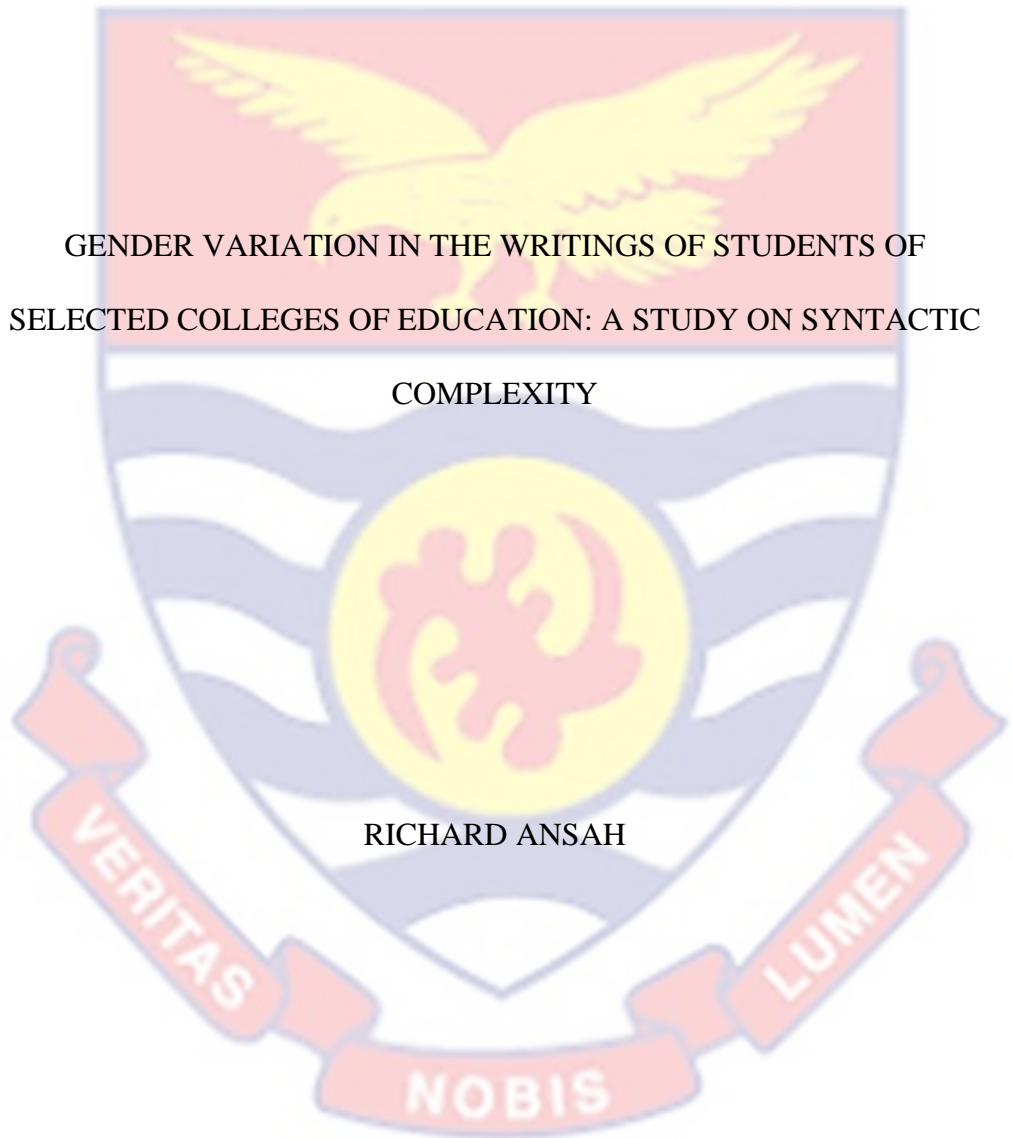


UNIVERSITY OF CAPE COAST

GENDER VARIATION IN THE WRITINGS OF STUDENTS OF
SELECTED COLLEGES OF EDUCATION: A STUDY ON SYNTACTIC
COMPLEXITY

RICHARD ANSAH



2022

UNIVERSITY OF CAPE COAST

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COMPLEXITY

BY
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Thesis submitted to the Department of English of the Faculty of Arts, College
of Humanities and Legal Studies, University of Cape Coast, in partial
fulfillment of the requirements for the award of Master of Philosophy degree
in English Language

JANUARY 2022

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: Date:

Name: Richard Ansah

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis was supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature: Date:

Name: Prof. Kwabena Sarfo Sarfo-Kantankah

Co-Supervisor's Signature: Date:

Name: Dr. Richmond S. Ngula

ABSTRACT

This thesis explored the differences in writings produced by both male and female students in colleges of education in Ghana with respect to syntactic complexity. The study sought to find out which gender is syntactically complex in writing of argumentative essay. Again, the study looked at the effect of syntactic complexity on the quality of students' writing of argumentative essay. The study was based on a corpus of two hundred examination essays belonging to the argumentation mode 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 lent credit to the *Difference* version of gender and language theory as it upheld the existence of variation in the writing of males and females with regard to writing syntactically complex sentences. 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. The study also showed that there was a positive but weak relationship between syntactic complexity and writing quality. That is, the greater the density of length of production unit, sentence complexity, amount of subordination and particular structures, the higher the quality of the students' writing. The present study focused on written language. Subsequent studies could examine gender variation with regard to syntactic complexity in spoken language.

KEY WORDS

Colleges of Education

Examination Essays

Gender Variation

Ghana

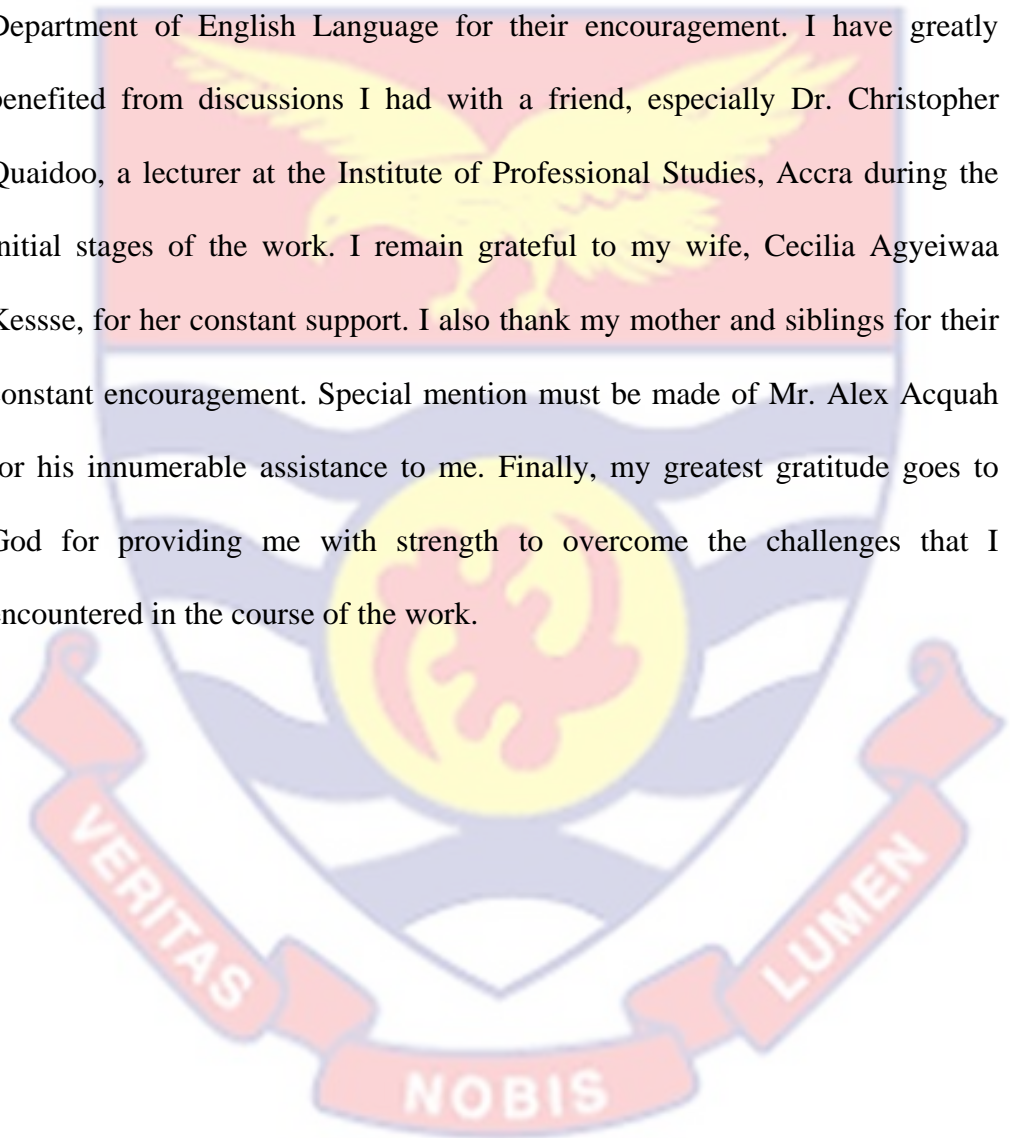
Students

Syntactic Complexity



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DEDICATION

To my wife, Cecilia Kesse; and my children; Goodwill Ansah, Prudence
Ansah, and Emily Ansah.



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CHAPTER ONE

INTRODUCTION

Introduction

This chapter gives general information about the topic investigated. It essentially provides the background of the study, the statement of the problem, the purpose of the study, and the research questions. Other issues considered in the chapter include the scope of the study, the definition of key terms, and the organisation of the entire work.

Background to the Study

Are there gender differences in the use of language? How does the gender of people influence how they speak or are spoken to? What is the correlation between the structure and use of language between the two genders? (West, Lazar & Kramarae, 1997, P. 119). While the question of whether males and females use language differently has a long history. However, it was as recent as 1970s that witnessed the genesis of studies into gender variations in language use (Jespersen, 1922). Recent times have witnessed a significant increase in studies on language, focusing on how males and females use language (Eriksson, 2012; Burchell, 1996; Marjanovic and Peklay, 2017) While some researchers involved in this line of study have documented some observable gender differences in language use (Lakoff, 1975; Mullac & Lundell, 1986), others have contended against the existence of such differences (Dubios & Crouch, 1975).

Herring (1994B) argues that even people from the same social class and speech community may demonstrate gender variation in terms of language use. Specifically, she shows that gender variation in language use is evident in

all speech communities. Herring's observation echoes the findings of Graddol and Swann (1989), who report the likelihood of the existence of gender variation in all levels of language (phonology, syntax, etc.), regardless of the specific language in question. Graddol and Swann (1989) maintain that there may even be instances where each gender uses entirely different terms to refer to the same entity.

In her ground-breaking work, Lakoff (1975) reports on the use of hedges, tag questions, intensive adverbs, hyper-politeness, etc. as typical of women's language. Subsequent researchers like Weiman, Widenmann and Gibson (1988) have sought to confirm the excessive use of questions and directives by women and men, respectively in conversations.

Focusing on the differences in the extent of offering opinions among children in Grades 4, 8, and 12, Mulac and Blau (1990) reveal a higher likelihood of opinion giving among boys, as compared to girls. On the issue of mean sentence length, Mulac and Lundel (1994) and Warshay (1972) emphasise that women's speech and writing are characterized by wordiness. On the other hand, a comparative study by Mulac, Seibold and Ferris (2000) describe men to use more negotiation and questions in their interaction. Their study reveals a likelihood of women to use more directives.

Other studies have reported different findings. Nimati and Bayer (2007), who focused on the use of hedges and question tags in English films, reported no significant gender distinctions in the way men and women use language. This finding was confirmed by Newman et al. (2008). These findings resonate with findings of an earlier study that focused on questions, compliments, apologies, etc. and reported no significant difference between

males and females during email correspondences (Thomson & Murachver, 2001).

Writing, an aspect of language, is an area that has gained the attention of researchers in recent times (Marjanovic and Peklay, 2017; Duhunsi, 2017; Dragana, 2016; Aperocho, 2016). The complexities involved in writing pose a significant challenge to students when learning to write. For instance, good writing requires that students demonstrate skills like planning and drafting, as well as a good handwriting and good command over grammar (Saddler & Graham, 2005). Besides, to become a good writer, one needs to practise and to be proficient and write effectively to be able to produce well-written sentences. This suggests that the inability to produce well-constructed sentences may present a significant challenge to writers, especially less skilled ones (Jagaiah, 2017).

Generally, syntactic complexity has been globally used as a benchmark for assessing and investigating second language L2 writing performance and development (Thai, 2015; Nasseri, 2016; Wang & Slater, 2016; Douglas & Miller, 2016; Martinez, 2016). Its usefulness in describing L2 performance has been emphasized by Bulté and Housen (2014). Syntactic complexity is considered an aspect of linguistic complexity, an area of linguistic research which has captured scholarly attention in recent times. Ellis (2003:140) mentions that linguistic complexity is “the extent to which language produced in performing a task is elaborate and varied.” Bulté and Housen (as cited in Bulté & Housen, 2014: 43–44) argued that investigations into linguistic complexity may either focus on the language system as a whole or on individual linguistic features that constitute the linguistic system. Additionally,

these researchers believe that studies on linguistic complexity may focus on either the form or functions of linguistic items or both. Such studies can also be undertaken at the various levels of language.

The present study investigates syntactic complexity, which is defined as “the range and the sophistication of grammatical resources exhibited in language production” (Ortega, 2015:82). For the present study, complexity means that the more components and dense a feature consists of, the more complex the feature is.

Statement of the Problem

The literature on gender differences in the use of language abounds (Holmes, 1993; Lakoff, 1975; Newman, 2008). However, it appears that most of the works on gender and language have concentrated on specific lexical items in spoken language and that works on gender variation in the use of language focusing on syntactic complexity are quite rare, especially in Ghana. Baron (2004) argues that despite the large body of research on language and gender, researchers have focused on spoken language as compared to the written language. Similarly, Labov (1972), Trudgill (1974) and Chambers (1992, as cited in Obeng (2012), contend that researches on language and gender have focused on variation at the phonological and lexical levels, but not at the syntactic level.

This notwithstanding, there are currently studies on syntactic complexity. Researchers like Nasser (2017), Wang and Slater (2016), Douglas and Miller (2016), Thai (2015), and Martinez (2016) have examined syntactic complexity in relation to the comparison between native speakers of English and English as Second Language (ESL) learners at different grade

levels. Other researchers like Dahunsi (2016), Aperopocho (2016), Dragono (2016), Maria (2016), Umek and Fakonja- Peklay (2017), D Waskita (2018) and Signell (2012) have looked at syntactic complexity in relation to gender. Though these researchers looked at syntactic complexity in relation to gender, they either concentrated on children or used different texts for different gender. For example, using different texts for males and females, Dahunsi (2016) examines the syntactic complexity in their prose. Crowhurst (2014) also focused on the syntactic complexity deference between boys and girls at Grades 6, 10, and 12. Similarly, Signell (2012) looks at the syntactic maturity of male and female students of Junior High School and Senior High School.

Besides, opinions are varied as to which gender is more syntactically complex in their writings. Whereas Eriksson (2012), Burchell (1996), Marjanovic and Peklay (2017) argue females' superiority in complexity to that of men, researchers like Duhunsi (2017), Dragana (2016), Waskita (2008), Aperocho (2016) argue for males' superiority in complexity to that of females. In fact, some researchers do not believe in the existence of the difference between men and women in language use. O'Barr and Atkins (1980) in their study of language in the court room confirm that there is no specific language associated with males and females and that people tend to use certain language, depending on the situation they find themselves.

Given the contrasting views expressed by the above writers coupled with the fact that these researches are rare in Ghana, it is important for such a study to be carried out in Ghana. Again, given that these researchers mainly based their analysis using the T-unit, using metrics with wide range of indices (Syntactic Complexity Analyser) that adequately measure real complexity will

be more rewarding. Ortega (2012) criticizes the T-unit analysis, given that it does not take into consideration some information (e.g., coordination and rankshifted clauses that are found within nominal phrases) considered very relevant by other scholars such as Biber, Gray and Poonpon (2011) in determining syntactic complexity level.

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. The study is different from other studies on syntactic complexity (Jones and Myhill, 2007; Eriksson, 2012; Chan et al., 2002; Marjanovic and Peklay, 2017; Martinez, 2018), in that it uses advanced writers (students of colleges of education) rather than children. It also uses text with same topic and genre (argumentative essay) for analysis for both males and females. Finally, the study is situated Ghana, where English is taught as a second language and again, research of this nature is quite rare.

Purpose of the Study

Different studies on gender and language use have produced different results (Mullac & Lundell, 1986; Nimati & Bayer, 2007). Earlier researchers like Lakoff (1975) and Holmes (1993) have been criticized heavily for their position on the difference between men and women on language use; though some researchers have sought to confirm their stances. To these earlier researchers, social roles and relationships between the speakers contribute immensely to difference in language use.

The study was informed by the contrasting view presented by Aperocho (2016) and Dahunsi (2016) who claim that male students and

writers are more syntactically complex than their female counterparts. This is contrary to the results of Waskita (2008), who rather finds women to be more complex than men in the structure of the text they produced. More importantly, the study is ignited by the work of Signell (2012) who observes that while girls in Junior High School outperformed boys in syntactic maturity, boys in Senior High School outperformed girls in syntactic maturity.

The study, therefore, has the ultimate purpose of confirming or disconfirming the contrasting position by the various researchers by bringing to bare which gender is more syntactically complex and also looking at the correlation between syntactic complexity and quality of writing. The present study looks at the nature of syntactic complexity used by student teachers at the colleges of education. The work, therefore, examined if male students at the colleges of education in Ghana are more complex syntactically in their writing of argumentative essays than female students or vice versa in the area of length of production, sentence complexity, subordination and coordination. Again, the study focused on the relationship between students' complexity level and the quality of their writings.

Research Questions

The study was guided by two research questions:

1. Which gender is more syntactically complex in the writing of argumentative essays by colleges of education students?
2. What is the relationship between syntactic complexity and quality of writing by colleges of education students?

Hypothesis

The following hypotheses guide this study:

1. There is no gender difference in the writing of argumentative essay by the colleges of education students in terms of syntactic complexity
2. There is no correlation between syntactic complexity and the quality of writing by the colleges of education students.

Significance of the Study

The outcome of the study has both theoretical and practical implications. That is, it has significance for theory testing, enhancing and adding to knowledge. The study contributes to knowledge on linguistic variation by showing the influence of gender on syntactic complexity in students' writing. Again, the study contributes to knowledge on gender discourse by looking at it from the angle of syntactic complexity which is arguably rare in Ghana. Lastly, the study adds to knowledge on academic writing by bringing to light the complexity of students' syntactic complexity at the colleges of education.

Delimitation of the Study

The study focused on written text because using written texts gave every student the opportunity to write on the same subject matter unlike the spoken form where people are likely to speak in a certain way, depending on the situation they find themselves. Again, using written texts brings out the naturalness of the data to a large extent since it will be devoid of interference that may characterize interview and recording of spoken language. To ensure naturalness and avoid influence from teachers' alteration and incorporation, data was obtained from unmarked examination scripts.

Again, in using written texts, the researcher has the advantage of minimizing unfinished sentences that characterize spoken language. Writing full sentences will help the researcher to measure the true complexity of the texts produced. The study focused on argumentative essay. Argumentative essay is one discourse type that brings out syntactic complexity in writers. Marian (2014) found argument to be more syntactically complex than narration and description, a finding that is consistent with San Jose (1972) and Perron (1977) who found in a study that the mean T-unit length was greatest in argument, followed by exposition, narration and description. Marian argued that presenting an argument seems inherently to require the inter-relationship of propositions which are expressed syntactically by the subordination of clauses and less-than-clausal elements and that high syntactic complexity argument is a function of the essential nature of argument.

Lastly, the study was limited to Level 200 students of three Colleges of Education in Ghana: Fosu College of Education, Wesley College of Education, and Presbyterian College of Education. The choice of the colleges was based on zonal selection. In addition, the selected colleges are mixed colleges which suit the purpose. The selection of Level 200 students was for convenience since the third-year students were out of campus and the first-year students had just joined the colleges and that their language had hardly been influenced by the college system.

Definition of Key Terms

Syntactic complexity: This refers to “a sentence structure that connects pieces of information effectively and efficiently using sentence

components with varying levels of hierarchy” (Jagaiah, 2017, p. 14).

Syntactic complexity measures (SCMs): Measurable sentence elements (sentence length, clause length, number of clauses, and number of phrases, etc.) that are used to operationalize the construct of syntactic complexity.

Sentence: This constitutes 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; Tapia, 1993).

Clause: This is a term used to describe any grammatical structure consisting of a subject and a verb (Hunt, 1965).

Main clause: This refers to a clause that can stand on its own and make a complete thought (Hunt, 1965).

Dependent clause: Unlike a main clause, a dependent clause cannot stand on its own and make a complete thought. It is normally attached to the main clause to provide additional information (Hunt, 1965).

Gender: It refers to “roles and responsibilities of men and women that are created in our families, societies and cultures” (UNESCO, 2003, p. 1).

Sex: Sex refers to “a biological categorization based primarily on reproductive potential” (Eckert & McConell-Ginet, n.d., p. 2).

Writing Quality: This refers to a measure of the overall quality of a written text, with the focus on issues such as content, grammar, spelling, and complexity of syntax, (Sparks, 1988).

T-unit: Hunt (1965) defines T-unit as one main clause with all the subordinate clauses attached to it.

Organization of the Study

The study is organized into five chapters. Chapter One covers background of the study, statement of the problem, objectives of the study, research questions, significance of the study and organization of the study. Chapter Two reviews relevant literature on the study. It also discusses theoretical and conceptual frameworks as well as empirical literature. Chapter Three describes the methodology employed for the study. Chapter Four presents the results while Chapter Five presents the summary, conclusions and recommendations of the study.

Chapter Summary

Chapter One focuses on the relevant information to serve as the basis for the work. It provides background information to the study. The chapter clearly identifies the gap that the current study intends to fill and outlines the need for conducting this study. It states the questions which the study intends to address, the scope and limitation of the study as well as the organization of the study.

CHAPTER TWO

LITERATURE REVIEW

Overview

This chapter focuses on the review of related literature pertaining to the study. It incorporates theoretical review, conceptual review, and empirical review. Under the theoretical review, the gender and language (deficit, discursive, dominance, and difference) theories are reviewed. The conceptual issues include gender and sex, gender and language, and syntactic complexity. The empirical literature, on the other hand, reviews other previous studies related to this study.

Theoretical Review

Deficit Theory

This theory was propounded in the early 1970s. The theory considers language use by women as a deviation from a male standard which is more desirable. Some of the proponents of this theory are Jespersen, Lakoff, Holmes and Brown. Otto Jespersen has written extensively on women's language, especially in 1922. According to him, there are certain great expressions (*damn, shit*) which are peculiar to men. When used, such expressions are understood by women, who lack the ability to pronounce them. He also argued that women also have some peculiar expressions, (specialised colour terms e.g. *mauve*; "empty" expressive adjectives and adverbs e.g. *quite*; "hedge words", e.g. *I think, kind of* and *sort of*; tag questions e.g. *they are coming, aren't they?*), which men do not use. This suggests that there are differences in language use by both genders (Jespersen, 1922).

Among other things, Jespersen advances that women's language is wordy and characterized by incomplete sentences and that women also use conjunctions in sentence initial positions, incoherent syntax, etc. Based on these, Jespersen argues that women's language is inferior to that of men (Jucker, 1992). However, for various reasons, this theory has been criticized by feminist scholars (Speer, 2005; West, 1995.)

Holmes (1998) also presents women's speech as deficient compared to men's speech. Holmes argues that, in their use of language, women tend to focus on ways they can create solidarity while men use language to enact power relations. She additionally maintained that women tend to be more flexible in style. Brown (1980) also argues that women tend to exhibit a high level of formality and politeness. He explained that this is due to the lower status of women in society. In line with this, it has also been reported that women use acrolectal varieties of language more than men do (Mc Groarty, 1996).

Lakoff (1975) explains women's deficiency in language use owing to the fact that women are expected to be "ladylike" which makes them the less powerful group in society (Akhter, 2014). In her ground-breaking book, *"Language and Woman's Place"*, Lakoff explains that women's inferiority in language use results from the fact that they occupy a low status in society. To her, the weakness in women's speech is reflected in the fact that women tend to express uncertainty and are highly polite in using language which is evident in linguistic forms such as "empty" expressive adjective and adverb, hedges, rising intonation, use of more tags, etc. (Lakoff, 1975).

Lakoff (1975) has been heavily criticized for her claim on women's language. For instance, contrary to Lakoff's assumption that females use more question tags than men do, Holmes (1993) revealed that modal question tags are more frequently used by men than women. Dubois and Cronch (1975) also blamed Lakoff for relying so much on intuition rather than on empirical evidence. This notwithstanding, Lakoff's theory is still remarkable in discussing issues on gender and language. The theory underscores the fact that women's language exists and that men use language differently from females.

The present study draws much inspiration from this theory as it is on the basis that males use language differently from the females that the researcher sought to find out which gender (male, female) is more syntactically complex.

Dominance / Power

The dominance theory assumes that the difference between the way women and men speak is derived from the fact that both genders live in distinct linguistic worlds characterized by unequal distribution of power. This theory emphasizes that when women and men are conversing, men use more interruptions than females.

In a study by Zimmerman and West (1975), for instance, they reported more frequent use of interruptions by men. In explaining their findings, they noted that interruptions reflect the power relations between males and females. Spender (1980) similarly argues that the world is a male-dominated society (patriarchy) and male language is treated as norm. Thus, men and women speak differently because of evidence of male privilege in society.

One possible limitation of Zimmerman and West's 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 significantly affected the whole research.

This theory is important to the study as the present study sought to find out if indeed the difference in privileges accrued to men and women in society reflects in the way males and females write and again if males' interruption in conversation can translate into they being better argumentative writers.

Difference Theory

Tannen's book "*You just don't Understand*" constitutes a major work people refer to when talking about the difference theory. In the book, which was published based on her PhD thesis, she attributed the gender differences in language use to the distinctive ways people of different genders get socialized (Tannen, 1990). She also argues that men and women come from different cultures and use language for different reasons.

To Tannen, in using language, men focus on maintaining their status and reporting facts while women use language to establish intimacy and rapport. She defines this "rapport-talk" as emphasizing and involving and "report talk" as exhibiting knowledge, initiating and dominating conversation. Though Tannen agrees that men usually seek to dominate women, she disassociates 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 it ultimately seeks to find out if indeed gender, which is socially constructed, has any influence on the way males and females speak and write.

Discursive Approach

Discursive approach considers culture as the basis for the gender differences in linguistic behaviour. According to this theoretical perspective, gender is constructed through discourse on a daily basis. From this perspective, Cameron (2006) believes that changes in economic conditions can lead to a change in some gender stereotype. According to her, the interpretations given to such economic shifts have some influence on language use.

This theory does not see gender as fixed characteristics ascribed to men and women. For example, according to Cameron (2006), the time where women were seen as weak communicators is no more and that in recent times men's behaviour has been relabeled as undesirable; leading to men being considered as inept communicators, a characteristic previously attributed to women.

Indeed, if this theory is anything to go by, then it defies the idea of women's use of language. This theory, thus, challenges the existence of gender-specific language. The theory is very relevant to the study, as it will confirm (or deny) the existence of gender variation in written language.

Conceptual Review

This section focuses on concepts that the researcher uses in the study. These include: gender, sex, and syntactic complexity.

Gender and Sex

The terms “gender” and “sex” are related and are often confused with each other. The two terms often pose difficulties to researchers who attempt to define them or differentiate one from the other.

The term “gender” concerns roles that come with being a man or a woman. It is the roles society or culture expects from one by virtue of the person being a man or a woman. Gender also constitutes how society expects one to behave based on the person being either male or female. Such expected roles and responsibilities are learned over time and are also subject to change. Given that there are cross-cultural differences in what society expects of people, gender roles are also culture-specific but not biological (UNESCO, 2003). Thus, whereas gender is determined by one’s culture, sex is an aspect of one’s anatomy (Obeng, 2012). Thus, gender differences are evident in the social lives of people while biological differences serve as the basis of sex.

Human institutions, including the media and religion, serve as the vehicle for the construction and shaping of gender roles in societies. Through such institutions, social norms emerge and rules are made in view to what behaviour, attitudes, and responsibilities are expected of men and women (Johnson et al., 2007).

Given that gender roles spring from societal expectation of men and women rather than from one’s biological make-up, as people interact with others in their daily lives, they learn to behave to suit the societal expectations based on their being male or female. This is in line with WHO’s definition of gender as socially constructed characteristics of men and women, which are produced and shaped by societal norms. Gender roles in some societies are

more rigid than others; and these roles differ, depending on the society one finds themselves which of course are amiable to change.

On the other hand, sex is conceptualized as universal and biological. This suggests that being a male or female is determined at birth. Thus, based on sex, women are differentiated from men based on their anatomical or biological characteristics. The relationship between sex and gender is so fragile and people hardly are able to draw a line between the two terms.

According to Simon de Beauvoir (1972), it is what one does that defines one as a man or a woman but not necessarily one's sex. He believes that a person is not born but rather becomes a woman or a man, depending on the way they behave. Growth comes with learning experiences that expose us to new ways of constructing our gender identities (Eckerk & McConnell-Ginet, 2003). In fact, one never stops to learn to be a man or woman, because society is so dynamic that one is forced to learn to change to meet the societal perceptive roles of men and women (Cameron, 1995). Indeed, the issue of gender is seen in all facets of life, even on public toilet: "...toilet segregation is presented as a natural consequence of the difference between the sex-classes when in fact it is a means of honoring if not producing this difference" (Goffinan, 1977, p. 315)

Gender and Language

The past few decades have witnessed a growing body of research on gender and language (e.g., Holmes, 1986; Lakoff, 1975; Tannen, 1990). Coates (1993) argues that being either a male or a female involves using language to enact one's gender. In effect, the way one speaks could be used to determine one's gender.

In their upbringing, children learn how to use gender-specific language. In the case of females, their upbringing involves symbolic transformations, and this helps them to develop their (meta) language (Umek et al., 2017). It has also been found that mother-daughter relationship involves more interactions than mother-son relationships. Specifically, in conversing with their daughters, mothers use more interpretations, while in conversing with their sons, they use more conversations (Clearfield & Nelson, 2006). When males and females speak, they use distinct language forms to reflect their status of being male or female.

Language use involves the projection of attitudes, changing of the flow of talk, etc., all of which can be manipulated to suit one's gender. Thus, gendered identities can be constructed at all levels of language, be it word choice, tone, pitch of voice and intonation, which is manifested through the speaker's presentation.

Syntactic Complexity

“Syntactic complexity” is a term used to describe the formal features of syntax (Blue & Housen, 2012). Syntax allows us to join words to convey an intended meaning. Syntax allows us to choose words from a wider set, arrange them in a preferred order to effectively convey meaning (Scontras, 2014). When making a statement, one needs to choose appropriately from a variety of words and arrange them correctly in order to convey an intended meaning. This includes how much one can provide specific details to communicate meaning effectively.

Syntactic complexity involves sentences structures that join pieces of information together such that such information will be seen as a hierarchy

using sentence elements such as clause, phrase and word (Jagaiah, 2016). Thus, the constituents of a sentence characterized by syntactic complexity are arranged in proper ways to form unlimited set of simple or complex sentences (Chomsky, 1957 as cited in Jagaiah, 2016). Such sentences can be expanded infinitely in terms of length (Makels, 1984). Figure 1 exemplifies syntactic complexity:

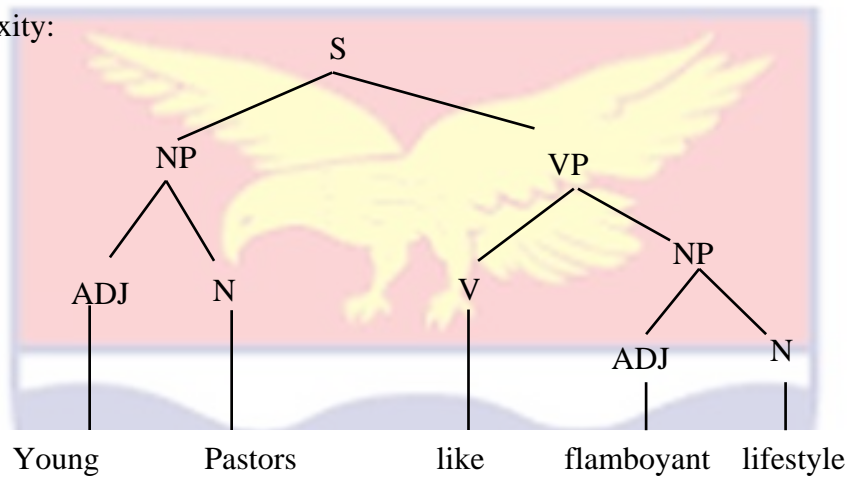


Figure 1: Two-constituent model of a sentence illustrating complexity of each constituent.

S = Root of the tree; NP = Noun Phrase; VP = Verb Phrase; ADJ = Adjective; N = Noun; V = Verb

In figure 1, the sentence is seen as the highest hierarchy comprising all the elements below it (clause, phrase, word and morpheme). The sentence *Young pastors like flamboyant lifestyles* has descending branches of two phrases.

Phrase 1 (NP) ⇔ Young Pastors

Phrase 2 (VP) ⇔ likes flamboyant lifestyle.

The NP comprises an Adjective (Adj) – *young* and Noun (N) *pastors*. Similarly, the VP comprises verbs (V) - *like* and a Noun phrase (NP) *flamboyant lifestyle*. Further, the Noun phrase (NP) *flamboyant lifestyle* consists of the Adjective (Adj) - *flamboyant* and Noun (N) - *lifestyle*.

According to Chomsky, the level of complexity is signaled by the relations between the constituents and connections within the nodes. The composition of this various levels of hierarchy determines whether or not a sentence is simple or complex (as cited in Jagaiah, 2016).

Philips (2006) argues that syntactic complexity can be increased by changing the subject and predicate, and putting in their place more complex structures. Syntactic complexity can also be achieved through embedding, which allows one clause to subsume another. Figure 2 illustrates an embedding in the Noun phrase (*i.e.* Relative clause).

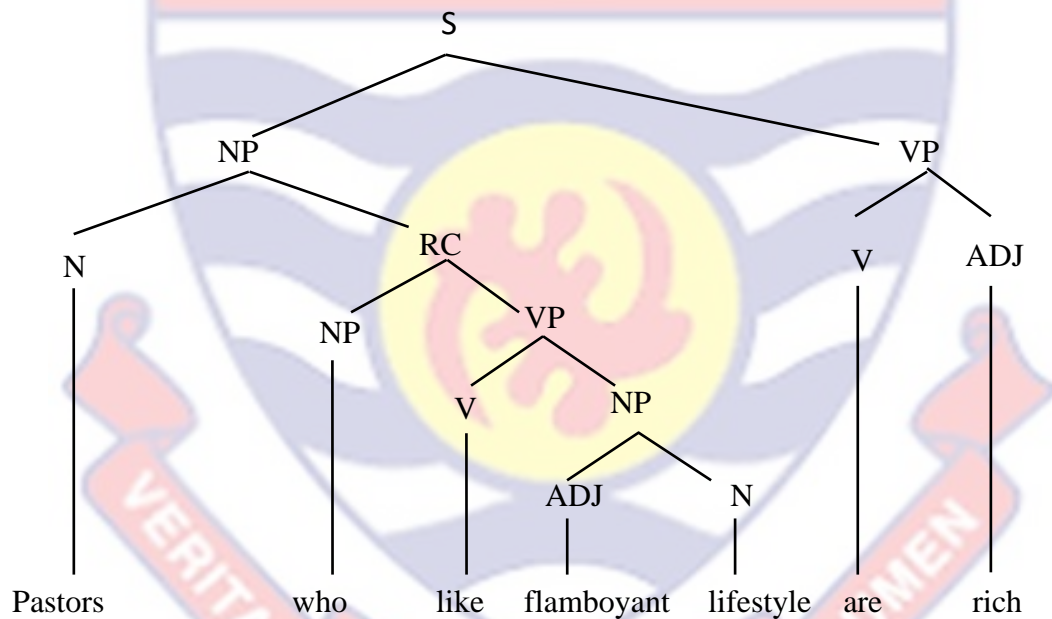


Figure 2: Two constituent hierarchical levels of a sentence illustrating complexity of each embedded clause.

S = Root of the tree; NP = Noun Phrase; VP = Verb Phrase; N = Noun; RC = Relative Clause; V = Verb; ADJ = Adjective; V=Verb.

The main clause “pastors are rich” has two hierarchical levels: NP (*pastors*) and VP (*are rich*). The embedding of the relative clause increases the levels of hierarchy to five (5). In effect, the complexity of the sentence is increased. The relative clause forms the second level of hierarchy (“who like

flamboyant lifestyle”) and the VP (“are rich”) forms the third, while the adjective phrase forms the fourth (“flamboyant lifestyle”). Similarly, the noun phrase (“lifestyle”) constitutes the fifth level. Structures characterized by embedding are often employed by writers to show how ideas are related (Jagaiah, 2017).

According to Skehan (1996), complexity shows the ability of learners or the extent to which learners construct elaborate sentences, making the sentences sophisticated. This point is emphasised by Ortega (2003), who stressed that as one writes elaborated sentences, the sentences become sophisticated which leads to complexity. Complexity also concerns the lexical or syntactic characteristics of narrative performance (Elis & Barkusizen, 2005). concerns the range of structures in a language and the density of sophistication. This implies that language keeps revolving and at any point in time, one can learn something new. Writing complex structures also means that learners would have to take risk as one has to piece pieces of information together to make a sentence elaborate.

The Sentence

In his conceptualization of the sentence, Kerl (1861) asserts that a sentence is a thought that is expressed by words. Sentences are either simple or compound. Homburg (1984) also defines a sentence as a string of words with a capital letter at the beginning of the first word and a period or another terminal punctuation mark after the last word. Given that written language contains punctuations, it makes it easier to identify sentences (Crystal, 2008). This is because punctuation helps one to identify what a sentence is.

Traditional grammars identify five grammatical units: sentence, clause, phrase, word, and morpheme. The sentence is seen as the highest grammatical

unit on the rank scale. According to Greenbaum (1996), the traditional definition of a sentence is a statement that expresses a complete thought. He argues that the notional definition of a sentence seems a bit problematic since it requires knowledge of complete thought. This is because two ideas can be put together to express complete thought

Example A:

The man bought his wife a car and a beautiful house for his mother.

Likewise, one idea can also express complete thought.

Example B:

I bought my wife a car.

Greenbaum (1996) asserts that grammatical completeness can be measured by the clause, since some sentences may contain more than one clause. Perhaps, this explains why Halliday (2014) rather talks about clause complex as the highest grammatical unit. Halliday argues that the clause is the basic unit of analysis. He sees the clause as a multifunction structure which expresses three types of meaning which he describes as meta-function: ideational, interpersonal, and textual. Clause Relationships

“A Clause is a term used in some models of grammar to refer to a unit of grammatical organization smaller than the sentence, but larger than phrases, words or morphemes” (Crystal, 2008, p. 78). At its lowest form, the clause contains a covert or an overt subject and a predicate which expresses a proposition (Hartmann & Stork, 1972). Clauses may be independent or dependent, adjectival, adverbial, or nominal. Dependent clause (also known as subordinate clause) serves as a clausal element in the matrix clause which can

function like adjectives, nouns or adverbs in complex sentences (Quirk, Greenbaum, Leech, Svartvik, & Crystal, 1985).

The relationship between clauses is established by co-ordination or subordination (Greenbaum, 1996). In coordination, the joined clauses are considered grammatically equal. Coordination, therefore, results in the formation of compound sentences. For example:

Example C:

The man sued his friend and he never rescinded his decision.

Here, we have two clauses joined by a coordinator “and” that is,

- a. *The man sued his friend.*
- b. *He never rescinded his decision.*

Example D:

His confidence was high; his presentation was incredible and there is no way he will fail.

Here, we have an instance of three coordinated main clauses.

Greenbaum (1996) asserts that coordination may either be syndetic or asyndetic. Syndetic coordination involves the explicit signaling of coordination by the use of coordinators while the asyndetic counterpart does not use coordinators though such coordinators easily are inserted. In example D, the last two clauses are coordinated by “and” (syndetic) while the first two clauses are separated by comma (asyndetic).

On the other hand, clauses can also be put together through subordination.

Example E:

- a. *Who knocked the door is not known.*

b. *I don't know who is coming.*

The subordinate may also be a constituent of phrase.

Example F:

The accident was caused by the road that was abandoned (Greenbaum, pp. 314).

Types of Sentence

Qirk et al. (1972) identify the sentence as the largest unit of analysis which can be simple - consisting of only one clause or complex- consisting of more than one clause. A simple sentence consists of just one main clause. Example: a. *Kofi eats fufu.* b. *The man in the green shirt opposite the nurse is my father.*

A compound sentence results from the use of coordinators (such as “and”, “or”, and “but”) to join two or more simple sentences. Example: *I like mangoes and she likes apples.* Here, two clauses are joined by the coordinator “and”. Similarly, we can have three main clauses that are coordinated. Example: *John came yesterday, saw the food on the table and ate it.*

A complex sentence contains one or more subordinate clauses. Example: *I know that my redeemer lives.* A complex sentence can have a complex structure: of subordination within subordination and an independent clause. Example: *If you have come because of the party, the party may not come on.* Similarly, there could be one main clause and two subordinate clauses of equal level. Example: *Richard who joined the staff five years ago when he had no teaching experience is now the principal.*

Compound-Complex sentence has, at least, two main clauses and at least a subordinate clause. Example: *The dog went into the room and ate the raw meat while the children were sleeping.* Similarly, there could be a more

complex structure consisting of two or more coordinated clauses, each of which contains one or more subordinate clauses. Example: *I am quiet because I am not surprised but he is talking because it hurts him so much.*

It is important to further distinguish between major sentences from minor sentences. Graddol et al. (1993) refer to major sentences as those structures such as simple and complex; and minor sentences as fixed structures such as *Hi, Good morning, thank you, No,* etc. Such structures, according to Graddol et al., hardly undergo changes. They also refer to comments such as *you know, you see, you know what I mean,* which are parenthetical in nature and are better described in a way which shows they are parenthetical. For example: *I love you, you know.*

Measures of Syntactic Complexity

Research on language teaching has emphasized the significance of syntactic complexity as a measure of learners' linguistic advancement. According to Ortega (2003), syntactic complexity is the degree to which a text contains embedding, coordination, and subordination.

A wide variety of measures of syntactic complexity exist in the literature on second language writing. A good example of such measures has been the minimal Terminal Unit (T-Unit). According to Hunt (1970), T-Unit comprises a combination of one main clause and a subordinate clause or non-clausal structure. He recommends the mean length of T-Units and clauses per T-units, together with words per clause as important indicators of syntactic complexity. While T-units have been widely accepted as a measure of syntactic complexity, its reliability has been questioned in recent times. Bardovi-Harlig (1992), for instance, contends that defining uniformity of

length and complexity on output that is absent in the original language is quite problematic since that may distort the original intentions of the learners who produce sentences rather than T-units. Ortega (2012) also notes that the use of T-units ignores some relevant information (such as coordination and non clausal embedded in the noun phrase) emphasized by some other researchers such as Biber et al. (2011). It has also been argued that the ability to produce long T-units is not a sufficient measure of learners' proficiency (Smart & Crawford, 2009). Given that the reliability of research results depends on the validity and accuracy of syntactic complexity metrics, it is, therefore, very necessary to use metrics that adequately measure in essence what it intends to measure. Previous studies have sought to quantify one of the following in one way or another: clauses, sentences, and T-units as a way of assessing syntactic complexity.

Many researchers have raised questions about the many metrics for measuring syntactic complexity. These questions have been raised especially with regard to how the various syntactic complexity measure actually measure of learner's linguistic proficiency. Lu (2010) believes that many works that have been conducted to examine the proficiency difference in syntactic complexity among learners (e.g., Bardovi-Harlig & Bofman 1989; Larsen-Freeman, 1978) and those that monitor how students' develop in syntactic complexity of second language with time (e.g., Stockwell & Harrington, 2003) have never yielded the desire outcomes because of the non-existence of a tool that can adequately and effectively automate all the syntactic complexity measurements. The questions raised were predicated on the fact that such studies did not use reliable statistical tools. Additionally, the sample size of

previous studies has been quite small due to the lack of a teller-made system that can truly measure syntactic complexity, a development that has been questioned by many researchers. Lu (2010) recommends that studies should employ the computational system for automatic analysis in second language writhing called Syntactic Complexity Analyser which can automate fourteen different measures in measuring second language writing reviewed in Wolfe-Quintero et al.'s (1998) and Ortega's works.

Syntactic Complexity Analyser

According to Lu (2010), Syntactic Complexity Analyser uses written English data (in plain text format) as input, which it then uses to generate fourteen indicators corresponding to the fourteen measures. The process involves two stages. The preprocessing stage involves the analysis of the syntax of the sentence by the use of the syntactic parser. Through the preprocessing stage, parsed samples consisting of a sequence of parse trees emerge. After the preprocessing stage, comes the syntactic complexity analysis, which involves the analysis of the parsed sample to produce fourteen syntactic complexity indices. This involves two stages. The first stage involves the retrieval and counting of relevant production units and syntactic structures necessary for calculating one or more of the fourteen measures in the sample. This is followed by the calculation of the indices using those counts.

The definition assumed by the sentence segmentation module in the Stanford parser is compatible with the following definitions: A *Sentence* is a group of words with an ending marked by a period, quotation mark, question mark, exclamation mark, or ellipsis (Hunt, 1965). A *Clause* is defined as a syntactic structure consisting of a subject and a finite verb (Hunt, 1965). Based

on the definition of clause, *Dependent clause*, is defined as a finite adjective, adverbial, or nominal clause (Hunt, 1965). A *T-unit* is defined as “one main clause plus any subordinate clause or non-clausal structure that is attached to or embedded in it” (Hunt 1970:4). A *Complex T-unit* contains a dependent clause (Casanave, 1994). *Coordinate phrase* consists of adjective, adverb, noun, and verb phrases are counted in coordinate phrases (Cooper, 1976). *Complex nominal* comprises (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).

The final output of the analysis constitutes fourteen numeric scores representing the fourteen indexes of syntactic complexity of the writing sample after the system has retrieved and counted the occurrences of the syntactically parsed writing sample using the Tregex. The indexes, therefore, correspond to the fourteen measures for measuring syntactic complexity.

The measures can be grouped into five. The first one comprises mean length of clause (MLC), mean length of sentence (MLS), and mean length of T-unit (MLT), and sentence complexity ratio (clauses per sentence, or C/S) makes up the second type. The third type encompasses 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 comprises 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), and finally, the fifth type is made up of 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.

Syntactic Complexity Measure-Code Definition

<p>Type 1: Length of Production Unit</p> <ul style="list-style-type: none"> • 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
<p>Type 2: Sentence Complexity</p> <ul style="list-style-type: none"> • Sentence Complexity Ratio (C/S) – number of clauses / number of sentences
<p>Type 3: Subordination</p> <ul style="list-style-type: none"> • 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`
<p>Type 4: Coordination</p> <ul style="list-style-type: none"> • 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).

Syntactic Complexity and Writing Proficiency

One important aspect of academic achievement is writing skills. Good writing skills are required for a student to successfully graduate from college and it is sometimes required for employment and effective communication. Studies have shown that students' ability to write complex texts determines their academic success in college (Jagaiah, 2016). In line with this, Applebee et al. (1990) found that linguistic proficiency determines the ability to produce well-punctuated complex linguistic structures.

According to Jagaiah (2016), the ability to use complex syntax leads to the composition of coherent texts, summaries, etc. By so doing, a writer is able to connect ideas and clarify earlier thought to effectively make transition between ideas in order to effectively put across the intended meaning. She noted that writing the idea in many simple sentences presents the readers with the challenge of making connections among them. While making this connection will be easy for some readers, it will pose a problem to, especially, those who lack background knowledge of the topic. It is against this backdrop

that there is the need for students to learn how to produce a variety of sentences, taking into consideration those that are syntactically complex in order to bring out best in them with regard to the quality of the texts they produce.

Some decades ago, writing research was principally focused on grammatical accuracy of content, organization, style, vocabulary, and grammar as a way of judging the value of a text (Schultz, 1994). However, in recent times, researchers are rather paying attention to the processes that are involved in producing a text which include planning, drafting, revising and editing (Nagy, 2009). This often refers to as “process writing”. Again, syntactic complexity has recently been a major tool for judging the quality of students’ writings. It is believed that a text is considered superior when it is syntactically complex compared to a written text which is less complex (Jajaiah, 2017). In effect, much importance is given to syntactic complexity in grading of texts. Writers believe that the complex nature of a text and the syntax of it is as crucial as the other grammatical accuracies in so far as the quality of a text is concerned.

The importance given to the ability to construct complex sentences is a valid one. This is because complexity is needed in order for one to be able to transform or organize ideas that often requires students to piece together pieces of information and rightly so do that correctly to form complex sentences (Jajaiah, 2017). Students who often lack the ability to produce complex sentences find it difficult to present their thought efficiently either in speaking or in writing.

It has been argued that complex sentences are not the same as good sentences. This is because measures of syntactic complexity do not always correlate with the effective ways of determining proficiency in writing or judging the quality of a text (Lu, 2011). Though writing a variety of sentences is perceived to be the best, sometimes ideas are more effectively communicated when presented in simple sentences than in complex sentences, given that too much complexity may sometimes result in awkward and unintelligible sentences (Weaver, 1996).

Clearly, “Different measures can serve different interpretive purposes for different proficiency levels” (Norris & Ortega, 2009, p. 573). This suggests that students develop the ability to write complex sentences as they move up on the educational ladder. For instance, the sentence complexity of intermediate students may be lower than that of advanced learners. Also, students who use subordination to achieve sentence complexity at the intermediate level may switch to the use of nominalizations as they progress to meet the demands of advanced levels. Thus, while sentence complexity is necessary, it is not sufficient for the production of quality texts (Beers & Nagy, 2009, p. 187).

Syntactic Complexity and Argumentative Writing as a Discourse Mode

Studies have revealed contextual factors that influence syntactic complexity of language, whether written or spoken. Paramount among these contextual features is the nature of writing. A study by Rosen (1969) revealed high syntactic complexity in referential writing, compared to expressive ones. Rosen’s findings were confirmed by San Jose (1972) and Perron (1977), who found greater syntactic complexity in argumentative essays, compared to

exposition, narration, and description. Specifically, the mean T-unit length for the argumentative essay was far more than that of expository essay, followed by narrative and descriptive essays.

Focusing on contextual issues such as audience, Marian (2014) found that syntactic complexity increased with increase in the levels of the students. Also, Marian found argument to be more syntactically complex than narration and description, a finding which is consistent with San Jose (1972), Perron (1977), and Rosen (1969). Marian holds that presenting an argument requires the inter-relationship of propositions which are expressed syntactically by subordination.

Empirical Review

Studies on Language and Gender

The question of whether there is indeed a woman's language or a man's language remains unresolved. Right from day one, men and women have been assumed to use language differently (Jespersen, 1922). Otto Jespersen has written extensively on women's language, as far back as 1922. Despite the assertion that men and women use language differently, investigations into gender variation in language use are a recent development.

The origin of studies on men and women's language is often traced to Otto Jespersen. In *Language: Its Nature, Development and Origin*, he devotes one chapter, which he titled "*The women*," to describe women's language. Specifically, he noted that women's speech is characterized by limited vocabulary, simple sentences, etc. He also revealed that women use incomplete sentences and like joining sentences with coordinators since they hardly think of what to say before speaking, which of course indicates of their

emotional states, though he agrees that women's speech is quite polite and more refined than that of the men. Jespersen's study has attracted criticisms, especially on the ground that it is sexist and patronizing (Speer, 2005; West, 1995).

Published in 1975, Lakoff's, *Language and Women's Place* has been widely recognized as the pioneer of feminist linguistics. The work of Lakoff has been instrumental in discussing language and gender issues. Leaning on the deficit approach, Lakoff considered the language of women as reflecting the powerlessness of women in society. Lakoff also argued that the inferiority of women's language is a consequence of the training women go through from childhood (Speer, 2005a). Lakoff identified and grouped the features of women's speech at the various levels of language. Specifically, she noted that women's speech comes with a higher pitch, compared to men's speech, and that women express uncertainty by giving a declarative clause a rising intonation. Additionally, the author noted that, compared to men, women hedge a lot, use more question tags, and often express politeness when using language. Concurring with Lakoff on the issue of question tags, Fishman (1978) reveals that women use tag question about three times as much as men do. However, some related studies (e.g., Bauman's, 1976; Macaulay, 2005) have revealed contrasting findings. In fact, Macaulay (2005) revealed a more frequent use of tag questions among working-class boys than girls.

In addition, Lakoff contends that women tend to use more 'empty' expressive adjectives (e.g. *lovely, adorable*) and adverbs and tend towards hyperbole and avoid the use of swears and taboo words. With evidence agreeing with Lakoff's (1975) findings, Haas (1979) showed that girls use

adjectives more frequently than boys do, concurring with the findings of Kramer (1974) that women do not just use adjective but they do use context-dependent adjectives and that they do use such adjectives frequently. Studies by Olivier, Corney, Anderson and Mohay (2002) also affirm the position of Lakoff and Hass when they reported excessive use of emotional adverbs and adjectives as characteristics of women's speech.

Jespersen and Lakoff have been criticized for relying so much on intuition than on empirical evidence. West (1995), for instance, contends that Jespersen and Lakoff's conclusions came from informal observations rather than empirical research. Contrary to Jespersen and Lakoff's studies, Nemati and Bayer (2007) conducted a similar study, focusing on intensifiers, hedges, and tag questions while paying attention to cross-cultural differences. In all the three variables (intensifiers, hedge and tags questions) they tested, the result showed no significant gender variation. In fact, O'Barr and Atkins (1980) maintain that one is likely to use certain linguistic items, depending on the situation they find themselves. O'Barr and Atkins confirm this when they talk about "Powerless Language". In their study of language in the courtroom, they realized that both genders use language in similar ways when they're in subordinate positions. Holmes (1993) rather found out in a study that men rather use more tags and other linguistic types than women, contrary to the findings of Lakoff.

Examining the language of men, Herring (1995) identified behaviours that are typical of male participants as opposed to female participants on the LINGUIST (academically-oriented discussion group on the internet devoted to informal discussion of issues relevant to professional linguist though

accessible to all) as mainly dominated by men, which are *self-promotion, rhetorical coercion and adversariality* vis a vis the intended addressee. She argued that all these behaviors are likely to intimidate other participants. Herring analyzed five samples (messages) for over two years and, within the period, men posted 81 percent messages and their messages were one and half times longer compared to those of the women.

Herring further explains that self-promotion is accomplished by a variety of means including the use of one's title or role label, mentioning one's connection to important personality and referencing one's own published work. Rhetorical coercion, Herring explains as a set of strategy involving rhetorical coercion or advancing one's own position in a way that cannot be easily resisted or challenged. The adversative is also explained as treating their interlocutors as if they were adversaries, by criticizing and ridiculing them, misrepresenting their views and generally attempting to make themselves look good by making others look bad. Though Herring's work is consistent with other works, it has suffered some criticisms especially on the grounds that some of the explanations she gives are ludicrous because women are also guilty of such "offense". Obeng (2012) contends that the notion that men exhibit self-promotion by referring to their own words is absurd in that she, Herring, being a woman (and many other women) has made many references to her own work. Again, that men treat their interlocutors as if they were adversaries, by criticizing and ridiculing them, misrepresenting their views and generally attempting to make themselves look good by making others look bad cannot be considered as a vice (adversative) entirely because it is considered desirable in agonistic debate (ibid).

A study by Bell, McCarthy, and McNamara (2006) reported a more frequent use of self-reference words among men than women. The authors also found that women used language to index their social environment and to maintain social relationship. They explained this with the fact that women are usually nurturing and often express concern for others than they themselves, compared to men. It was also found that, on one hand, women's language features more positive emotion-loaded words and, on the other hand, men use more negative emotions. With this, the author explained that men tend to be less cooperative than women and are not productive when it comes to using them to maintain relationship. Relatedly, Bell et al. (2006) investigated the ability of the biological and social constructionist theories of gender in predicting gendered styles of language use in an emotional context. The study utilized a corpus of 54 texts, half of which was written by each gender, and found that the biological theories could predict styles of language but the social constructionist theories could not.

Newman et al. (2008) rather found less significant gender variation in language use. They used 14,000 texts from archives and used text analysis program and Linguistic Inquiry and Word Count (LIWC) to analyze the data. To them, gender variation is larger on tasks that place fewer constraints on language.

Studies on Syntactic Complexity

Syntactic complexity refers to the formal characteristics of syntax which has been described as absolute complexity. Being syntactically complex means being able to put together series of words to convey unlimited range of meaning. Globally, complexity has been used as a major tool for assessing

and investigating second language (L2) writing performance and development. This has not been clearly established by previous studies (e.g. Scott & Danielle, 2014; Dong, 2014; Thai, 2015; Douglas & Miller, 2016; Nasseri, 2016; Ana, 2017).

Ana (2017) compared the level of linguistic complexity of texts produced by both monolingual and bilingual secondary school students. In the analysis, the author focused specifically on the levels of the sentence, clause, and phrase. The author revealed that texts produced by bilinguals were characterized by more syntactic complexity than those produced by their monolingual counterparts. The author also reveals that students' linguistic complexity increased as they progressed on the academic ladder. This was especially the case with the use of coordination and subordination in both groups.

In a longitudinal study, Scott and Danielle (2014) investigate the relationship between syntactic complexity of texts written by non-native speakers of English and how that complexity affects the grades given to those texts or the quality of the essays. In their study, they used the computational tool, Coh-Metrix for their analysis of fifty seven second language learners' essays and revealed that students who spent time studying English actually advanced in writing more syntactically complex sentences. On the other hand, it was found that most features of syntactic complexity did not predict human judgment of the texts studied as only one of the syntactic features was found to correlate with the quality of the texts studied. Based on the findings, Scott and Danielle, therefore, concluded that higher syntactic complexity does not necessarily guarantee higher grades or score in terms of the quality.

Situating his study among Asian students, Dong (2014) examines the relationship between language proficiency and syntactic complexity measures in English as a Foreign language (EFL), English as a Second Language (ESL) and English as a Native Language (ENL) learners' writings. First, the study revealed subordination and coordination as markers of proficiency levels though the study noted that some of the features of syntactic complexity found in certain categories were immaterial and had little or no significant to the overall development.

Douglas and Miller (2016) looked at the correlation between MBA students' regular reading content and their writing using algorithm-based software in assessing the syntactic complexity of both reading content and writing samples. The researchers identified strong correlations between students' most common reading content and their writing on widely-used measures of writing sophistication: mean sentence length and mean clause length. In effect, the complexity of the content one reads is likely to have effect on one's writing.

Also, focusing on thesis abstracts produced by EFL, ESL, and native speakers (NS) of English, Nasseri (2016) examines the syntactic complexity of texts written by students of different linguistic backgrounds. The findings revealed a higher use of more syntactically complex structures by the NS speakers, compared to the other two groups of students. Nasseri, therefore, concluded that the NS group was syntactically more proficient than both NNS groups and that the EFL group was the least syntactically proficient group.

Sanchez and Mier (2017) examined the syntactic complexity (SC) in written narratives produced by Spanish heritage language speakers, growing

up in a multilingual context (children attending language and culture of origin courses in Switzerland) and texts produced by Spanish speaking children growing up in a mostly monolingual context, in Córdoba, Argentina. The researchers considered traditional measures of SC (T-Units, mean length of T-Unit, syntactic complexity index, and percentage of error free clauses) and also assessed the type and frequency of subordinate clauses used in the children's written productions including possible associations between syntactic complexity and different variables (such as age, Spanish input at home and time attending Spanish courses). The study concluded that the groups do not differ greatly in the SC of their text productions.

An interesting line of enquiry has focused on how proficiency relates with syntactic complexity. Studies that adopt this perspective often employ the longitudinal approach to trace the changes in syntactic complexity in L2 writing. Norrby (2007), for instance, investigated the changes in syntactic complexity in texts written by learners of Swedish. He specifically focused on the correlation between syntactic complexity and students' development of morpho-syntax. A study by Larsen-Freeman (1978), on the other hand, using a cross-sectional research design, investigated the syntactic complexity of texts written by college students at different levels of proficiency. His focus was to identify and compare the markers of syntactic complexity, as a way of telling apart texts written by students of different academic levels. Again, he aimed to investigate the relationship between syntactic complexity and proficiency. A study similar to Larsen-Freeman's (1978) is Ferris's (1994) comparative investigation of syntactic complexity of texts produced by both advanced and low-level ESL students. His findings revealed significant differences in the

markers of syntactic complexity of the two groups. Focusing exclusively on Chinese ESL learners, Lu (2011) examined the markers of syntactic complexity in texts written by college students, with special attention to how such markers of syntactic complexity differed by the academic level of students. Based on his findings, the author recommended specific linguistic resources as markers that differentiate the texts written by students at various academic levels.

Aside from the longitudinal and cross-sectional studies reviewed in the preceding paragraphs, some studies have also compared texts written by NS and NNS in terms of syntactic complexity. A perfect example of studies of this kind is Hinkel's (2003) comparison of texts written by NS and NSS students in the United States of America. The study revealed that, relative to NS students, NNS ones employed less complex syntactic structures in their writings. Similarly, focusing on oral narratives as a genre, Foster and Tavakoli (2009) investigated how task features impacted on syntactic complexity. In the study, the authors compared texts written by NSS and NS students, focusing on subordination and mean utterance length as indicators of syntactic complexity. They found varying effects of tasks on syntactic complexity of texts written by the two groups of students.

Also, some attention has been given to the role of syntactic complexity in second language writing instruction and assessment. Evidently, a study by Hinkel (2003) investigated the factors that influenced NNS students' use of less syntactically complex linguistic structures in their writings. A detailed analysis of L2 academic essay texts provides clear evidence that NNS students with a relatively high academic standing employ significantly higher median

rates of simple syntactic and lexical features than newly admitted first-year NS students do. An implication of this finding is that the NNSs' productive range of grammar and lexis is comparatively small and consists largely of constructions prevalent in spoken and conversational discourse as well as high-frequency, everyday vocabulary items. Specifically, the study identifies as particularly prevalent the use of *be*-copula as the main verb most often associated with employment of predicative adjectives, as well as frequent use of vague nouns and public, private, and expecting/tentative verbs.

Studies on Syntactic Complexity and Gender

Researchers have in many decades investigated the syntactic complexity of language learners. Most of these works have rather sought to measure learners' proficiency based on how complex they are syntactically (Lu, 2010; Ortega, 2003; Wolfe–Quintero et al., 1998). Nevertheless, there are quite a number of researches on syntactic complexity in relation to gender among children and mature writers.

In relation to children, the literature suggests that girls are more syntactically complex than boys across a variety of language tasks and in all levels of narrative and expository (Jones and Myhill, 2007; Eriksson, 2012; Chan et al., 2002; Marjanovic and Peklay, 2017; Martinez, 2018).

Jones and Myhill (2007) explored gender variation in linguistic competence in writings. The authors used essays written by 13 and 15-year-old boys and girls. In looking at text level, Jones and Myhill focused on the nature and quality of paragraphing. The study revealed gender variation at text level, with about half of the variables coded showing statistical significance. The researchers concluded that gender variation among the students studied

was more evident at the levels of text organization and cohesion than at the sentence level when looking at it from the angle of paragraphing.

A study by Eriksson (2012) found that girls rather have more advantages over boys in language abilities. Specifically, the study revealed that girls were ahead of boys in each early communication stage: in terms of vocabulary and combining words. Chan et al. (2002), in a similar study involving Cantonese-speaking children, also observed that among the Cantonese-speaking children, girls perform better than boys in the area of syntactic domain of language. They concluded that girls perform better in Mean Length of Utterances (MLU) than boys.

Marjanovic and Peklay (2017) also examined gender variation in language use, with specific reference to children and adolescents' language. The study found, among other things, that girls used more complex sentences than boys. The study concluded that, compared to boys, girls demonstrated a more sophisticated linguistic ability. These findings corroborate the findings of Hyde and Linn (1988) that most meta-analytical studies on gender variation revealed that girls use more complex language.

Martinez (2018), in a study to examine the syntactic complexity of lower intermediate and intermediate secondary education writers, evaluated the essays of 188 students. He focused on the quality of the writings as well as complexity at the levels of the sentence, clause and phrase. He revealed higher scores for girls, compared to boys, in all the variables investigated.

The body of knowledge on syntactic complexity and gender variation in relation to adult writings is inconclusive. Whereas there is a stable evidence of higher achievement for girls than boys in language use (Jones and Myhill,

2007; Eriksson, 2012; Chan et al., 2002; Marjanovic and Peklay, 2017; Martinez, 2018), opinions vary in relation to male and female adult writings in terms of syntactic complexity.

Waskita (2008) argues females' superiority over males in the use of language. Waskita examined argumentative essays written by men and women in an ESL class and found higher text complexity in the texts written by women. The study further argued that in the use of references, women tend to paraphrase more than men. The author also found more frequent use of dependent clauses in T-units in the texts produced by women, indicating higher levels of syntactic complexity. The findings of Waskita have been confirmed by a study by Maria (2016) in the Indonesian context. Maria, in a study, revealed that women utilize more complex sentences by exhibiting exceptionally imaginative skills and extra-ordinary sense of creativity in their writing. This notwithstanding, the study found the males use rich vocabulary compared to the females

On the other hand, Aperocho (2016) used textual approach to analyze students' texts and found higher complexity in argumentative essays written by males as compared to those written by females. This confirms what Burchell (1996) and Blair and Cramp (1984) found in their respective studies of boys and girls' English exams (GCSE) in UK. Burchell concluded that girls perform better than boys when it comes to imaginative writing and that the reverse is true when it comes to argumentation (Burchell, 1996). Examining the sentence types in essays, Blair and Crump found that descriptive essays, as against argumentative essays, were replete with more simple sentences.

Aperoch (2016) also found less frequent use of punctuations in essays written by males, with a high use of coordinators and subordinators resulting in an increase in T-units. Conversely, the author found less frequent use of subordination and coordination in essays produced by females, resulting in fewer T-units. In his study of the speeches of male and female politicians at the 113 Congress in USA, Dragana (2016) confirms males' superiority over females in their use of language. The researcher reports that male politicians use more words and sentences than the females.

By means of Halliday's systemic functional linguistics framework, in a similar study, Duhunsi (2017) investigated grammar-related gender variation in language use in prose fiction. It was found that male-authored texts, as compared to those authored by females, were replete with clause complexes. In addition, the male authors showed higher frequencies of embedded clauses than text written by females. Duhunsi, therefore, concluded that narratives of male writers are syntactically more complex than that of the female writers because of the nature of sophistication of the texts.

In a similar study, Obeng (2012) examined gender variation in writings produced by students in University of Cape Coast (UCC) with respect to the construction of noun phrases. The study revealed that, in terms of the use of complex noun phrases, syntactic complexity was in favour of females. However, the male students used more phrases with multiple modifiers than the female students. By implication, the researcher concluded that in terms of degree of complexity, the male students dominated.

Studies on the Relationship between Syntactic Complexity and Quality of Writing

In the previous section, I reviewed previous studies on syntactic complexity and gender. Another line of inquiry into syntactic complexity investigates its relationship with quality of writing. In this section, I review studies that took this line of inquiry.

The first research to be reviewed is Yan and Xu's (2017) study which focused on Chinese EFL Learners. One thousand three hundred and eighty-nine essays composed by students were collected from universities, such as Southwest Jiaotong University, Sichuan University, Wuhan University. The writing quality was assessed based on the unit length, unit complexity, clauses, and reduced structures. It was found that the quality of writing was improved by unit length, unit complexity, and the frequency of clauses. Thus, the results found that sentence length is a reliable index of writing quality. The longer the sentence length, the better the writer can command syntactic structure and vocabulary. Also, the higher the ratio of embeddedness (the more clauses in T-unit or C-unit), the better the writing quality will be. Similarly, Jagaiah (2017) investigated the relationship between syntactic complexity and quality of writing of argumentative essays, with the focus on these four variables: sentence pattern, sentence length, sentence connector, and sentence sophistication using the Multiple Linear Regression (MLR) in examining the relationship. The study found a modest positive relationship between each of these variables and writing quality.

Crossley et al. (2011) investigated the relationship between syntactic complexity and quality of writing. In the study, syntactic complexity was

measured by the number of modifiers in noun phrases while the quality of writing was measured by the grades scored by each essay. It was found that there is some correlation between mean number of words that precede the main verb, on the one hand, and the quality of writing, on the other hand. The study also reported significant increase in syntactic complexity as students progressed to advanced levels.

Situating his study within the Korean context, Park (2017) also investigated the syntactic complexity of EFL learners' writing. The aim was to ascertain whether the level of syntactic complexity can be used as a marker of writers' level of proficiency in writing. It was found that measures of syntactic complexity could serve as a benchmark for measuring writers' proficiency levels. Thus, as all the fourteen complexity measurements (three (3) length-based measures, a sentence complexity ratio, four (4) subordination ratios, three (3) coordination measures and three (3) measures of specific structures) increase, the proficiency of essays also increases. The study further reported diversity measures, length of production units, and number of complex noun phrases is a better predictor than subordination or coordination measures.

Shadloo, Ahmadi and Ghonsooly (2019) sought to identify syntactic features that can differentiate the levels of writing quality among EFL students, with the focus on high-rated, mid-rated, and low-rated essays. Using the online L2 Syntactic Complexity Analyzer developed by Lu (2010) to analyse the texts, the authors found that subordination and dependent clauses were not good indicators of different writing qualities. A similar study by Casal and Lee (2019) investigated how writing quality was related to syntactic complexity. The study focused on 280 texts produced by first-year

undergraduates. The study found that high-rated texts contained more linguistically complex structures than the low-rated ones. The study also found that phrasal complexity was associated with high-rated texts.

Relatedly, Beers and Nagy (2009) investigated the syntactic complexity of narrative and persuasive texts produced by middle school students. The authors used words per clause as their measure of syntactic complexity. They found a positive association between syntactic complexity and the quality of the persuasive essays. On the other hand, there was a negative association between syntactic complexity and quality of the narrative texts. The reverse of this finding was true for clauses per T-unit as a measure of syntactic complexity. This finding, thus, demonstrates that differences in genre can lead to differences in syntactic complexity.

In a study to assess across grades the relationship between syntactic complexity and mechanics of writing and to estimate the degree to which the relationship influenced the quality ratings teachers gave the writing of their students at the grades five, eight, and eleven, Stewart and Grobe (1979) found that writing quality of argumentative and narrative essays was not dependent on the length of T-units and that sentence length had no influence on the writing quality of expository texts, though that relationship existed in texts written by grade-five students.

Focusing on sentence length as a measure of syntactic complexity, Crowhurst (1980a) similarly studied the relationship between syntactic complexity and writing quality of narrative and argumentative essays. The author focused on Grades six, ten, and twelve. It was found that texts with longer sentence length scored higher marks than those with short sentence

length and this was especially true in the case of argumentative at Grades 10 and 12 but not at Grade 6. The author also found that students produced lengthier sentences as they progressed to advanced levels.

Unlike the studies that showed that sentence length correlated with writing quality (Crowhurst, 1980a), some studies have also reported negative associations between sentence length and writing quality (Belanger & Martin, 1984). Focusing on students in grades 10 and 9, Belanger and Martin (1984), for example, revealed a negative relationship across all genres in both grades 9 and 10. The authors also found no association between sentence sophistication and writing quality in the texts analysed.

Grobe (1981), in a replication of his earlier study with Stewart (1973), used samples of students' narrative texts in a similar study. His study produced the same findings as it was in their previous study. The result of the study showed that holistically derived writing scores were regressed in a step-wise fashion on 14 syntax, usage and mechanics variables. Separate analyses of Grades 5, 8 and 11 pupils' writings yielded regression solutions which accounted for 59.8, 42.0 and 31.8% of holistic score variance.

The literature reviewed so far on syntactic complexity indicates that syntactic complexity has been widely used to measure second language writings both on gender and as by way of comparing non-native speakers to native speakers of English (Ana, 2017; Douglas and Miller; 2016, Nasseri, 2016). The state of knowledge on gender in relation to syntactic complexity rather presents a contrasting view as to which gender uses syntactically more complex syntactic structure. While some writers agree that males are more complex than females (Duhunsi, 2017; Dragana, 2016; Aperoch, 2016, others

think otherwise Eriksson, 2012; Waskita, 2008; Maria, 2016; Marjanovic & Peklay, 2017). Again, the literature suggests that there is contrasting position by writers on the relationship between syntactic complexity and the quality of students' writing (Crowhurst (1980a; Belanger & Martin, 1984). Some writers see positive correlation between syntactic complexity and quality of writing (Crowhurst (1980a). Others do not see such correlation based on their findings (Belanger & Martin, 1984). The current study draws much inspiration from the views expressed by writers on syntactic complexity and its relationship with the quality of writing as the present study also looks at syntactic complexity in relation to gender and how it affects the quality of writing.

Chapter Summary

This chapter, present the various theories underpinning the study. The four theories reviewed so far actually point to the fact that there exist differences in the way males and females use language. These theories are relevant in the data analysis as they form the basis for the whole work. This current work is inspired by the fact that males and females use language differently (Lakof, 1975). It is against backdrop that the researcher sought to analyse the argumentative essays written by students of colleges of education to know if the difference in language use by males and females is reflected in their writing of argumentative essays. The current work uses the Lu, (2010) framework for determining syntactic complexity which has been used in studies like Crossley et al., (2011); Yan & Xu, (2017); Park (2017); Shadloo et al., (2019). In addition, some concepts such as sex, gender and syntactic complexity have also been reviewed. The chapter ended with a review of

empirical studies on thematic areas related to the current study. In the next chapter, the methodology for the study will be presented.



CHAPTER THREE

METHODOLOGY

Introduction

This thesis explores the differences in writings produced by both male and female students in colleges of education in Ghana with respect to the construction of syntactically complex sentences. In this chapter, the research design, the population, the sample and the sampling technique of the population are discussed. The chapter also describes the data collection procedure and the data analysis approach.

Research Sites

The study took place within three colleges in Ghana: Foso College of Education, Wesley College of Education, and The Presbyterian College of Education.

Foso College of Education, established in November 15, 1965, is one of the 46 public teacher training institutions in Ghana and it is located in Assin Foso in the Central Region of Ghana. Foso College of Education, an affiliate of University of Cape Coast, has a student population of 1193 (Personal communication with the vice principal of the Assin Foso College of Education, 21st November, 2018). The college is co-educational, implying that it admits students of both genders.

Kumasi, the capital town of the Ashanti Region of Ghana, harbors Wesley College of Education. The college was established by the Methodist Church to train teachers, catechists, and ministers. The foundation stone of the present site was laid in 1922 (Personal communication with the vice principal of the Wesley College of Education, 16th February, 2019).

The Presbyterian College of Education, Akropong is also located at Akropong in the Eastern Region of Ghana. Over the years, the college has taken up a variety of names, including the Presbyterian Training College, the Scottish Mission Teacher Training College, and the Basel Mission Seminary. The college was established on 3 July, 1848 and is affiliated to the University of Education, Winneba (Personal communication with the vice principal of the Presbyterian College of Education, 28th February, 2019).

These colleges are mixed colleges and therefore fit for purpose. Again, the colleges have relatively large population and besides are among the early colleges established in Ghana. It is the hope of the researcher that the description will help anyone who wants to undertake a duplicate study on the subject matter.

Research Design

The research design that was used in this study is the descriptive design. It did not, however, involve either a questionnaire or an interview but purely quantitative content analysis of students' examination scripts. The quantitative research approach is most suitable for the research questions one and two that sought to find out which gender is more syntactically complex in their writing of argumentative essay, and the relationship between syntactic complexity and the quality of students' writing respectively. This approach is adopted because it enabled the researcher to objectively examine the causal relationships existing among the quantitative variables.

Since the study sought to examine information in written material, descriptive design was mainly used. This design, according to Gay (as cited in

Obeng, 2012), tests hypothesis based on a data collected on a particular subject.

In this study, the descriptive design was settled on because it helped to describe the features of syntactic complexity and their occurrence as they are. Again, given the large population I had to deal with, the design gave me the opportunity to select sample from the population, draw conclusions and make generalizations. According to Osuala (1991), the usefulness of this approach to analysing large data has been widely acknowledged by social scientists. To Amadehe (2002), the design helps to accurately describe activities and it is considered the most appropriate design for conducting the investigation since it is the one that deals with things as they currently are (Creswell, 2003).

Population

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 a total of 1295 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 the 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 the data collected would be diverse enough to meet the primary objective of the study. Secondly, these colleges are mixed colleges and therefore fit for the purpose of the study as I sought to examine the variation that existed between males and females’

writings in relation to syntactic complexity. Again, the students in these selected colleges share similar characteristics with other students in other colleges because: colleges of education have the same criteria for selecting students for admission; they write the same examination, and these selected schools admit students from all over the country, like other colleges.

Sample and Sampling Technique

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. 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.

Sampling involves how individuals are selected from a larger population to form a subset of that population. That is, with sampling, a researcher studies the characteristics of the selected few instead of focusing on the entire population. This becomes advisable, given the difficulty involved in studying all possible cases of very large populations (Obeng, 2012). Obeng (2012) contends that sampling produces quick answers, as a complete coverage may not offer substantial advantage over a sample survey.

The present study adopted a multi-stage sampling technique to ensure representativeness of the sample. The multi-stage sampling allows researchers to sample at two or more hierarchical levels (Battaglia, 2008). This means using more than one sampling technique to select your respondents (Sarantakos, 1998).

Firstly, the purposive sampling was used to select three colleges. This was to make sure that colleges selected were mixed colleges. This was meant

to cater for gender differences. Using random sampling may settle on a single sex college, which will not help achieve the purpose of the study in relation to gender variation.

Secondly, the stratified sampling was used to classify the students into males and females using their names. Teddlie and Yu (2007) posit that stratified sampling involves dividing a selection subject into sub-groups known as strata. Simple random sampling technique was used to select 100 students' scripts from each stratum. The techniques gave each of the level 200 students' scripts the equal chance to be selected.

Having divided the students into males and females using the stratified sampling, I 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 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.

All the 200 scripts from the Level 200 students from the various colleges were 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. Table 1 presents the details.

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
Source: Author, 2020

Research Data

The data for the study were students’ scripts of 2018/2019 academic year. The researcher settled on examination essay given its widely recognized significance in tertiary education (Johns, as cited in Afful, 2005). The scripts were derived from level 200 students of the selected colleges who took English Language Studies II 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 researcher was 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 altering of content (Obeng, 2012) and this was curbed by photocopying the needed scripts before they were marked.

Validity and Reliability

Reliability and validity are two indispensable issues in research (Lincoln & Guba, 1985; Patton, 2001). Reliability involves the consistent measurement of the construct under study (Joppe, 2000). This ensures that the findings are replicable under same methodological considerations. In other words, reliability suggests that the findings are replicable or repeatable. It also involves the repeatability, stability, and similarity or measurement over a

period of time (Kirk & Miller, 1986). Though Joppe (2000) disagrees that test-retest method at two different times (testing same item(s) at two different times to compare the result) is one way of ensuring stability of a measurement over time which result in reliability, Charles (1995) argues otherwise. Validity, on the other hand, involves the researcher's ability to measure the construct he/she intends to measure (Joppe, 2000).

To ensure reliability and validity in the present study, the researcher adopted three strategies suggested by Shenton for ensuring trustworthiness in research projects (as cited in Obeng, 2012). They are random sampling procedure, peer scrutiny of the research project, and frequent debriefing sessions between the researcher and his superiors. The researcher used random sampling at different stages of the research. In random sampling, any of the samples in the targeted group has an equal opportunity to occur. This guarantees that the sample chosen is representative and that any "unknown influences" are distributed evenly within the sample. Thus, statistical conclusions will be valid. According to Joppe (2000), random sampling negates charges of researcher's bias in the selection of participants.

Again, peer scrutiny was also adopted at different stages of the study to make sure that the study was valid and reliable. In addition, the researcher was in constant touch with his supervisor at every stage of the work. He factored all suggestions proffered by the supervisors. This engagement broadened the researcher's knowledge and gave more insight into the study.

Above all, to ensure the trustworthiness and validity of the study, the research sites have been vividly described. This is to provide accurate

description of the setting for the study and is provide a solid basis for comparison for those who want to do a similar or duplicate study.

Data Collection Procedure

In order to gather the required data for the study, the researcher followed the necessary protocols to secure the required data for the study. Contacts were made to the heads of language departments of the selected schools through telephone calls to inform them of the researcher's intention to carry out a study in their colleges. This was followed with a visit to the colleges for subsequent introduction to the vice principals of the colleges. With the introductory letter from the Department of English, University of Cape Coast, introducing the researcher, the vice principals of the colleges agreed for the researcher to carry out the study in their colleges upon briefing them on the purpose of the study. The heads of department of the selected colleges were briefed on the topic the students were supposed to write on.

The topic, "You are a principal speaker in a debate competition on the motion 'SRC week celebration should be cancelled'. Write your speech for or against the motion", was agreed upon by all to be used in the 2018/2019 second semester mock examination as the topic forms part of the content the students were supposed to go through in the semester. The date for the examination was determined by Institute of Education, University of Cape Coast, so the researcher had no control. The date was 25th April, 2019. In all, a total of 200 scripts were sampled. The selected scripts were coded 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 researcher 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.personal.psu.edu/xx_133/downloads/12sca.html. The software analyses data using Stanford Parser and also Treegex. The results of the analysis were fed onto SPSS to determine the statistical difference between the males and females, using independent T-test.

Again, each script of the selected students was marked by three independent experienced examiners for West Africa Examination Council (WAEC) and Institute of Education (IoE) of University of Cape Coast. The mean of the subjective scores by the three examiners were recorded for the males and the females. The results were therefore fed onto SPSS to determine the statistical difference between the males and the females using the standard deviation and independent T-test.

Data Analysis

The researcher used frequencies, percentages, independent T-test and content analysis to analyse the data obtained. Content analysis deals with the study of human communication such as books, text message, letters, emails, tweets and so on. There are two forms - Conceptual analysis has to do with analyzing the existence and frequency of concepts in human communication while Relational analysis deals with analyzing the relationship of concepts in human communication (Palmquist, 1980).

In doing content analysis, one must have his/her research question(s), operationalize the variables, create coding scheme, and finally do the coding before quantifying the codes. This involved coding the texts on a variety of

levels: word, phrase, sentence, or theme. The texts are then examined by using either conceptual analysis or relational analysis. The results are then used to make inferences about the messages within the text(s), the writer(s), the audience, and even the culture and time of which these are a part (Palmquist, 1980). In the present study, I sought to analyse the texts of students of colleges of education to determine the presence of features that measure syntactic complexity. Given the focus of the study, I used content analysis, based on the recommendations of some researchers (e.g., Elo & Kyngas, 2008; Palmquist, 1980).

Chapter Summary

This Chapter presents the methodology used for this research. The research design adopted was the quantitative method with specific reference to descriptive design. The descriptive design involves the collection of data in order to test the hypotheses or research questions on the subject of the study. The chapter also focuses on the data collection procedure and the techniques used in sampling the data. A multi-stage sampling approach involving purposive, (nonprobability) stratified and simple random was employed at different stages of the study to obtain the required scripts. The data was analysed using mainly content analysis. The aim was to provide a quantitative account of gender variation in the students' writing of argumentative essay inherent in the data. The analysis was also supported by inferential statistics in order to reinforce the claims of the quantitative analysis.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

The study explored gender variation in the writing of students of colleges of education in Ghana in terms of syntactic complexity. This chapter presents the results from the analysis of the data collected. The discussion is done per the research questions, within the gender theory, specifically two of its versions, namely, the difference and the discursive versions. The chapter specifically presents demographic characteristics of respondents, the gender that is more complex in the writing of argumentative essays and the relationship between syntactic complexity and quality of students' writing.

Results

The summary statistics present the description 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 the quality of the argumentative essays written by students. The maximum values for Mean Length of Sentences (MLS) and Mean Length of T-units (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, Verb phrase per T-unit (VP/T), Coordinate phrases per T-unit (CP/T) and Coordinate phrases per clause (CP/C) had 0 as their minimum values. The mean values for MLS, MLT and Mean Length of Clause (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. The summary statistics

therefore forms the basis for analysis for the entire work. Table 2 presents the details.

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

Source: Author’s fieldwork (2020)

Research Question One

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: 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.

Gender Variations on 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.

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

Source: Author’s fieldwork (2020)

An independent sample t-test was conducted to compare the Length of Production Unit 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 MLS is calculated by counting the number of words and dividing it by number of sentences. This means that the males wrote few sentences compared to the females. In fact, the results revealed a significant difference for the mean length of sentence between males and females (since p-value = .029 < alpha-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 MLT is measured by the number of words divided by number of T-units. This shows that the males were able to use few T-units to express their thoughts, unlike the females who had to use many t-units to express similar thought. The difference between males and females for the mean length of T-units was found to be significant at alpha level of 0.1 (since p-value = .097 < alpha 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) counterpart. The MLC is measured by

calculating the number of words divided by the number of clauses. The result shows that males were able to express their thought in few clauses compared to that of the females. However, the difference between male and female was not significant (since the p-value = .812 > alpha 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-value = .058 < alpha level = 0.1).

The findings from the study revealed that the Mean Length of Sentence, Mean Lengths of Clause and the Mean Lengths of T-units were higher for males than females. It was for only the Mean Length of the Clause that the difference was not significant, even for that, the males still produced higher length of clauses than females. Hence, among the three indicators to measure syntactic lengths, the average length of sentences and clauses produced by males were much greater than those of the females.

Gender Variations on 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 the 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). The C/S is calculated by counting the number of clauses divided by the number of sentences. The TC/T is measured by the number of clauses divided number of T-units. The CT/T is also calculated by counting the number of complex T- units divided by the number of T-units. The DC/C is similarly measured by number of dependent clauses divided by the number of clauses. Finally, DC/T is measured by the number of dependent clauses divided by the number of T-units. Table 4 presents the details of results.

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
Source: Author’s fieldwork (2020)

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 mean number of clauses per sentence (C/S) produced by males (Mean=2.4099.99) was much higher than the mean number of clauses per sentence (C/S) produced by females (Mean=2.2409.40). That is to say that the females utilized many sentences in relation to the number of clauses and that the males used few sentences in relation to the number of clauses to express similar or same thought. 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 subordination syntactic complexity, all the four indices showed significant difference between males and females for the three colleges. The mean 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 mean 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-value = .001 < .alpha 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 level = .905 > alpha 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 level = .134 > alpha 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 statistically significant difference between males and females for coordinate phrases per clause (P-value = .122 > .alpha level = .05, 0.1).

It was found that males produced a greater mean number of clauses per sentence (C/S) than females and that the difference between the genders was significant. The results of the study also revealed that density of subordinate complexity for males was much higher than females and the difference was significant across all the four indices under the subordinate syntactic complexity measurement. Thus, males produced significantly higher mean number of complex T- units per number of T-units (CT/T), clauses per number of T-units (C/T), dependent clause ratio (DC/C) and dependent clauses per T-

unit (DC/T) than females. The findings showed that for the density of coordination structure complexity, there was no significant difference between the genders. However, males seem to produce much lower than females in terms Sentence Coordination Ratio (T/S), Coordinate Phrases per T-unit (CP/T) and Coordinate Phrases per clause (CP/C).

Gender Variation on Particular Structure

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 (CN/T), Complex nominals per clause (CN/C) and Verb phrase per T-unit (VP/T). The CN/C is measured by the number of complex nominals divided by the number of clauses. The CN/T is calculated by the number of complex nominals divided by the number of T-units. Similarly, the VP/T is calculated by the number of verb phrase divided by the number of T-units. Table 5 presents the details of results for the particular structure complexity for males and females.

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)

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 use 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 (Mean=1.2092.28). The difference between the genders for the complex nominals per clause (CN/C) was significant (since $p\text{-value} = .014 < \alpha \text{ level} = 0.5$). However, the study found no significant difference between the genders for the production of verb phrase per T-unit clauses (since $p\text{-value} = .123 > \alpha \text{ level} = 0.1$).

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 produced 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.

As said earlier, syntactic complexity is a sentence structure that connects pieces of information effectively and efficiently using sentence components (word, phrase, and clause) which are combined and arranged in

grammatical ways to form potentially infinite sets of simple or complex sentences. A syntactically complex structure helps a writer to put across ideas that tie together, sum up a series of thoughts, qualify a previous point, and transition between ideas to convey meaning effectively. Complex sentence structures make connections for the reader and convey meaning effectively.

Jagaiah (2017) argues that the ability to use complex syntax leads to the composition of coherent texts, summaries, etc. She noted that writing the idea in many simple sentences presents the readers with the challenge of making connections among them. While making this connection will be easy for some readers, it will pose a problem to especially those who lack background knowledge of the topic, which does not promote reading comprehension. For example:

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. *Mr. Chairman, the meaning of SRC is Students Representative Council. It is a body of students in every second cycle and tertiary institutions which serve as link between the students body and the administration. Mr. Chair, the celebration of SRC week is done in every second semester of the academic calendar. (F- 62)*

In example 1, the writer puts together different related ideas in one sentence, thereby getting the opportunity to clarify and make clearer their intention to readers. In example 2, the writer presents the ideas in separate but related

sentences when these ideas can be put together into one or two sentences as below:

Mr. Chairman, the meaning of SRC is Students Representative Council which is a body of students in every second cycle and tertiary institutions which serve as link between the students body and the administration. Mr. Chair, the celebration of SRC week is done in every second semester of the academic calendar.

Table 6 presents the details of results for example 1, an extract from a male’s text and Example 2, an extract from a female’s text.

Table 6 - Details of Results for Examples 1 and 2

Variables	Example 1- M1	Example 2 -F62
MLS	35.00	17.00
MLT	35.00	12.75
MLC	35.00	17.00
C/S	1.0	1.3
VP/T	3.00	1.33
C/T	1.0	1.3
DC/C	0	0.25
DC/T	0	0.33
T/S	1.0	1.0
CT/T	0	0.33
CP/T	2.00	0.66
CP/C	2.00	0.50
CN/T	3.00	2.66
CN/C	3.00	2.00

It is important to note that out of the various measures of syntactic complexity, the Mean Length of Production is very fundamental in measuring syntactic complexity. 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. 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).

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 several 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. Thus, the males' sentences were found to be more complex compared to the sentences written by the females. This finding confirms the study by Otto Jespersen. In his study, he argued that women use simple sentences more frequently than men. Indeed, excerpts from the data show a similar trend.

3. *Furthermore, the SRC week celebration has over the years ensured that majority of the students' populace and the college's staff at large participate in one activity or the other and has provided greater opportunities to enrich the educational needs of the dear students as such opportunities may not be gained from the lecture halls but outside the lecture halls. (M-3)*

4. *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)*

In Example 3, the writer has actually pieced together series of ideas into one sentence, unlike in Example 4, where the writer expressed each idea in a separate sentence, though the two examples are meant to express a similar or same idea in their attempt to underscore the importance of SRC celebration. Table 7 presents the details of results for Example 3, an extract from a male's text and Example 4, an extract from a female's text.

Table 7 - Details of Results for Examples 3 and 4

Variables	Example 3- M3	Example 4 -F9
MLS	61.00	13.33
MLT	61.00	13.33
MLC	20.33	10.00
C/S	3.0	1.3
VP/T	4.00	2.00
C/T	3.0	1.0
DC/C	0.66	0.25
DC/T	2.00	0.33
T/S	1.0	1.0
CT/T	1.00	0.33
CP/T	3.00	0.66
CP/C	1.00	0.50
CN/T	6.00	1.66
CN/C	2.00	1.25

On the Sentence Complexity Ratio, the findings of the study also revealed that the number of clauses per sentence (C/S) produced by males was 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 $p\text{-value} = .058 < \alpha \text{ level } 0.1$). This is evident in the below excerpts from the data.

5. *Mr. Chairman, in addition, it helps in the exhibition of talent.*

During the SRC week celebration, the students are allow to exhibit their God given talent where through that the students that are not good academicals can also showcase what they are good at, some

may be good in sport which can help them to earn a living, the likes of Asomoah Gyan, Jodan Ayew and L. Messi are earn a living through the sporting activity they involve themselves in, some may also be good in singing which when given the chance many be able to use their talent to help the school. (M-13)

6. *Also, the celebration of SRC in the teacher training colleges helps student to offer help to the community. When the SRC executives are drawing the activities for the celebration of SRC, they include clean – up exercises in the activities. This helps students to add the few hands to clean up the environment. Without the celebration, it becomes difficult for students to engage in communal labour. Sometimes, students, as a form of contribution, towards ensuring a clean environment. (F-33)*

In the examples above (5 and 6), both writers had the intention of expressing a similar thought. In the writers' attempt to underscore the importance of SRC celebration, the writer in Example 5 is able to use few sentence components (word, phrase, and clause) to connect pieces of information effectively and efficiently. On the other hand, the writer in the Example 6 expressed related ideas in separate sentences which actually translated into writing of many sentences. Table 8 presents the details of results for Example 5, an extract from a male's text and Example 6, an extract from a female's text.

Table 8 - Details of Results for Examples 5 and 6

Variables	Example 5- M13	Example 6 -F633
MLS	109.0	15.40
MLT	109.0	15.40
MLC	109.0	12.83
C/S	1.0	1.2
VP/T	1.00	2.20
C/T	1.0	1.2
DC/C	0	0.16
DC/T	0	0.20
T/S	1.0	1.0
CT/T	0	0.20
CP/T	0	0
CP/C	0	0
CN/T	1.00	1.80
CN/C	1.00	1.50

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 which translated into more complex sentences 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:

7. *Mr. Chairman, ladies and gentlemen, my opponents again said that, SRC week celebration helps students to exhibit their talents and also serves as a form of entertainment to help them release stress. This might be true but on the contrary, Mr. Chairman, this activity rather leads to highly sexual immorality and hard drugs abuse on behalf of some students especially the gentlemen. This is because, as students do their things freely without any rules controlling them, some students hide themselves in darkness having sexual affairs, some smoking wee and others too drinking or taking in hard alcohols to help them gain energy to be able to take part in the activities thinking that they are enjoying. These are also some causes of SRC week celebration on student. (M-27)*

8. *Mr. Chairman my opponent has thrown dust into your eyes by saying that SRC celebration is a form of entertainment. I want to ask what is the essence of infusing entertainment in the school curriculum during this time quizzes and other form of programs are organized. Firstly, SRC week celebration increases deviant behaviors and indiscipline among student. In this season student have advantage to indulge in all sort of immoral behaviors such as*

smoking, drinking of alcohol, engaging in sexual activities. As I know we are to be trained and become professional teachers to inculcate in the children good behaviors, but not sex machines and drummers. (F- 25)

In Example 7, the writer is able to combine one hundred and twenty-eight words into two sentences by putting together related ideas. On the converse, in Example 8, the writer breaks the ideas into smaller units, thereby getting five sentences out of one hundred and seven words. Table 9 presents the details of results for Example 7, an extract from a male’s text and Example 8, an extract from a female’s text.

Table 9 - Details of Results for Examples 7 and 8

Variables	Example 7- M27	Example 8 -F625
MLS	31.75	21.20
MLT	31.75	17.66
MLC	15.87	11.77
C/S	2.0	1.8
VP/T	5.00	2.66
C/T	2.0	1.5
DC/C	0.37	0.33
DC/T	0.75	0.50
T/S	1.0	1.2
CT/T	0.50	0.50
CP/T	1.25	0.50
CP/C	0.62	0.33
CN/T	2.75	2.50
CN/C	1.37	1.66

With regard to the coordination complexities (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, 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), though the difference between males and females was not significant (since alpha level = .905 > alpha 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.

On the density of a particular structure, 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). Lu (2011) identified complex nominals to include: (1) nouns plus adjective, possessive, prepositional phrase, adjective clause, participle, or appositive; (2) nominal clauses; and (3) gerunds and infinitives in subject, but not object position.

Objective one sought to investigate gender variation in the writing of augmentative essay with respect to syntactic complexity. The difference

between writings of males and females with respect to syntactic complexity has been clearly established. The study has revealed that males were more syntactically complex in their writing than the females. This is not surprising as most studies have reported gender difference in academic writings of ESL students (Chan et al, 2002; Jones & Myhill, 2007; Waskita, 2008; Eriksson, 2012; Aperocho, 2016; Dragana, 2016; Maria, 2017).

Waskita (2008) studied gender variation in the writings of ESL students. The findings of the current study partially confirmed the findings of her study. Both studies reported gender differences in academic writing of ESL students. However, unlike this study, Waskita argued that females utilised more complex dependent clause in T-units, which contradict the result of this study that showed that male's writings are more complex than females. A number of reasons could account for this difference. The difference in socio-demographic characteristics of both studies can be the cause of the difference in the findings. Another factor that could account for the difference is the fact that this study used an equal number of male and females, while Waskita (2008) used less number of males (18) compared to females (31).

Generally, most studies have argued in favour of girls' ability to produce good essays compared to males (Chan et al, 2002; Eriksson, 2012; Marjanovic & Peklay, 2017; Martinez, 2018) which contradict 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. Few meta-analysis studies that compared a number of studies on gender difference in adolescent language also reported results in favour of girls (Marjanovic & Peklay, 2017; and Hyde

& Linn, 1988). In the study by Marjanovic and Peklay (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 males use more complex structures in their essays than females (Duhunsi 2017; Aperocho, 2016 & Dragana, 2016). The current study supports these findings. Bergman (2010) and Signell (2012), for instance, reported that males scored higher than females and Dahl (2012) found that males performed better than females when it came to relative clauses. Duhunsi (2017) similarly revealed that the male authors showed high frequencies of embedded clauses than texts written by females. Dragana (2016) also revealed that male politicians use more words and sentences than the females. Thus, the male politicians' mean length of sentence exceeds that of their female counterparts. Aperocho (2016) argued that the male argumentative essays showed more syntactic complexity due to the absence of punctuation. The author further explained that females had lower number of T-units because they used simple declarative sentences instead of complex sentences. All these reinforce the assertion that males utilise more syntactic complexity 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 opposed 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.

Research Question Two

What is the relationship between syntactic complexity and quality of students' writing? In order to answer this question, the texts written by students were scored according to the quality of writing of the augmentative essay. The highest score for the essay in terms of quality was 42 while the least score was 12 out of total of 50. These were compared with the results for the syntactic complexity measurement to see the relationship that exists between the quality and complexity. First, correlation was conducted to find how the fourteen indices of complexity measurement correlate with the quality. Afterwards, these fourteen indices were merged into the five main types of complexity measures and compared with the quality. Finally, all the fourteen indices were merged into an overall complexity measurement and compared with the quality.

To use the Pearson correlation (r), first, the study checked the preliminary results to ensure that all the assumptions of correlation including normality, linearity and homoscedasticity have been met. Where the assumptions were violated, the necessary steps were taken to correct them. The preliminary results found that there were two outliers, so these were dropped. Using the 198 participants that were left, there were some interesting findings. This study also utilized Cohen (1988) guidelines for interpreting

correlation (r) Thus, $r = 0.1$ to 0.29 or $r = -0.1$ to -0.29 indicate small correlation, $r = 0.30$ to 0.49 or $r = -0.30$ to -0.49 indicate medium correlation and $r = .50$ to 1.0 or $r = -.50$ to -1.0 indicate large correlation. Table 10 presents the relationship between syntactic complexity and quality of augmentative essay written by students from the three colleges

Table 10 - Correlation between Complexity Measurement Indicators and Quality

Variables	MLS	MLT	MLC	CS	CT
Quality					
Pearson Correlation	.105	.116	.142**	-.014	.046
Sig (2-tail)	.140	.102	.046	.850	.516
	CTT	DCC	DCT	TS	CPT
Quality					
Pearson Correlation	.120	.075	.078	-.052	.086
Sig (2-tail)	.091*	.296	.273	.470	.230
	CPC	CNT	CNC	VPT	Syntactic Complexity
Quality					
Pearson Correlation	.073	.065	.083	.025	.127*
Sig (2-tail)	.307	.360	.244	.727	.074

*Significant at 0.05; **significant at 0.1
Source: Author's fieldwork (2020)

The relationship between syntactic complexity and quality of augmentative essay written by students from the three colleges was investigated, using Pearson correlation (r) coefficient. The findings showed a weak positive relationship between overall syntactic complexity and quality (since $r = .127$). In other words, though the result showed that the overall complex of students' writing correlates with the quality of their writings, the relationship is not strong. The correlation was found not to be significant since the relationship was found to be significant (since $p = .073 < .05$). This

notwithstanding, the result indicates that the greater the syntactic complexity, the greater the quality of the essay.

The study also presented the relationship that exists between fourteen indicators and the quality of the essay. Lu (2011) argues that the best length measure to distinguish L2 writing proficiency is MLC, the second being MLS, and the third being MLT. Using Pearson correlation, it was found that Mean Length of Sentences (MLS) had a weak but positive relationship with quality (since $r = .105$). That is to say, the higher the Mean Length of Sentence, the higher the quality the essay and vice versa. In other words, the result showed that students who had high Mean Length of Sentence produced good essays based on the subjective rating. Similarly, students who produced less in MLS scored less in terms of the quality of the essay based on the subjective rating. Also, both Mean Length of T-units (MLT) and Mean Length of Clause (MLC) had weak but positive relationship with quality of the essay (since $r = .116$ and $.142$ for MLT and MLS respectively). However, it was found that Mean Length of Clause (MLC) had a significant relationship with quality. That is to say, as the mean length of clause and mean length of T-units increases, the quality also increases but mean length of clause has a stronger relationship with quality than mean length of T-units.

The results also indicated a weak negative correlation between Sentence Complexity Ratio (C/S) and quality of essay (since $r = -.014$). Thus, students who produce more sentence complexity ratio score less in the quality of the essay.

Using Pearson product correlation coefficient to estimate the kind of relationship 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) have with quality, the results showed that they all had a weak but positive relationship with quality of essay (since $r = .046$ for Complex T-unit ratio, $r = .120$ for T-unit Complexity Ratio, $r = .075$ for Dependent clause ratio and $r = .078$ for Dependent clauses per T-unit). However, it was Complex T-unit ratio (CT/T) that showed a significant relationship with quality (since $p = .09 > 0.1$). Thus, Complex T-unit ratio relates with quality much stronger than the other indicators under subordination complexity measurement. The sentence coordination ratio (T/S) was observed to show a negative and weak relationship with quality of essay (since $r = -.052$). That is, the greater the density of sentence coordination ratio, the lower the quality of essay. Both the coordinate phrases per T-unit (CP/T) and coordinate phrases per clause (CP/C) were also seen to show weak but positive relationship with quality of essay (since $r = .086$ and $r = .073$ for coordinate phrases per T-unit and coordinate phrases per clause respectively).

Table 11 – Correlation between Complexity Types and Quality

Variables	Length	Sentence	Subord.	Coord.	Particular
Quality					
Pearson Correlation	.133*	-.014	.083	.063	.067
Sig (2-tail)	.061	.850	.247	.381	.352

*Significant at 0.05; **significant at 0.1
Source: Author’s fieldwork (2020)

This section presents analysis on the correlation between the five major types of syntactic complexity and quality of augmentative essay. Unlike Table 6 that presents analyses on the individual indices of complexity (MLS, MLT and MLC), this section analyses the major types including the length of

production units, sentence complexity ratio, subordination, coordination and particular structures. The study showed a positive but weak relationship between the length production unit complexity and quality (since $r = .133$), subordination complexity and quality (since $r = .083$), coordination complexity and quality (since $r = .063$) as well as particular structure complexity and quality ($r = .067$). It is the sentence complexity ratio that negatively relate to quality ($r = -.014$). Thus, students that produce more sentence complexity ratio score low marks in the quality of essay. This notwithstanding, all other measures proved a positive correlation between syntactic complexity and writing quality though weak.

The second objective of the study sought to investigate the relationship between syntactic complexity and quality of augmentative essays written by students from the three colleges. According to Jajaiah (2017), raters attribute some superiority to syntactically complex texts, as compared with texts replete with simple sentences. This view runs contrary to the opinion of Lu (2011) that there is no direct correlation between syntactic complexity and writing proficiency. Weaver (1996) argues that sometimes ideas are more effectively communicated with simple sentences than with complex sentences, given that too much complexity may result in awkward and unintelligible sentences.

This study aimed to find whether students that employed complex sentences scored high marks in the quality of essay. The findings of the study showed a weak positive relationship between overall syntactic complexity and quality (since $r = .127$).

On the length of production unit, the study found that MLS had a weak but positive relationship with quality (since $r = .105$). Also, both MLT and

MLC had weak but positive relationship with quality of the essay (since $r = .116$ and $.142$ for MLT and MLS respectively). However, it was found that MLC had a significant relationship with quality. That is to say as the mean length of clause and mean length of T-units increase, the quality also increases but mean length of clause has a stronger relationship with quality than mean length of T-units. The results also indicated a weak negative correlation between Sentence Complexity Ratio (C/S) and quality of essay (since $r = -.014$).

With regard to complexity in terms of subordination, the results showed that 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) have weak but positive relationship with quality of writing (since $r = .046$ for Complex T-unit ratio, $r = .120$ for T-unit Complexity Ratio, $r = .075$ for Dependent clause ratio and $r = .078$ for Dependent clauses per T-unit). The sentence coordination ratio (T/S) was observed to show a negative, weak relationship with quality of essay (since $r = -.052$). Both the coordinate phrases per T-unit (CP/T) and coordinate phrases per clause (CP/C) were also seen to show weak, positive relationship with quality of essay (since $r = .086$ and $r = .073$ for coordinate phrases per T-unit and coordinate phrases per clause respectively).

The study first investigated the relationship between the quality of essays to the overall syntactic complexity and then established the relationship between the quality to the five major groups of syntactic complexity, before looking at the relationship between the quality and the fourteen individual indices. The study reported a positive relationship between overall syntactic

complexity and quality of essay. That is to say as usage of syntactic complexity increases, so does the quality of essay and vice versa. This implies that students that utilize greater syntactic complexity score higher marks in their essay and vice versa. Put differently, students that employ more syntactically complex structures in their essays are able to write good essays.

As stated already above, some authors group the overall syntactic complexity into five subgroups namely length of production units, subordination complexity, coordination complexity, structure complexity and sentence complexity ratio. The study further wanted to ascertain if all the five subgroups influenced the positive relationship that exist between complexity and quality, if not which of the subgroups influenced the positive relationship between complexity and quality of essay. The study reported that subordination complexity, coordination complexity, particular structure complexity and sentence complexity ratio do not influence quality of the essay. That is, the usage of subordination complexity, coordination complexity, particular structure complexity and sentence complexity ratio has no influence on the marks scored by the students. However, the quality of essay was found to be influenced by the length of production units. This implies that the higher the usage of lengths of units in essays, the higher the marks students' scores and vice versa. Therefore, students that had more in terms of length of production units in their essays are able to produce good essays. It can therefore be concluded that the length of production units influenced the positive relationship between overall complexity level and quality of essay since the other four indicators have no relationship with the quality of essay.

Also, those five subgroups of syntactic complexity could be expanded into fourteen indices of complexity measurements. The study also presented the relationship that exists between fourteen indicators and the quality of the essay. The findings from this section confirmed the findings on the five subgroups and quality of essay. The result found no significant relationship between sentence complexity ratio and quality of essay. The study also found no significant relationship between quality of essay and the following: T-unit complexity ratio, dependent clause ratio, dependent clauses per T-unit, sentence coordination ratio, coordinate phrases per T-unit, coordinate phrases per clause, complex nominals per T-unit, complex nominals per clause, and verb phrase per T-unit. It is only complex T-unit ratio that showed a positive significant relationship with quality of essay. However, it should be noted that there are a total of eleven (11) indices found within the four other subgroups (i.e. subordination complexity, coordination complexity, particular structure complexity and sentence complexity). Therefore, the influence of the ten (10) indices that showed no significant relationship with quality will outweigh the influence of only complex T-unit ratio. It is as a result of this that the four other subgroups were found not to relate with quality of essay.

Since the results from the relationship between the five subgroups and quality showed that only length of production units had positive correlation, it is also logical that definitely one or all the sub-indices of lengths of production units caused that influence. Surprisingly, mean length of sentence and mean length of T-units showed no significant relationship with quality of essay. That is, the quality of essay cannot be attributed to the influence of mean length of sentence and mean length of T-units. It is only mean length of a

clause that had a significant relationship with quality. That is to say as the mean length of clause increases, the quality also increases. This implies that students that utilise more mean length of clause will score higher marks than those that use less and vice versa. In a nut shell, the study found that quality of essay depends on the mean length of clause and complex per T-units. That is the ability of students to utilise more mean length of clause and complex per T-units translate into the quality of essay.

The findings of previous studies on the relationship between syntactic complexity and quality of essays have been inconsistent. Different studies find different results when looking at the relationship that exists between syntactic complexity and quality of essays. Whereas some studies confirm that all the complexity measures influence quality of essays (Park, 2017; Jagaiah, 2017), others also report that only some of the measures correlate with quality or proficiency of essays (Crossley et al., 2011; Yan & Xu, 2017). The current study confirms the studies that report that only some of the measures correlate with quality or proficiency of essays. Even though this study supported the assertion that only certain indices correlate with quality of essay, there are differences as to which complexity index has an impact on augmentative essays. For example, at the fourteen complexity measurement level, only mean length of clause and complex T-unit ratio correlate with quality of essays. This result partially confirms the findings by Yan and Xu (2017) who in their study upheld the significant influence of mean length of clause and complex T-unit ratio on quality of essays. According to them, the longer the sentence length, the better the writer can command syntactic structure and vocabulary as well as the higher the ratio of embeddedness, the more clauses in T-unit or C-unit,

the better the quality of writing. The current study contradicts their study with regard to T- unit length (mean length of T-unit) and dependent clause ratio. Unlike this study that showed no relationship between T- unit length (mean length of T-unit) and dependent clause ratio, they reported a positive relationship between those variables (mean length of T-unit and dependent clause ratio) and quality of essays.

Their findings further reported that except for objective clauses, appositive clauses and nominal verb phrases, other types of clauses and phrases are in positive correlation with writing quality. Crossley et al. (2011) investigated the relationship between syntactic complexity and quality of writing. In their study, syntactic complexity was measured by the number of modifiers in noun phrases, mean number of words that precede the main verb and mean number of high-level constituents per word while the quality of writing was measured by the grades scored by each essay. It was found that only the mean number of words that precede the main verb correlates with the quality of writing. This study unlike Crossley et al. (2011), found no significant relationship between the mean length of sentence and quality of essay and there contradicts the findings by Crossley et al., (2011).

Park (2017) in a study argues that all the fourteen indices have a significant relationship with quality. It should be noted that he used a different technique to establish the relationship between complexity and quality of essays. Park (2017), unlike the other studies, he used regression analysis to establish the relationship that exists between complexity and proficiency of essays. Regression is a powerful tool that controls a number of things. Jagaiah (2017) like Park (2017), use regression technique and reported that all the four

latent variables (Sentence Pattern, Sentence Length, Sentence Connector, Sentence Sophistication) had a positive relationship with quality of essay.

Casal and Lee (2019) who also used an entirely different technique (MANOVA) in assessing the relationship between syntactic complexities and writing quality found an interesting results. Their results show that the highest densities of complex nominal types are present in high-rated papers, with statistical significance in adjectival pre-modification, prepositional post-modification, and participle modification, and the lowest densities in low-rated papers. This reinforces the idea that there is no relationship between clausal complexity and quality of writing of essays found by the current paper. This result is also in line with Shadloo, Ahmadi and Ghonsooly (2019). Shadloo, Ahmadi and Ghonsooly (2019) used phrasal and clausal features based on the development scheme hypothesized by Biber, Gray and Poonpon (2011) for academic writing, and analysed using the online L2 Syntactic Complexity Analyzer developed by Lu (2010) revealed that subordination and dependent clauses had no positive relationship with the quality of a write-up, a finding that is consistent with the current study.

The finding of the current study is also in line with some previous studies (Crowhurst, 1980; Stewart & Grobe, 1979). Crowhurst (1980) similarly investigated the relationship between syntactic complexity and writing quality of narrative and argumentative essays. The author focused on grades six, ten, and twelve. It was found that texts with longer sentence length scored higher marks than those with short sentence length and this was especially true in the case of argumentative essay at Grades 10 and 12 but not at Grade 6. The author also found that student produced lengthier sentences as

they progressed to advanced levels. Stewart and Grobe (1979) found that quality of argumentative and narrative essays was not dependent on the number of words per T-units and that sentence length had no influence on the writing quality of expository texts for students in grade eight and eleven, though that relationship existed in texts written by grade-five students.

However, the results also contrast studies by Stewart and Grobe (1979), Grobe (1981), and Belanger and Martin (1984). For instance, Stewart and Grobe (1979) found that there was a weak relationship between sentence length and writing quality. Similarly, focusing on students in Grades 10 and 9, Belanger and Martin (1984) revealed a negative relationship across all genres in both grades 9 and 10. The authors also found no association between sentence sophistication and writing quality in the texts analysed. This confirms Lu (2010) assertion that it is not always that complexity translate into quality.

Chapter Summary

In this chapter, I analyzed and discussed the data with regard to gender variation in the writings of students of college of education in Ghana in terms of syntactic complexity. Lu's (2010) tool for measuring syntactic complexity was used to determine the complexity level of the students. The data showed that the writings of male students at the colleges of education in Ghana were more complex than those of female students. Again, the data showed that there was a positive correlation between syntactic complexity and the quality of students' writing, though not in all cases. For example, the findings of the study showed a negative correlation between syntactic complexity and quality of students' writing in relation to sentence complexity. That is to say students who produced high sentence complexity ratio rather scored less in their essays.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The study explored the differences in writings produced by both male and female students in colleges of education in Ghana with respect to syntactic complexity. This concluding chapter has four sections. The first section provides a summary of the entire study. In the second section, the key findings of the present study are highlighted. Section three discusses the implications of the study while the final section of this chapter, and for that matter this thesis, suggests directions for future research.

Summary

The fundamental objective of this study was to explore gender variation in the writing of argumentative essays by Level 200 students in colleges of education with respect to syntactic complexity. In this light, the problem the researcher sought to solve in this study was how gender influences students' writing and its quality with the kind of writings they produce. This problem led the researcher to formulate two basic research questions:

1. Which gender is more syntactically complex in the writing of argumentative essays by colleges of education students?
2. What is the relationship between syntactic complexity and quality of writing by colleges of education students?

To achieve the objective of the study, the researcher made use of quantitative approach of data analysis. The quantitative approach employed by the researcher helped in identifying which gender was syntactically complex

and looked at the correlation between syntactic complexity and writing quality. The study was rooted in content analysis as a method of analysis. This method is very effective in determining the presence of certain words, concepts, themes, phrases, characters, or sentences within texts or sets of texts and to quantify their presence in an objective? The data upon which the analysis was made were derived from scripts written by Level 200 students of college of education in the 2018/2019 academic year second semester first quiz. A total of two hundred scripts (one hundred from each gender) was used.

The data were analysed, using the gender theory, specifically the Difference and Discursive versions. Researchers who follow the Difference strand assert that men and woman use language differently due to differences in their socialization. Those who follow the Discursive strand, however, suggest that language and communication are integrally tied to the context in which they occur and that both males and females have the capability to use various linguistic strategies within different contexts

Key Findings

Based on the analysis and discussion of the data, the following key findings were made with specific reference to the research questions. With respect to the first research question, the results showed that among the three indicators to measure syntactic lengths, the average length of sentences and clauses produced and average length of T-Unit by males were much greater than those of the females. The findings revealed that males used more complex sentences than their female counterparts; that is, females tended to use simple sentences in their writing. With regard to the density of subordination and coordination as well as sentence complexity ratio between

males and females of the three colleges, the findings of the study were quite interesting.

The findings revealed that the density of the writing by males in terms of subordination and sentence complexity ratio was higher than that of the females. However, the density of the writings by the females in terms of coordination was found to be higher than the males. That is, while males produced more in terms Sentence Complexity Ratio (C/S), Complex T-unit Ratio (CT/T), T-unit Complexity Ratio (C/T), Dependent Clause Ratio (DC/C), Dependent Clauses per T-unit (DC/T), the females produced higher number of Sentence Coordination Ratio (T/S), Coordinate Phrases per T-unit (CP/T), Coordinate Phrases per Clause (CP/C). With regards to the density of particular structure (Complex nominals per T-unit, Complex nominals per clause and Verb phrase per T-unit), 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, Complex nominals per clause.

With respect to the second research question which sought to find the relationship that exists between complexity of students' writing and the quality of their writings, the findings showed a weak positive relationship between overall syntactic complexity and quality (since $r = .127$). The relationship was found to be significant (since $p = .073 < .05$). This indicates that the greater the syntactic complexity, the greater the quality of the essay.

Conclusions

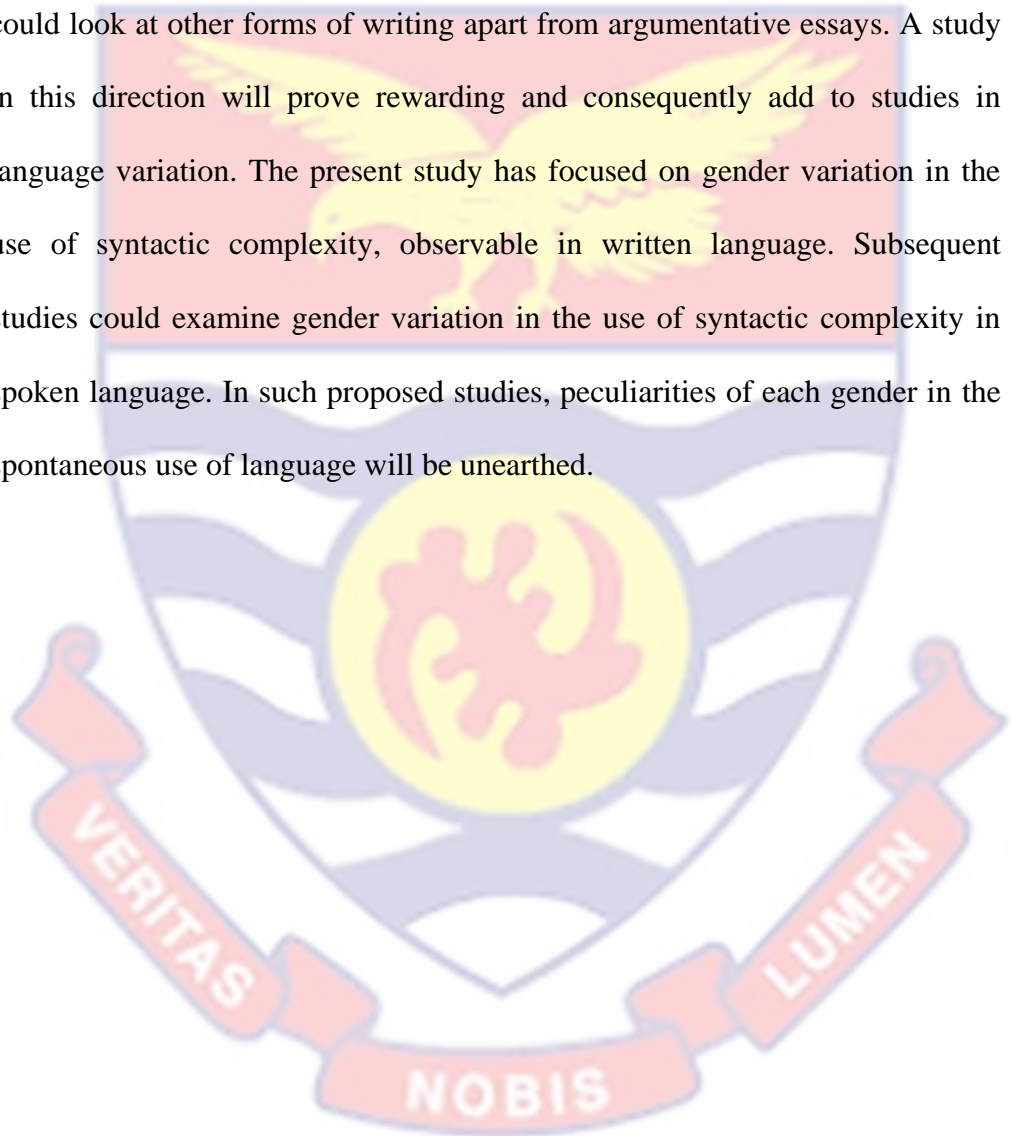
Based on the findings, the following conclusions were drawn: first, the study has implication on the scholarship on syntactic variation in learners' academic writing. The study has shown that syntactic variation can be conditioned by gender. The study has, among other things, established that the male students are more syntactically complex in their writing than the female students. This sharply contradicts the views of some researchers that social factors are not involved in syntactic variation (Namati & Bayer, 2007). Again, the study has shown that there is a correlation to some extent between syntactic complexity and quality of writing.

The study also has implication on 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 a similar context when they wrote the exams so the difference cannot be attributed to any other social factor than gender. Again, the study has pedagogical implications. It has shown that syntactic complexity has overall positive effect on the quality of essay one writes and therefore gives an indication of how composition can be taught in schools. Teachers can therefore pay much attention to helping students improve their writing by writing syntactically complex sentences. This will help writers (students) convey ideas that tie together, sum up series of thoughts, qualify a previous point, and transition between ideas to convey meaning effectively. It is also important to note that a syntactically complex structure may not

necessarily result in a good writing and therefore a blend of simple and complex structures will prove more rewarding.

Recommendation

Based on the conclusions from the study, there is the need for further investigation into any of the following areas. The first line of further research could look at other forms of writing apart from argumentative essays. 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 the spontaneous use of language will be unearthed.



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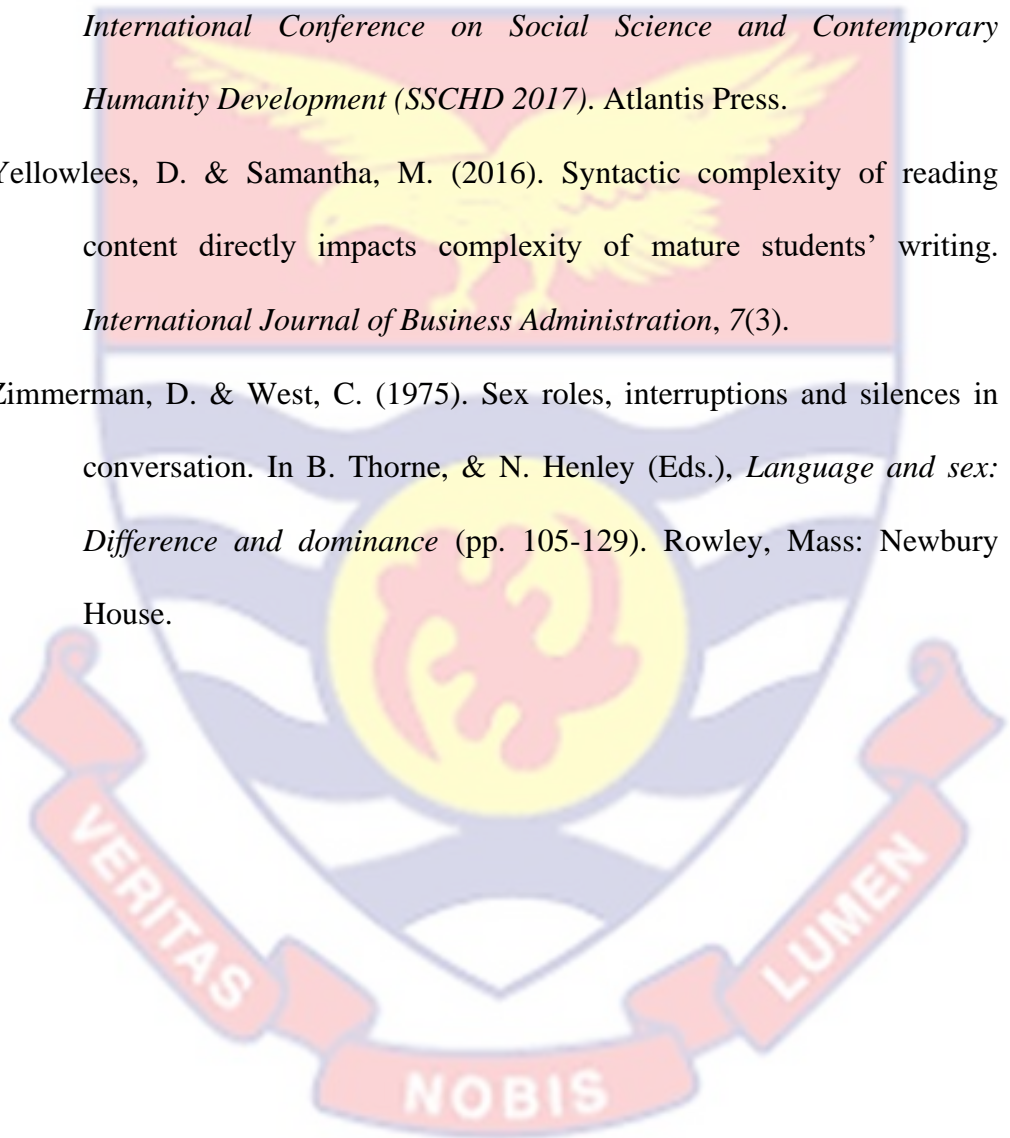
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APPENDICES

APPENDIX A

Result from the Syntactic Complexity Analyser for the females

MLS, MLT, MLC, C/S, VP/T, C/T, DC/C, DC/T, T/S CT/T, CP/T, CP/C, CN/T, CN/C,
187059 176667 102581 18235 21111 17222 03871 06667 10588 04444 04444 02581 20000 11613
186500 186500 109706 17000 26000 17000 04706 08000 10000 04500 04000 02353 26500 15588
224667 168500 99118 22667 22500 17000 03824 06500 13333 06500 04500 02647 22000 12941
337000 337000 160476 21000 41000 21000 05238 11000 10000 07000 08000 03810 25000 11905
189444 179474 106562 17778 25263 16842 04062 06842 10556 04737 03158 01875 23158 13750
292500 270000 78000 37500 43846 34615 06444 22308 10833 06154 06154 01778 37692 10889
330000 206250 103125 32000 25000 20000 04688 09375 16000 05625 02500 01250 30625 15312
209412 148333 82791 25294 22917 17917 03721 06667 14118 04583 02500 01395 13333 07442
475000 475000 135714 35000 48750 35000 06786 23750 10000 08750 13750 03929 42500 12143
179444 161500 115357 15556 21000 14000 02500 03500 11111 03500 02000 01429 19000 13571
193684 193684 87619 22105 31579 22105 04286 09474 10000 03684 03158 01429 19474 08810
304545 257692 90541 33636 36154 28462 06486 18462 11818 07692 03077 01081 38462 13514
183913 162692 84600 21739 23846 19231 04000 07692 11304 06538 01538 00800 14615 07600
205625 219333 88919 23125 30667 24667 04324 10667 09375 06667 03333 01351 24000 09730

249286 249286 112581 22143 28571 22143 04194 09286 10000 05000 04286 01935 33571 15161
225714 185882 95758 23571 24706 19412 03636 07059 12143 04706 05882 03030 23529 12121
248824 211500 120857 20588 28000 17500 04571 08000 11765 05500 09000 05143 21000 12000
177778 177778 114286 15556 23889 15556 03929 06111 10000 05000 04444 02857 21111 13571
315000 262500 101613 31000 35000 25833 06129 15833 12000 08333 03333 01290 33333 12903
362308 314000 112143 32308 37333 28000 06429 18000 11538 08000 09333 03333 39333 14048
224667 238571 87895 25333 33571 27143 06316 17143 09333 07857 05000 01842 27857 10263
238571 208750 92778 25714 33125 22500 04722 10625 11429 06875 04375 01944 23750 10556
278333 238571 92778 30000 30714 25714 05556 14286 11667 07143 02143 00833 26429 10278
153000 145714 90000 17000 23810 16190 03529 05714 10500 05238 03333 02059 14762 09118
407500 296364 130400 31250 30909 22727 04800 10909 13750 06364 03636 01600 20909 09200
185000 166500 90000 20556 23500 18500 03784 07000 11111 05500 04000 02162 18000 09730
269167 201875 111379 24167 24375 18125 03103 05625 13333 05625 04375 02414 29375 16207
241538 184706 112143 21538 25882 16471 02143 03529 13077 02941 02941 01786 21765 13214
181053 181053 114667 15789 23684 15789 03000 04737 10000 04211 04211 02667 21053 13333
278182 255000 122400 22727 31667 20833 04400 09167 10909 06667 07500 03600 26667 12800
232857 203750 125385 18571 23750 16250 04231 06875 11429 06250 10000 06154 19375 11923
285455 209333 95152 30000 30667 22000 03636 08000 13636 05333 04000 01818 22000 10000

279286 279286 105676 26429 34286 26429 05676 15000 10000 07143 08571 03243 27143 10270
260833 173889 100968 25833 22778 17222 03871 06667 15000 05000 06111 03548 20000 11613
183333 194118 113793 16111 22941 17059 04138 07059 09444 04118 03529 02069 27059 15862
329091 226250 109697 30000 25625 20625 04545 09375 14545 04375 03750 01818 19375 09394
219375 206471 125357 17500 26471 16471 04286 07059 10625 03529 05294 03214 24118 14643
451250 361000 156957 28750 32000 23000 04783 11000 12500 09000 10000 04348 38000 16522
270769 234667 100571 26923 29333 23333 04857 11333 11538 08667 05333 02286 26000 11143
204000 218571 95625 21333 27857 22857 05312 12143 09333 07143 04286 01875 27857 12188
169444 169444 105172 16111 18889 16111 03793 06111 10000 03889 07222 04483 15556 09655
266923 89167 144583 18462 30000 20000 03333 06667 09231 05000 06667 03333 31667 15833
265833 227857 96667 27500 29286 23571 05455 12857 11667 06429 05000 02121 26429 11212
270833 216667 130000 20833 22667 16667 03200 05333 12500 03333 05333 03200 20000 12000
475714 475714 256154 18571 28571 18571 04615 08571 10000 07143 12857 06923 35714 19231
188824 200625 94412 20000 29375 21250 05294 11250 09412 06875 01250 00588 23125 10882
265385 215625 104545 25385 29375 20625 04848 10000 12308 05000 07500 03636 26250 12727
216000 216000 129600 16667 28000 16667 04000 06667 10000 05333 06667 04000 27333 16400
168889 152000 98065 17222 22000 15500 03226 05000 11111 04000 03000 01935 16500 10645
185000 138750 92500 20000 20417 15000 03611 05417 13333 03333 02500 01667 13750 09167

192353 204375 93429 20588 30000 21875 04286 09375 09412 07500 04375 02000 17500 08000
141429 156316 114231 12381 23158 13684 02692 03684 09048 03158 05789 04231 15789 11538
198824 187778 109032 18235 23889 17222 04194 07222 10588 04444 05000 02903 23889 13871
440000 352000 160000 27500 35000 22000 05455 12000 12500 06000 08000 03636 25000 11364
238696 228750 116809 20435 25000 19583 04894 09583 10435 05833 07083 03617 23750 12128
256923 222667 145217 17692 27333 15333 03913 06000 11538 03333 07333 04783 25333 16522
208974 203750 107237 19487 27000 19000 04079 07750 10256 06000 05000 02632 22750 11974
180000 163636 97297 18500 21818 16818 03784 06364 11000 04091 04545 02703 20000 11892
234615 217857 122000 19231 26429 17857 03600 06429 10769 05714 09286 05200 27143 15200
211250 187778 88947 23750 28889 21111 03947 08333 11250 05000 03889 01842 16667 07895
251538 218000 105484 23846 29333 20667 04839 10000 11538 05333 06000 02903 29333 14194
300000 235714 94286 31818 33571 25000 04857 12143 12727 05000 04286 01714 27143 10857
232143 216667 104839 22143 28667 20667 05161 10667 10714 07333 10667 05161 23333 11290
229286 229286 114643 20000 26429 20000 04643 09286 10000 07143 06429 03214 34286 17143
177368 177368 105312 16842 25789 16842 03750 06316 10000 04737 06316 03750 20526 12188
230000 230000 106786 21538 36154 21538 03929 08462 10000 05385 03077 01429 28462 13214
211333 186471 109310 19333 25294 17059 03793 06471 11333 04706 07059 04138 21176 12414
240000 258462 115862 20714 31538 22308 03793 08462 09286 06154 09231 04138 32308 14483
233077 252500 112222 20769 30000 22500 05185 11667 09231 08333 05000 02222 34167 15185
243846 166842 93235 26154 25789 17895 03824 06842 14615 03684 05263 02941 17895 10000
105000 676667 203000 50000 38333 33333 06000 20000 15000 10000 06667 02000 41667 1 2500



APPENDIX B

Result from the Syntactic Complexity Analyser for the Male

MLS, MLT, MLC, C/S, VP/T, C/T, DC/C, DC/T, T/S, CT/T, CP/T, CP/C, CN/T, CN/C,
270000 270000 124615 21667 31667 21667 06154 13333 10000 07500 09167 04231 34167 15769
226429 211333 117407 19286 26667 18000 04074 07333 10714 05333 08667 04815 23333 12963
241538 241538 136522 17692 26923 17692 03913 06923 10000 04615 07692 04348 30769 17391
253077 219333 109667 23077 23333 20000 05000 10000 11538 08000 04000 02000 25333 12667
145714 145714 92727 15714 20000 15714 03636 05714 10000 03333 03333 02121 18095 11515
920000 613333 306667 30000 28333 20000 04167 08333 15000 06667 03333 01667 25000 12500
257692 239286 115517 22308 29286 20714 04483 09286 10769 06429 07143 03448 27857 13448
210000 168000 101818 20625 22000 16500 04242 07000 12500 04000 03500 02121 18000 10909
270000 270000 124615 21667 31667 21667 06154 13333 10000 07500 09167 04231 34167 15769
226429 211333 117407 19286 26667 18000 04074 07333 10714 05333 08667 04815 23333 12963
270000 270000 124615 21667 31667 21667 06154 13333 10000 07500 09167 04231 34167 15769
523333 314000 130833 40000 28000 24000 04583 11000 16667 08000 03000 01250 23000 09583
264167 264167 90571 29167 44167 29167 06286 18333 10000 04167 02500 00857 25833 08857
167500 167500 93056 18000 28500 18000 04722 08500 10000 04500 03500 01944 17500 09722
253846 220000 110000 23077 32000 20000 04000 08000 11538 07333 05333 02667 24667 12333
172000 163810 104242 16500 20000 15714 03030 04762 10500 03333 04286 02727 17619 11212
181176 181176 123200 14706 17647 14706 03200 04706 10000 02941 03529 02400 25294 17200
165789 196875 112500 14737 26250 17500 03214 05625 08421 04375 04375 02500 22500 12857

261429 228750 93846 27857 32500 24375 04359 10625 11429 06875 08750 03590 19375 07949
176111 186471 105667 16667 24706 17647 04333 07647 09444 05294 02941 01667 27647 15667
234000 206471 97500 24000 28824 21176 05556 11765 11333 05882 02941 01389 30588 14444
232308 251667 111852 20769 35833 22500 05556 12500 09231 06667 04167 01852 25833 11481
223571 208667 97812 22857 29333 21333 04375 09333 10714 04667 05333 02500 26000 12188
270909 270909 114615 23636 31818 23636 04615 10909 10000 07273 03636 01538 40000 16923
260000 240000 97500 26667 34615 24615 05938 14615 10833 06923 03846 01562 31538 12812
192778 182632 111935 17222 27895 16316 03871 06316 10556 04211 04737 02903 20526 12581
238667 179000 87317 27333 26500 20500 04146 08500 13333 05500 03500 01707 22500 10976
225333 225333 102424 22000 29333 22000 05455 12000 10000 06667 04667 02121 34667 15758
208000 195000 84324 24667 28125 23125 05405 12500 10667 08125 01875 00811 26250 11351
264167 211333 117407 22500 27333 18000 02963 05333 12500 04667 04667 02593 21333 11852
334000 303636 128462 26000 32727 23636 04615 10909 11000 06364 07273 03077 38182 16154
305385 264667 172609 17692 22000 15333 03478 05333 11538 03333 08000 05217 28000 18261
207333 172778 115185 18000 18889 15000 03333 05000 12000 03889 01667 01111 20556 13704
286364 185294 112500 25455 22941 16471 05000 08235 15455 05294 03529 02143 24118 14643
217857 179412 117308 18571 20000 15294 03462 05294 12143 04118 02353 01538 20588 13462
191765 191765 108667 17647 27647 17647 03667 06471 10000 05294 04118 02333 22941 13000
242308 210000 143182 16923 24000 14667 03182 04667 11538 04000 10000 06818 23333 15909
224000 186667 115862 19333 26111 16111 04483 07222 12000 06667 04444 02759 21667 13448
211111 211111 95000 22222 31667 22222 04500 10000 10000 07222 01667 00750 23889 10750
218000 218000 125769 17333 26667 17333 04231 07333 10000 05333 05333 03077 30667 17692
196471 196471 85641 22941 30588 22941 05128 11765 10000 06471 01176 00513 25882 11282
267692 232000 128889 20769 26667 18000 04444 08000 11538 06000 10667 05926 29333 16296

228667 201765 83659 27333 31765 24118 05366 12941 11333 07647 05294 02195 22353 09268
205333 220000 123200 16667 27857 17857 03200 05714 09333 04286 05714 03200 20714 11600
282727 311000 107241 26364 39000 29000 04483 13000 09091 07000 07000 02414 38000 13103
199375 199375 122692 16250 22500 16250 03846 06250 10000 04375 06250 03846 26250 16154
240667 225625 97568 24667 30625 23125 05135 11875 10667 06875 03750 01622 31250 13514
290000 267692 112258 25833 33846 23846 05161 12308 10833 06923 06923 02903 35385 14839
167895 167895 81795 20526 25789 20526 04615 09474 10000 05789 01579 00769 18947 09231
178889 178889 119259 15000 23889 15000 04074 06111 10000 04444 03889 02593 20556 13704
129167 134783 86111 15000 17826 15652 02778 04348 09583 03478 01304 00833 17826 11389
178333 160500 86757 20556 24000 18500 04595 08500 11111 06500 02000 01081 21500 11622
955000 955000 224706 42500 47500 42500 07647 32500 10000 10000 0 0 47500 11176
217647 205556 112121 19412 24444 18333 04242 07778 10588 06111 02222 01212 26111 14242
213750 213750 85500 25000 34375 25000 06000 15000 10000 08125 01875 00750 22500 09000
168421 168421 100000 16842 21579 16842 04375 07368 10000 05263 02632 01562 17368 10312
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303333 303333 125517 24167 31667 24167 05517 13333 10000 06667 05000 02069 27500 11379
167059 167059 94667 17647 22353 17647 04000 07059 10000 04706 01176 00667 16471 09333
270000 294545 115714 23333 36364 25455 05714 14545 09167 06364 10909 04286 39091 15357
294545 202500 104516 28182 24375 19375 03226 06250 14545 06250 08125 04194 23750 12258
284545 284545 82368 34545 40000 34545 06579 22727 10000 08182 04545 01316 39091 11316
212000 198750 96364 22000 26250 20625 04848 10000 10667 05625 03125 01515 24375 11818
382500 306000 90000 42500 40000 34000 06765 23000 12500 10000 03000 00882 37000 10882
368889 301818 118571 31111 30909 25455 06071 15455 12222 07273 06364 02500 25455 10000
288182 264167 102258 28182 33333 25833 06129 15833 10909 06667 05000 01935 37500 14516

408750 363333 142174 28750 31111 25556 06087 15556 11250 07778 03333 01304 34444 13478
345556 239231 97188 35556 33077 24615 04688 11538 14444 06923 04615 01875 26154 10625
407500 326000 135833 30000 33000 24000 05833 14000 12500 10000 08000 03333 25000 10417
310000 221429 103333 30000 28571 21429 05333 11429 14000 06429 03571 01667 25714 12000
218125 183684 89487 24375 24737 20526 04872 10000 11875 06316 04211 02051 23158 11282
239286 197059 104688 22857 28235 18824 04375 08235 12143 05294 07059 03750 21176 11250
242000 201667 117097 20667 25556 17222 04194 07222 12000 04444 05000 02903 18889 10968
200625 214000 103548 19375 30667 20667 05161 10667 09375 05333 08667 04194 23333 11290
345556 311000 100323 34444 42000 31000 06129 19000 11111 07000 10000 03226 39000 12581
252500 252500 159474 15833 30833 15833 03158 05000 10000 05000 11667 07368 28333 17895
218667 218667 86316 25333 30000 25333 05263 13333 10000 07333 06000 02368 27333 10789
203750 217333 95882 21250 31333 22667 04412 10000 09375 06667 01333 00588 22000 09706
237143 237143 94857 25000 33571 25000 05714 14286 10000 07143 03571 01429 34286 13714
267500 246923 91714 29167 33077 26923 06286 16923 10833 07692 05385 02000 28462 10571
242143 242143 130385 18571 30000 18571 05000 09286 10000 07857 05000 02692 27143 14615
232308 215714 120800 19231 25714 17857 03200 05714 10769 05000 09286 05200 27143 15200
310833 310833 124333 25000 32500 25000 04333 10833 10000 06667 01667 00667 27500 11000
343000 285833 114333 30000 36667 25000 05667 14167 12000 07500 06667 02667 40000 16000
234667 195556 135385 17333 21111 14444 03846 05556 12000 04444 08333 05769 24444 16923
309091 226667 94444 32727 30667 24000 06111 14667 13636 08000 04000 01667 27333 11389
183684 183684 116333 15789 18947 15789 03667 05789 10000 04211 03684 02333 28421 18000
202941 181579 90789 22353 26316 20000 05000 10000 11176 06842 02632 01316 24211 12105

APPENDIX C
Scores from the independent rater for males and females

M	F	M	F	M	F	M	F	M	F
25	19	26	22	23	22	22	42	24	22
22	18	24	25	22	21	25	24	21	24
22	22	27	25	24	24	24	24	M	F
30	21	22	21	22	24	24	23	25	22
24	22	22	21	23	21	24	25	22	12
26	21	23	24	21	22	21	25	22	20
25	21	22	24	25	22	21	22	M	F
21	23	25	21	21	21	22	22	25	20
22	21	M	F	M	F	22	21	25	21
19	24	22	22	21	25	M	F	21	22
M	F	21	24	20	25	23	20	M	F
21	24	25	19	25	24	26	21	19	24
22	22	23	22	24	21	25	20	22	22
25	21	24	22	25	21	25	21	22	20
21	20	19	25	25	24	21	21		
22	21	26	21	24	24	25	24		
25	25	21	21	21	23	22	21		
22	21	22	21	21	23	22	22		
21	21	19	25	22	21	25	20		
24	23	M	F	19	19	22	25		
26	21	25	25	25	25	24	21		
M	F	25	24	22	22	22	21		
22	22	21	23	21	42	M	F		
25	22	22	23	21	12	24	22		

