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# A Meaning-Based Approach to the Language of the TOEFL test and Japanese EFL Textbooks: A Functional Analysis of Patterns of Lexico-Grammatical Meanings and Structures

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A MEANING-BASED APPROACH TO THE LANGUAGE OF THE TOEFL TEST AND  
JAPANESE EFL TEXTBOOKS:  
A Functional Analysis of Patterns of Lexico-Grammatical Meanings and Structures

A thesis submitted to  
the Graduate College of  
Marshall University  
In partial fulfillment of  
the requirements for the degree of  
Master of Arts

In  
English  
by

Koshin Fukuyoshi

Approved by

Dr. Hyo-Chang Hong, Committee Chairperson

Dr. Ryan Angus

Dr. Kateryna Schray

Marshall University  
May 2018


## APPROVAL OF THESIS

We, the faculty supervising the work of Koshin Fukuyoshi, affirm that the thesis, “A Meaning-Based Approach to the Language of the TOEFL test and Japanese EFL Textbooks: A Functional Analysis of Patterns of Lexico-Grammatical Meanings and Structures,” meets the high academic standards for original scholarship and creative work established by the English MA-TESOL and the college of Liberal Arts. This work also conforms to the editorial standards of our discipline and the Graduate College of Marshall University. With our signatures, we approve the manuscript for publication.

  
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4/4/2018  
Date

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## LIST OF CONTENTS

List of Tables .....	viii
List of Figures .....	ix
Abstract .....	xi
Chapter 1 .....	1
Literature Review .....	1
1.1 Historical Background of Japanese English Education.....	1
1.2 Current Main Focus of Language Education in Japan .....	3
1.3 TOEFL iBT and Related Research .....	6
1.4 Research Question.....	9
Chapter 2 .....	10
Theoretical Framework for This Study .....	10
2.1 Approach from Systemic Functional Linguistics .....	10
2.2 Stratification .....	11
2.3 Metafunction.....	13
2.4 The Notion of Rank System .....	15
2.5 Congruent Realization and Grammatical Metaphor .....	19
Chapter 3 .....	26
Data and Methodology .....	26
Chapter 4 .....	33
Analysis .....	33
4.1. The Number of Clause Complexes in the TOEFL Texts.....	33
4.1.1. Patterns of Clause Complexes in the TOEFL Texts.....	34

4.1.2. The Number of Grammatical Metaphors in the TOEFL Texts .....	37
4.1.3. The Number of Grammatical Metaphors in the TOEFL Texts .....	38
4.2. The Number of Clause Complexes in EFL Texts .....	40
4.2.1 Patterns of Clause Complexes in EFL Texts.....	41
4.2.2. Number of Grammatical Metaphors in the EFL Texts .....	46
4.2.3. Patterns of Grammatical Metaphors in the EFL Texts .....	48
4.3 Comparison of Two Data Sets.....	50
Chapter 5 .....	53
Discussion and Conclusion .....	53
References .....	57
Appendix A: Letter from Institutional Research Board .....	60



## LIST OF TABLES

Table 1. Types of Relationship between Clauses .....	17
Table 2. Types of Interpersonal Grammatical Metaphor .....	21
Table 3. Congruence between Semantic and Grammatical Categories .....	22
Table 4. Type of Ideational Grammatical Metaphors .....	24
Table 5. Total Number of Clauses and Lexical Items Analyzed.....	26
Table 6. Total Number of Clauses for Logico-Semantic Analysis.....	27
Table 7. Total Number of Lexical Items Analyzed for Grammatical Metaphors .....	27
Table 8. Total Number of Clauses in EFL Textbooks for Clause Complex Analysis.....	28
Table 9. Total Number of Lexical Items in EFL Textbooks for Grammatical Metaphor Analysis .....	29
Table 10. Frequency of Clause Complexes in the TOEFL iBT Texts.....	33
Table 11. Numbers of Grammatical Metaphors in the TOEFL iBT Texts .....	37
Table 12. Distribution of Grammatical Metaphors in the TOEFL Texts.....	39
Table 13. Distribution of Experiential and Logical Grammatical Metaphors in the TOEFL .....	39
Table 14. Numbers of Clause Complexes in EFL 1, 2, and 3 .....	41
Table 15. Numbers of Grammatical Metaphors in EFL 1, 2, and 3 .....	47
Table 16. Distribution of Grammatical Metaphors in EFL 1, 2, and 3.....	48
Table 17. Distribution of Experiential and Logical Grammatical Metaphors in EFL 1, 2, and 3.	49

## LIST OF FIGURES

Figure 1. Stratification .....	12
Figure 2. Metafunction in Relation to Language.....	14
Figure 3. Rank System within the Strata of Lexico-Grammar.....	16
Figure 4. Interpersonal Semantic Junctions at the Level of Semantics and Lexico-Grammar .....	20
Figure 5. Experiential Semantic Junctions at the Level of Semantics and Lexico-Grammar.....	21
Figure 6. Congruent Relationship in the Ideational Metafunction .....	23
Figure 7. Frequency of Clause Complexes in the TOEFL iBT Texts .....	34
Figure 8. Frequency of Hypotactic and Paratactic Relations in the TOEFL Text.....	35
Figure 9. Frequency of Hypotactic Relations in the TOEFL Texts.....	36
Figure 10. Frequency of Paratactic Relations in the TOEFL Texts .....	37
Figure 11. Frequency of Grammatical Metaphors in TOEFL Texts .....	38
Figure 12. Frequency of Hypotactic and Paratactic Relations in EFL 1.....	42
Figure 13. Frequency of Hypotactic and Paratactic Relations in EFL 2.....	42
Figure 14. Frequency of Hypotactic and Paratactic Relations in EFL 3.....	43
Figure 15. Frequency of Hypotactic Relations in EFL 1 .....	44
Figure 16. Frequency of Paratactic Relations in EFL 1 .....	44
Figure 17. Frequency of Hypotactic Relations in EFL 2 .....	45
Figure 18. Frequency of Paratactic Relations in EFL 2.....	45
Figure 19. Frequency of Hypotactic Relations in EFL 3 .....	46
Figure 20. Frequency of Paratactic Relations in EFL 3.....	46
Figure 21. Frequency of Clause Complexes in the Entire Data Sets.....	50
Figure 22. Distribution of Types of Clause Complexes in the Entire Data Sets.....	51

Figure 23. Frequency of Grammatical Metaphors in the Entire Data Sets .....52

Figure 24. Distribution of the Ideational and Interpersonal Grammatical Metaphors in the Entire  
Data Sets.....52

## **ABSTRACT**

The primary objective of this research project is to show varying degrees of textual and semantic contributions that semantic density and grammatical metaphors make in the way that TOEFL iBT reading sections and Japanese EFL textbooks are used. This research is conducted from two theoretical perspectives within the theory of Systemic Functional Linguistics. The first analysis is to investigate logical and semantic relationships within clause complexes in order to identify structural variations and their textual distributions. The second analysis focuses on the use of ideational and interpersonal grammatical metaphors and on the way that they further compact or untangle textual meanings. This second analysis allows the researcher to unpack the semantic features and their density of lexico-grammatical meanings within each lexical item. The results from these analyses show a lexico-grammatical gap between the two language materials in terms of the density of grammatical metaphors distributed in the data sets. The findings may have the potential to be applied to Japanese EFL educational settings as one meaning-based perspective distinct from the current form-based EFL pedagogical practice.

## CHAPTER 1

### LITERATURE REVIEW

#### 1.1 HISTORICAL BACKGROUND OF JAPANESE ENGLISH EDUCATION

The historical mainstream objectives of Japanese English language education can be divided into two distinctive parts; practical communicative purpose and entrance examination for higher education (Butler & Iino, 2005). The initial objective was to practically communicate with people from other countries for the purposes of learning new materials, gaining advanced technical knowledge, medical skills, weapons, and trades. Historically, the Japanese government had trading relations only with Asian countries such as China and Korea, and some European countries, such as Spain, Portugal, and England. English was introduced to Japan quite later than these other languages, but dominated Japanese language education exclusively as a tool of communication after Japan opened its trading routes to the western world after 1853. During this era, without any foreign language abilities, communication with non-Japanese individuals became a social and political problem. In order to address this issue, Japan began to be seriously engaged in English language teaching and learning. The methodology in the early language education in Japan was not well-organized and hardly anyone could teach or learn English in systematic ways. People in Japan tried to communicate without much understanding of the influence of social and cultural implications on language acquisition. The availability of language learning opportunities was, however, limited and not many people could engage in English language learning.

A turning point of this English language learning environment was at the beginning of the *Meiji* era that extended toward the end of the *Edo* era. It was a time to stop excluding other countries from contacting Japanese citizens, and to open Japan to other countries. The

Japanese government shifted to a new era for foreign language teaching and globalized itself so as to follow and learn from other developed countries. To achieve its purpose, the Japanese government emphasized education as part of evolutionary campaigns. This educational reform is the beginning of cramming education in Japan, and after this stage, English as an academic subject received much attention, and the teaching and learning of it became organized in more systematic ways than before. With the Grammar Translation Method used as the primary pedagogical foreign language teaching tool, language learners were forced to memorize all the vocabulary and grammar, or even sentences without knowing any background or functions of the targeted language. Later, this cramming nature turned into the persistent Japanese educational system for the university entrance exam to seek higher degrees, which resulted in middle and high school students being taught grammatical points for the university entrance examination.

Since then, the language learning system has been based on the formal or traditional linguistic perspectives, and language teaching has mainly focused on the separate features of the target language by exclusively focusing on input-related aspects of the target language. For example, the methodology of studying the English language has been limited only to reading textbooks and translating the materials into Japanese word for word, or line by line and answering grammar exercise questions. Even today, Japanese learners are rarely required to compose any texts, but repeat individual and unrelated sentences used in their textbooks, as the primary purpose of such repetition is to get grammar points memorized rather than to learn how individual clauses or sentences combine to express larger textual meanings (Ikegashira, Matsumoto, & Morita, 2009). In this context, it is interesting to note that to pass entrance examinations for high schools or universities is a real driving force to learn English at schools

in Japan. Some younger generations have to pass even entrance examinations in order to get admitted to private kindergartens or elementary schools.

## **1.2 CURRENT MAIN FOCUS OF LANGUAGE EDUCATION IN JAPAN**

The current educational system in Japan consists of three primary parts as other countries do. We have compulsory education for 6 years in elementary school, and 3 years in middle school. After graduating from middle school, around 97% of children move on to high school for 3 years, and more than 60% of them seek higher education at college or university levels, which are not compulsory (Butler & Iino, 2005). Through this Japanese educational system, Japanese students are taught English as a foreign language (henceforth, EFL) from the 5th grade of elementary school. This means that the Japanese learn English as a school subject for 9 years in total by the time they graduate from college.

The requirement of the national curriculum determines the objectives and contents of EFL learning both in public and private schools, and they are controlled by the Ministry of Education, Culture, Sports, Science, and technology (henceforth, MEXT), where classroom teachers have relatively limited control over these decisions. The guidelines assembled by the MEXT regulates all types and numbers of vocabulary, grammatical items, and cultural and societal topics that should be introduced at each school level (Butler & Iino, 2005).

As for high school language education, the objectives provided by the MEXT in its teaching guideline show that the Japanese government focuses on EFL learners' communicative abilities from the perspective of bottom-up approaches to understand the higher order of language entities. For example, the MEXT stipulates that:

- To develop students' communication abilities such as accurately understanding and appropriately conveying information, ideas, etc., deepening their understanding of language and culture, and fostering a positive attitude toward communication through foreign languages.
  
- (1) Pronunciation  
(2) Listening  
(3) Dialogue  
(4) Speech  
(5) Reading comprehension  
(6) Composition  
(7) Conducting research for a paper

(MEXT 2009)

In accordance with the primary objectives of language education, MEXT (2014) has initiated an English Education Reform plan to accelerate English language proficiency in 2014. In this Reform plan, MEXT (2014) stipulates the urgent necessity to start English language education in the early developmental stages, which includes the foundation of communicative skills through language activities. As for the goal of the entire language education, MEXT plans to utilize the practical language proficiency test conducted by the *Eiken* or Educational Testing Service (henceforth ETS). The listed goals in the Reform plan are to pass Grade 2 in the *Eiken* exam, and/or to score higher than 57 in the TOEFL Internet-Based Test (henceforth TOEFL iBT) test. This aim corresponds to the Action plan issued in 2013 by MEXT for the purpose of cultivating students' opportunities to use English and of evaluating students' language proficiency by way of utilizing external language exams such as the TOEFL iBT test.

The recognition of the significance of the TOEFL iBT has been increasing and has become one of the fundamental scales by which to evaluate students' language achievements in Japan. According to research conducted by the Council on International Educational



Exchange (CIEE, 2012), 43% of the participated colleges and universities responded that the utilization of the TOEFL iBT score has been applied to their admissions processes. This rate has increased to 47% in a recent study by the Council on International Educational Exchange (CIEE, 2015). In addition to this utilization of the TOEFL iBT in the university admissions, MEXT has also been discussing the application of the alternative standardized test such as the TOEFL iBT for college admissions purpose instead of operating the national center test (MEXT 2014; Kamiya, 2017).

In regard to this wide utilization of the TOEFL iBT for college admissions, the Osaka Prefectural Board of Education (2014a) has launched a project to foster EFL education with the aim of enhancing students' four integrated language skills (that is, reading, listening, speaking, and writing). This project includes two distinctive facets: one is that the Osaka Board of Education (2014a) has decided to teach these integrated English skills by using the TOEFL iBT in public high school in Osaka. The Board of Education has developed the suitable curriculum, provided extra weekend classes, and conducted online tests and short study-abroad programs. The other is the implementation of new types of language instructors called Super English Teacher (SET). The tasks of the SET are first to conduct language lessons to develop integrated skills through the TOEFL iBT to high school students in Osaka in order to equip them with the Academic language skills within the three years of high school education, and second, to share the methodologies with other language teachers to promote the growth of Osaka language education as a whole. The Osaka prefectural Board of Education (2014b) recently implemented the use of the TOEFL iBT scores for high school entrance admissions.

### **1.3 TOEFL iBT AND RELATED RESEARCH**

The TOEFL iBT proficiency test began as a paper-based test (TOEFLPBT). With the introduction of modern technology to the teaching and learning of languages, the testing style has also reflected this change by shifting to Computer-based TOEFL test (TOEFLCBT) in 1998, and has been upgraded to the internet-based TOEFL test (TOEFL iBT) in 2005 for the purpose of meeting the increasing demand to evaluate the language abilities of non-native speakers of English on speaking, writing, and integrated skills (Cho & Bridgeman, 2012; Biber & Gray, 2013; ETS, 2016). This TOEFL iBT test is designed to measure the English proficiency levels of non-native speakers of English from four different perspectives, reading, listening, speaking, and writing. These four skills are mutually integrated within the test, and test takers are evaluated on their general language proficiency (Cho & Bridgeman, 2012; ETS, 2016).

The TOEFL iBT has been accepted nationwide as both an authorized and authoritative language proficiency test used by more than 6,000 colleges, universities, licensing agencies and immigration authorities in 136 countries. (Alderson, 2009, pp 621). Current research indicates that the number of educational institutions such as colleges, universities, and licensing agencies that have accepted TOEFL iBT scores as representing the level of EFL proficiency has dramatically increased to more than 10,000 in over 130 countries. (ETS, 2016). This high level of acceptance rate is not limited only for admissions to higher education systems, but also to government, scholarship, and exchange programs around the world. In Japan, over 500 institutions have been using TOEFL iBT scores for the purpose of admissions requirements or for additional points for university candidates; and more than 200,000 students have utilized

this system (CIEE, 2015). Osaka Prefectural Board of Education (2014b) recently implemented the use of the TOEFL iBT score for high school entrance admissions.

Cho and Bridgeman (2012) conducted research regarding the relationship between the scores of the TOEFL iBT and the academic success using the GPA scale. The researchers collected 2,594 academic records from both undergraduate and graduate students in the United States. The results of this analysis showed that there is a high level of correlation between the TOEFL iBT scores and students' GPAs: higher score holders on the TOEFL iBT test were also likely to have higher GPAs. This research implies the validity of using the TOEFL iBT for language materials aiming to cultivate and promote academic skills and knowledge of discipline areas of study.

Liu (2011) further examined levels of correlation between test scores and the general and cultural background knowledge that test takers can make use of in order to answer questions on the TOEFL iBT reading sections (p. 621). The author hypothesized that cultural factors such as knowledge of the target culture and specific knowledge about reading passages can affect their reading performance on the test. The participants of the research were divided into two groups to investigate the difference; one group consisted of examinees who enjoyed studying the cultural aspects of other countries and the major field of study, the other group were those who did not. The study revealed that there was no consistent evidence for positive effects from pre-acquired knowledge on the reading topics. This research is remarkable in demonstrating that the TOEFL iBT test is designed only to test EFL language proficiencies.

Research conducted by Macmillan (2006) has further shown lexical relationships within the TOEFL reading passages. The author's methodology was to apply a system of text analysis from the Systemic Functional lexical cohesion perspective. In order to identify lexical

cohesion within the texts, the researcher applied two analyses. One was to classify the lexical features into nine types; simple lexical repetition, complex lexical repetition, simple paraphrase, complex paraphrase, superordinate, hyponymic repetition, co-reference, substitution, and ellipsis, and the other was to investigate the correlations among the questions on the test and the passages in terms of lexical cohesion. This study provided insights that the identification of the specific types of lexical connections among texts were one of the crucial skills that contributed to the success on the TOEFL test.

As was briefly mentioned above, the TOEFL iBT test has been incorporated into the Japanese EFL teaching situations as follows: EFL materials are selected and approved by MEXT, and the English department of each high school decides on suitable textbooks for their students each year. With these designated textbooks approved by the government, English as foreign language teachers are expected to fulfill the stipulated goals on the TOEFL iBT test, resulting in the implication that the features in the EFL textbooks should correlate with those of the TOEFL iBT reading sections in order to satisfy the objective of higher education in Japan.

Despite this application of the TOEFL iBT test scores in lieu of other EFL textbook-based test scores, it is worthy to mention that little research exists that demonstrates the level of linguistic correlations between TOEFL iBT reading passages and Japanese EFL textbooks.

Considering these situations that language educators and learners are faced with, the purpose of this research is to investigate this lack of research by examining two types of EFL materials from the systemic functional linguistic perspective of lexico-grammatical semantic density: TOEFL iBT reading texts and English textbooks in Japan in order to show the range of metafunctional features used in these two data sets.

#### **1.4 RESEARCH QUESTION**

Are EFL high school textbooks adopted in Japan equivalent to the TOEFL iBT reading sections in terms of the compactness of lexico-grammatical meanings as manifested in logical semantic relationships of clause complexes (henceforth, CCs) and grammatical metaphors (henceforth, GMs)? This general question is further elaborated as follows:

1. Analysis of CCs to find differences in the way that logical relationships show various meaning connections in clauses within CCs.
2. Analysis of GMs to discover different levels of the compactness of meaning in the way that the intermediate groupings of lexical items contain within word groups.

In the following section, the notion of Systemic Functional Grammar and its frame work are presented. The textbooks to analyze in this study were randomly selected from the list specified by MEXT (2017) for the current research purpose, a series of the Unicorn textbook publisher for English communication I, II, and III whose objectives were quoted above. The elaboration and examples of the selected language materials are also provided below.

## CHAPTER 2

### THEORETICAL FRAMEWORK FOR THIS STUDY

#### 2.1 APPROACH FROM SYSTEMIC FUNCTIONAL LINGUISTICS

Language teaching has been one of the main focuses among the systemic functional linguists and educators, and a variety of approaches have been investigated and applied for educational purposes. Systemic Functional Grammar (henceforth SFG) is one of the branches of linguistics, and was first introduced by Michael Halliday as an alternative approach to language studies from the perspective of language as a social semiotic (Bloor & Bloor, 2013).

Halliday (1993) argues that despite the fact that educational knowledge is heavily dependent first on verbal learning, language theories in relation to language teaching have not been based on the actual observations of how language is acquired through learning the semiotico-semantic systems of language, and that current language teaching methodologies are based more on surface features of language that show formal properties of language. Halliday's main point here is that language teaching and learning should be based on extensive research on the transmission and learning of various meanings, including both interpersonal, textual, ideational, and socio-cultural meanings, as language as a set of paradigmatic resources embeds within it paradigmatic features that have evolved to both manifest and be manifested by such meaningful features. In particular, Halliday's argument is based on the theorization of language as a set of lexico-grammatical choices. Halliday further argues that knowledge is not separate from experiencing, which is not separate from how lexico-grammatical features are organized. In this regard, Halliday argues that:

Language is not a domain of human knowledge (except in the special context of linguistics, where it becomes an object of scientific study); language is the essential condition of knowing, the process by which experience becomes knowledge.

(Halliday, 1993, p. 94)

In addition, Martin (1996) states that the SFG way of looking at grammar is to study the manner of language use and interactions with others in natural and actual conditions (p. 1). These natural and actual conditions can only be examined to the fullest when lexico-grammar is used as a way into matching semiotic meanings and wording, together of which contribute to the theorization of language as a set of functions. (Thompson, 2013, p. 29)

Systemic functional linguists have been attempting to solve problems that language learners experience throughout their learning processes with broader perspectives on language as defined as a set of resources that contain potential meanings from language users within their choices and functional texts reflecting different contexts. This attempt allows learners to acquire and utilize their language potential within social situations (Wu & Dong, 2009).

## **2.2 STRATIFICATION**

The significance of Halliday's contribution to understanding language is the development of the stratified semiotic system or stratified model of language with the core notion of lexico-grammar and semantics. As shown in Figure 1, the stratification has four strata of phonology, lexico-grammar, semantics, and context.

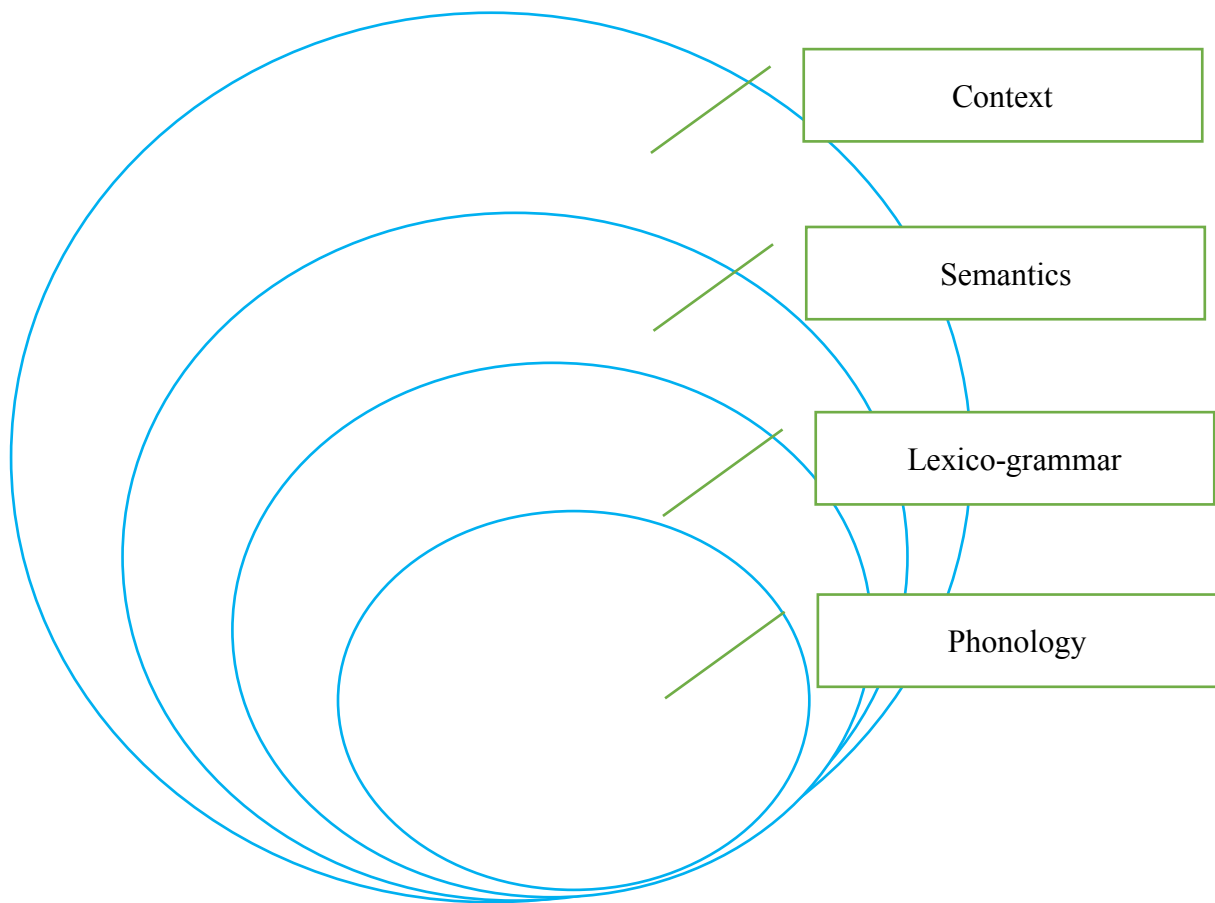


Figure 1. Stratification (Halliday & Matthiessen, 2014)

Halliday (1993) provides the SFL perspective of construing this stratified language system, explaining that language as a whole is processed as a stratified semiotic. That modelling of language includes two basic strata: contents and expression. Contents are the meaning of the language both at the levels of lexis and grammar conveyed to interact with others, and the expression refers to the actual sound system to utter the wordings (Halliday & Matthiessen, 2014, p. 26). Halliday and Martin (1993, p. 19) further elaborate the perspective with the technical term ‘realization’, which represents the relationship of the meanings and expressions within the stratified system. Halliday (Halliday & Matthiessen, 2014, p. 25) further



explains the relationship among the strata or ‘realization’ as the process of connecting the language features from these dual perspectives. The lexico-grammar, which contains the expressed forms as grammar in written or spoken form, exists between meaning and expression (Halliday, 1993). This notion of ‘realization’ is described by Eggins (2004, p. 19) as;

In language, meanings are realized as wordings, which are in turn realized by sounds (or letters). Typically; semantics gets realized through the lexico-grammar, which in turn gets realized through the phonology or graphology.

(Eggins, 2004, p.19)

Halliday and Martin (1993, p. 27) state the intention of this stratified design is to construe a semiotic system (language) as the realization of another more abstract semiotic system (social context).

### **2.3 METAFUNCTION**

With the stratified system or model of language including lexico-grammar as its core, Halliday (1993) has developed three perspectives to distinguish the functions of languages, interpersonal metafunction, textual metafunction, experiential metafunction. The relationship among the stratification and these three metafunctions is depicted as:

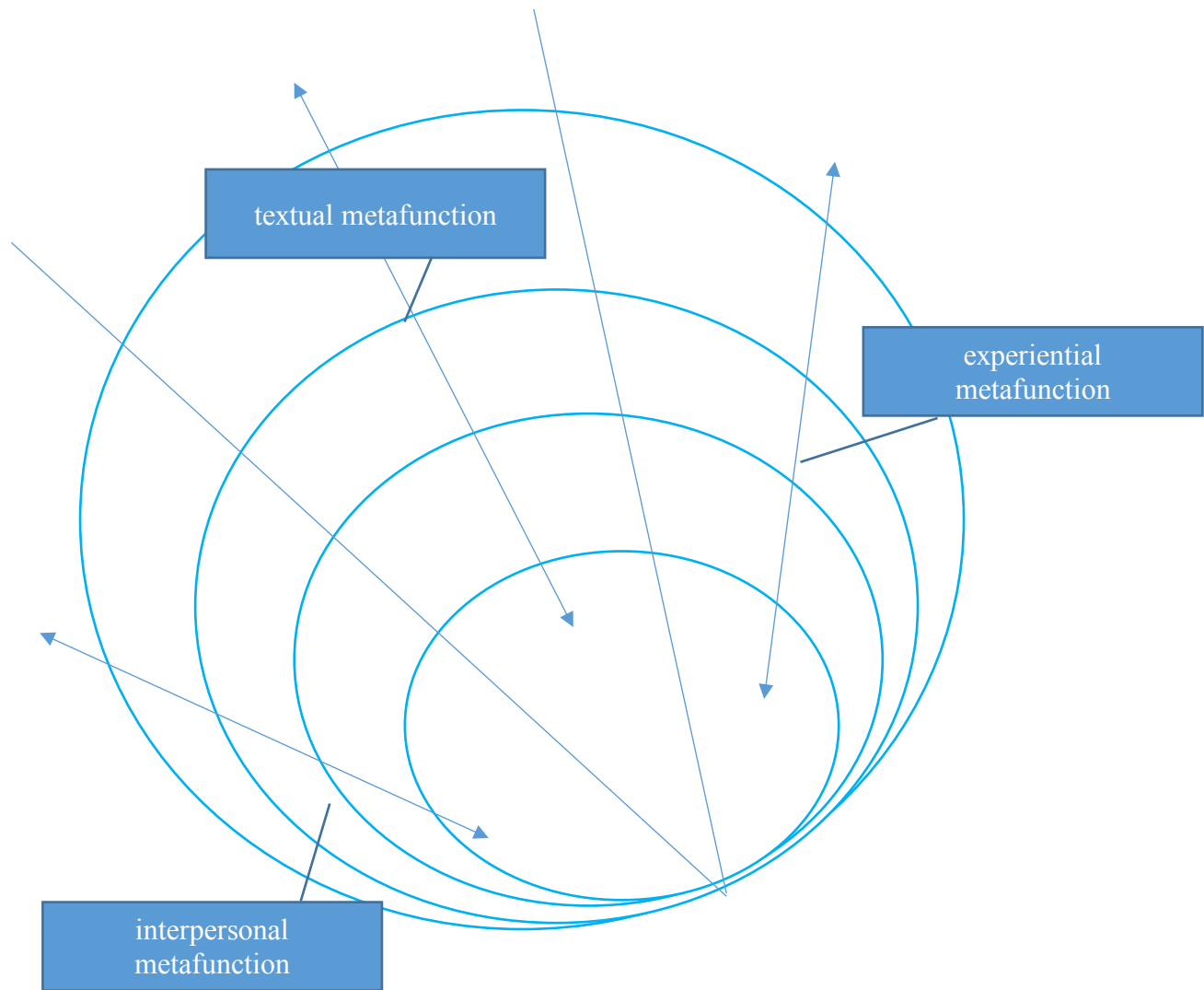


Figure 2. Metafunction in Relation to Language (Martin, 2009)

These three metafunctions allow us to construe meaning as: the first metafunction is the interpersonal metafunction which deals with the negotiation for social relations such as social status, authorities, power, or social solidarity. The second metafunction is the area of experiential meanings, which realizes human experience, and to naturalize reality, enabling participation in

domestic recreational, academic, and professional activities. This metafunction is associated with the use of language to talk about the world as a semiotic phenomenon. The third metafunction is the textual metafunction, which is related to the manner of information flow and of organizing language to fit in context in which language is used (Martin, 2009; Wu and Dong, 2009; and Thompson, 2013). The three metafunctions are further elaborated by Bloor and Bloor (2013, p. 13).

- Language is used to organize, understand and represent our perceptions of the world and of our own consciousness. This is known as the ideational metafunction. The ideational metafunction is classified in IFG into two subfunctions: the experiential metafunction and the logical metafunction. The experiential is largely concerned with content or ideas. The logical is concerned with the relationship between ideas.
- Language is used to enable us to participate in communicative acts with other people, to take on roles and to express and understand feelings, attitude and judgements; this metafunction is known as the interpersonal metafunction.
- Language is used to relate what is said (or written) to the rest of the text and to other Linguistic events; this involves the use of language to organize the text itself and is known as textual metafunction.

(Bloor & Bloor, 2013, p. 13)

## **2.4 THE NOTION OF RANK SYSTEM**

The stratification system and three metafunctions describe language functions in order to construe the meaning of language from different perspectives. As for the metalanguage to express the structures of a language in SFG, the notion of rank system plays an essential part. Halliday and Matthiessen (2014, p. 20) connect this rank system with clauses as the highest rank of the system. Following components are group/phrase, word, morpheme within the lexico-grammar. Under these components, phonological elements are located, such as tone groups, feet, syllables, and phonemes.

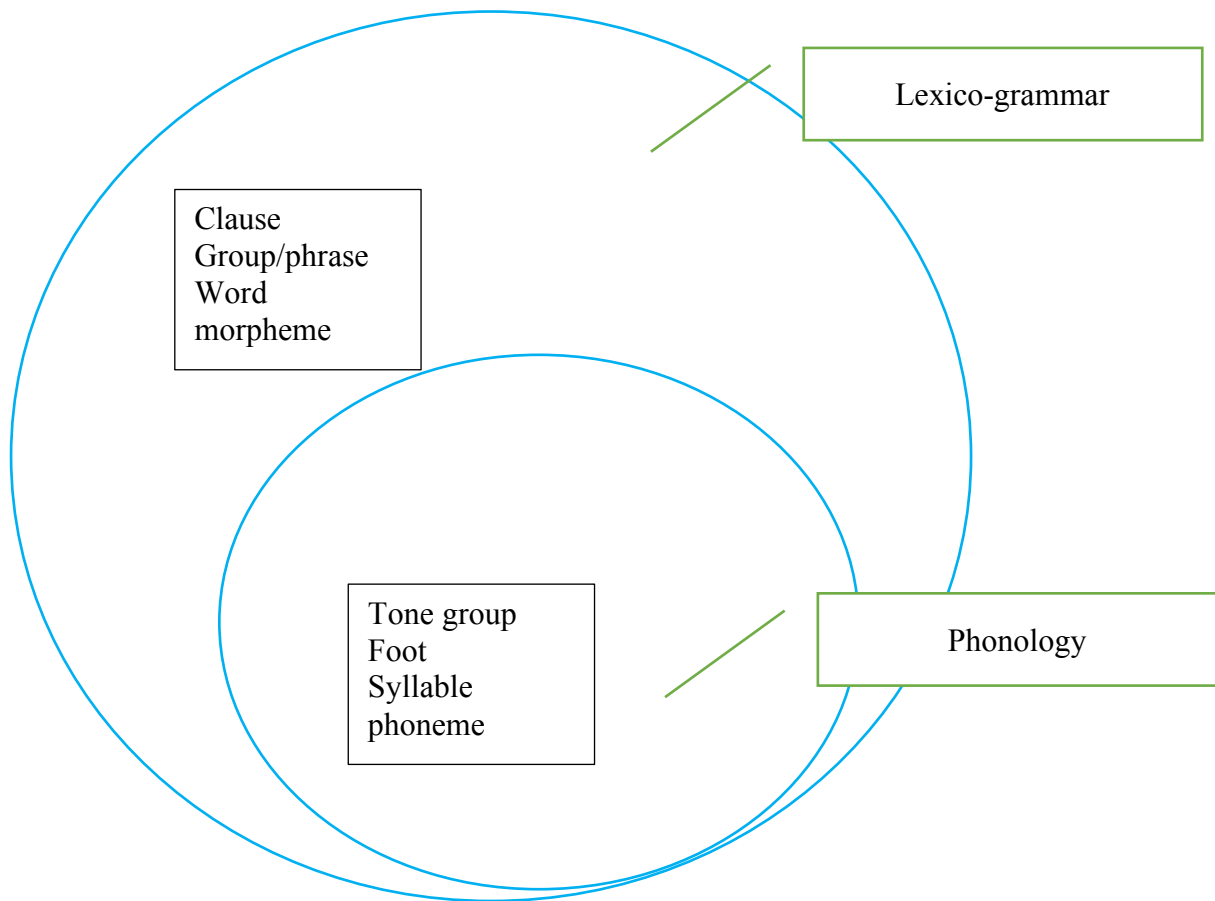


Figure 3. Rank System within the Strata of Lexico-Grammar

As stated, the highest rank of the elements in the lexico-grammar is clause. This element is linked with another clause to create ‘Clause Complexes.’ The formation of clause complex is realized through logico-semantic relations to express semantic sequences that are textually related to each other (Halliday & Matthiessen, 2014, p. 429). Table 1 shows examples of logical-semantic relations and their interdependencies. The logical-semantic relations demonstrate how clauses are logico-semantically related. The interdependencies indicate the levels of relationship with another clause.

Table 1. Types of Relationship between Clauses (Halliday, 1994, p. 59)

Logical-semantic relations			Interdependencies	
Category	symbol		Category	symbol
Expansion:	-elaborating	=	Parataxis:	1 2 3 . . .
	-extending	+		
	-enhancing	x		
Projection:	-idea	‘	Hypotaxis:	α β γ . . .
	-locution	‘,		

The logical semantic relations are divided into two fundamental parts. One is expansion, and the other is projection. Halliday and Matthiessen (2014, p. 443) define expansion as a relationship between primary and secondary clauses related through elaboration, extension, or enhancement meanings to expand the meaning of a clause, and it is related to phenomena as being of the same or different order of experience. Projection refers to the secondary clause projected by the primary clause to express a locution or ideas, which is related to the process of saying and thinking. Each definition of clause relations is provided by Halliday and Matthiessen (2014, p. 444):

- (1a) Elaborating: ‘i.e., e.g., viz.’  
one clause expands another by elaborating on it (or some portion of it): restating in other words, specifying in greater detail, commenting, or exemplifying.
- (1b) Extending: ‘and, or’  
one clause expands another by extending beyond it: adding some new element, giving an exception to it, or offering an alternative.
- (1c) Enhancing: ‘so, yet, then’  
one clause expands another by embellishing around it: qualifying it with some circumstantial feature of time, place, cause or condition.
- (2a) Locution: ‘says’  
one clause is projected through another, which presents it as a locution, a construction of wording.
- (2b) Idea: ‘thinks’  
one clause is projected through another, which presents it as an idea, a construction of meaning.

(Halliday & Matthiessen, 2014, p. 444)

The interdependencies among clauses are also an important notion. There are two ways to combine clauses from this interdependency perspective. One is through paratactic relations. As for the identification of paratactic relations, Bloor and Bloor (2013, p. 175) provide conjunctions that generate parataxis and their functions. These conjunctions are called linking conjunctions or linkers such as ‘and,’ ‘but,’ ‘or,’ and ‘so.’ These linking conjunctions allow clauses to be connected in a parallel manner. The symbols that show paratactic relations 1, 2, 3, etc. refer to a sequential order of clauses.

The other linking pattern of clauses is hypotactic relations. Hypotactic relations form clause complexes by way of being dependent on another clause for their grammatical meaning. Conjunctions that construct hypotactic relations are listed as ‘when,’ ‘while,’ ‘until,’ ‘before,’ ‘after,’ ‘if,’ ‘unless,’ ‘since,’ ‘because,’ ‘where,’ ‘whereas,’ and ‘so that’ (Bloor & Bloor, 2013, p. 176). These conjunctions are known as binding conjunctions or binders. The clauses with hypotactic conditions are unequal or dependent relations. The labels to indicate these relations are the alphabet symbols:  $\alpha$ ,  $\beta$ , and  $\gamma$ . Further elaboration is provided by Halliday and Matthiessen (2014, p. 452).

Parataxis is the linking of elements of equal status. Both the initiating and the continuing elements are free, in the sense that each could stand as a functioning whole. In principle, the paratactic relation is logically (i) symmetrical and (ii) transitive. This can be exemplified with the ‘and’ relation. (i) ‘salt and pepper’ implies ‘pepper and salt’, so the relationship is symmetrical; (ii) ‘salt and pepper’, ‘pepper and mustard’ together imply ‘salt and mustard’, so the relationship is transitive. Hypotaxis is the binding of elements of unequal status. The dominant element is free, but the dependent element is not. The hypotactic relation is logically (i) non-symmetrical and (ii) non-transitive. For example, ‘when’: (i) ‘I breathe when I sleep’ does not imply ‘I sleep when I breathe’; (ii) ‘I fret when I have to drive slowly’ and ‘I have to drive slowly when it’s been raining’ together do not imply ‘I fret when it’s been raining’.

(Halliday & Matthiessen, 2014, p. 452)

## 2.5 CONGRUENT REALIZATION AND GRAMMATICAL METAPHOR

The realization of meaning at the lexico-grammatical level through the stratum of semantics has two main patterns of structural realization: one is congruent realization, and the other is non-congruent realization, which means metaphorical realizations of semantic entities at the expression plane. This phenomenon of metaphorical realization is called Grammatical Metaphor (henceforth, GM). Thompson (2013, p. 236; Bloor & Bloor, 2013) defines this phenomenon of GM as lexico-grammatical reconfiguration of original meanings into lexico-grammatical forms that embed or hide the original wordings and meanings, thereby contributing in some cases to the creation of new meanings and new grammar forms. If semantic entities or meanings are realized at the level of lexico-grammar, the realization is referred to as un-marked or congruent. On the other hand, if the features do not correspond to each other at the two planes, the realization shows up as a marked, or metaphorical realization structure. This phenomenon of GM can be seen in two metafunctional reconfigurations in Figure 4.

Reflecting the three metafunctional organizations at the level of lexico-grammar, grammatical metaphors are also organized around the same three functions. One is interpersonal metafunction, where distinct interpersonal meanings at the semantic level are either configured or reconfigured into various Mood and Residue structures. This particular way of the reconfiguration of interpersonal grammar is exemplified in Figure 4. The relation between the semantic stratum and lexico-grammar is congruent if, for example, statements are realized as declaratives at the stratum of lexico-grammar. The same congruent realization can be observed with question-interrogative pairs, and commands-imperative relations. One of the realizations is not, however, congruent, as when meanings of commands are realized as

various forms of declaratives and/or interrogatives. In Figure 4, congruent expressions are marked with double arrows; and incongruent expressions are marked with single arrows.

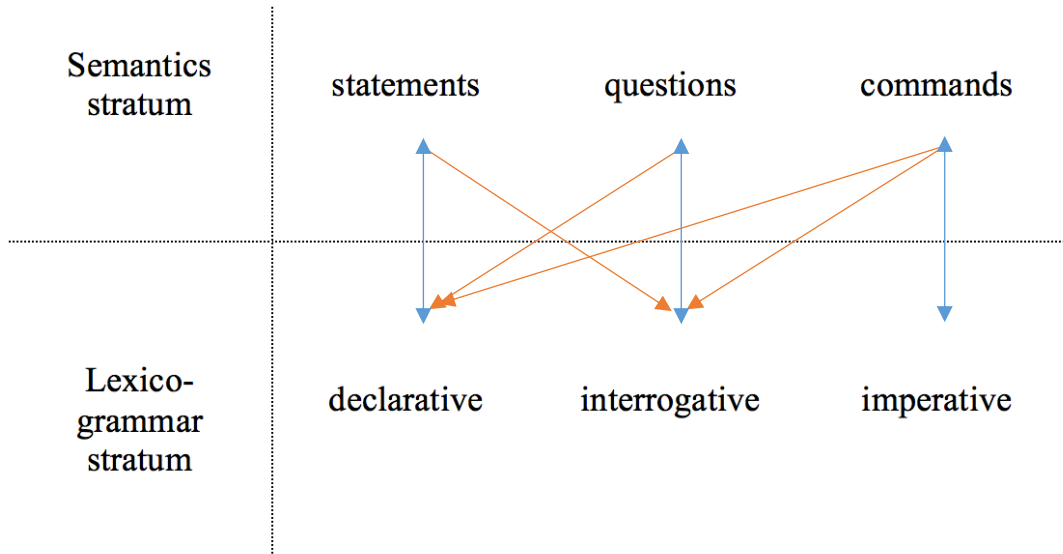


Figure 4. Interpersonal Semantic Junctions at the Level of Semantics and Lexico-Grammar

Interpersonal grammatical metaphor also appears within lexical items, which contains the meaning of ‘modality’ –*can*, for example- as a meaning of ‘possibility.’ As it can be seen in Table 2, the word ‘possibility’ is a ‘Thing’<sup>1</sup> when it appears in a text. If it is, however examined from the original meaning and function of the word, the word shifts from the original function of ‘auxiliary’ to an expressed function as a ‘Thing.’ The realization of meanings of modality in different forms is the phenomenon of the Interpersonal grammatical metaphor.

<sup>1</sup> It is important to note that Thing refers to one discursal function of words at the level of semantics; and hence it is capitalized in this thesis.



Table 2. Types of Interpersonal Grammatical Metaphor

Grammatical shift		Example	Semantic element	
(1) grammatical class	(2) grammatical functions		congruent →	metaphorical
verb → noun	Auxiliary → Thing	will/going to → prospect; can/ could → possibility/potential	tense; modality	Thing
verb → adjective	Auxiliary → Epithet/Classifier	was/used to → previous; must/will → constant	tense; modality	Quality

The other type of GM can be observed as being manifested in the experiential or ideational metafunctions. (Halliday, 2006, p. 104) illustrates the ideational metafunction as the variation of grammatical statuses as shown in the way that the semantic notion of process is reconfigured at the level of lexico-grammar as a clausal participant. What happens at these two levels of semantics and lexico-grammar is that there is some level of experiential semantic junction that clashes at these two levels. One consequence of this phenomenon can be seen in the semantic shift of lexical items known as ‘nominalization’ (Thompson, 2013, p. 238). The relationship between semiotic features and elements is illustrated in Figure 5:

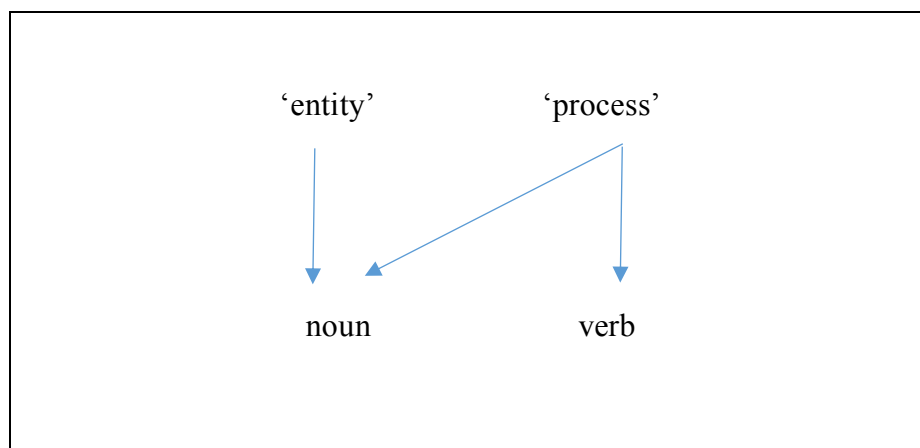


Figure 5. Experiential Semantic Junctions at the Level of Semantics and Lexico-Grammar

Figure 5 shows both the congruent realization and its metaphorical realization of processes. ‘Entity’ in the semantic strata is congruently realized as a noun. In this case, the relationship is congruent. The same congruent realization is exemplified between a process and a verb. The relationship between a process and a noun is, however, not congruent. This incongruent phenomenon is the ideational GM. One crucial point in this kind of reconfiguration is that the ideational GM is not limited only to nominalization but shows up in a wide range of grammatical realizations including processes that are linkers and binders at the semantic level. The various conflicts between the two levels of semantics and lexico-grammar have been used as evidence for discovering text types and register variations (Halliday & Martin, 1993), and have further been applied to language teaching pedagogy based on SFL (Rose & Martin, 2012).

The other types of the congruent realization within the ideational metafunction are described in Table 3 by Halliday (2006, p. 107).

Table 3. Congruence between Semantic and Grammatical Categories (Halliday, 2006, p. 107)

Congruence in rank		Congruence in status (elements)	
Semantic	grammatical	semantic	grammatical
Sequence	clause nexus	entity	noun (nominal group)
Figure	clause	quality	adjective [in nom. gp.]
Element	group/phrase	process	verb (verbal group)
		circumstance (1)	adverb (/adverbial gp.)
		circumstance (2)	prepositional phrase
		[minor process]	preposition
		relator	conjunction

The ideational metafunction, thus, deals with two phases, the rank and the status (or elements). Halliday (2006, p. 107) introduces three congruent realizations in the rank elements, and seven congruent realizations of elements. The sequence is a series of figures realized as

clause nexuses. The sequence contains multiple figures, which are realized as clauses. The element is realized as groups or words. Within the lexico-grammar, elements are subcategorized as seven reconfigurations. Each element is congruently realized as such at the lexico-grammatical stratum. The relationship of congruent realizations is visualized in Figure 6;

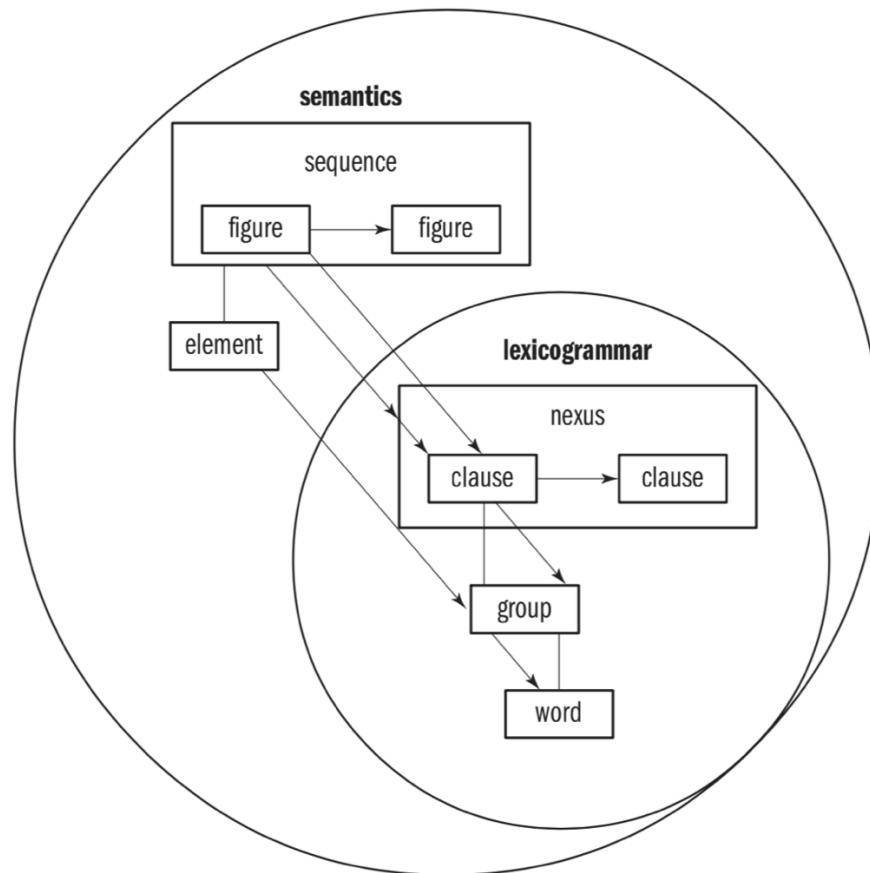


Figure 6. Congruent Relationship in the Ideational Metafunction (Halliday & Matthiessen, 2014, p. 719)

As stated above, nominalization, where processes shift into nouns, is not the only incongruent realization. Table 4 is the potentiality of GMs with examples from the ideational metafunction.

Table 4. Type of Ideational Grammatical Metaphors (Halliday, 2006, p. 41-42)  
Key figures

semantic element	grammatical class
grammatical function	example
Type of GM 1	
quality → entity	adjective → noun
Epithet = Thing	unstable = instability
Type of GM 2	
process → entity	verb → noun
(i) Event = Thing	transform = transformation
(ii) Auxiliary = Thing:	will/going to = prospect
(tense)	try to = attempt
(phase)	can/could = possibility, potential
(modality)	
Type of GM 3	
circumstances → entity	preposition → noun
Minor Process = Thing	with = accompaniment; to = destination
Type of GM 4	
relator → entity	conjunction → noun
Conjunctive = Thing	so = cause/proof; if = condition
Type of GM 5	
process → quality	verb → adjective
(i) Event = Epithet	[poverty] is increasing = increasing [poverty]
(ii) Auxiliary = (tense)	was/used to = previous
(phase)	begin to = initial
(modality)	must/will [always] = constant
Type of GM 6	
circumstance → quality	adverb/prepositional phrase → adjective
(i) Manner = Epithet	[decided] hastily = hasty [decision]
(ii) other = Epithet	[argued] for a long time = lengthy [argument]
(iii) other = Classifier	[cracked] on the surface = surface [cracks]
Type of GM 7	
relator = quality	conjunction → adjective
Conjunctive = Epithet	then = subsequence; so = resulting
Type of GM 8	
circumstance = process	be/go + preposition → verb
Minor Process = Process	be about = concern; be instead of = replace
Type of GM 9	
relator → process	conjunction → verb
Conjunctive = Event	then = follow; so = cause; and = complement
Type of GM 10	
relator → circumstance	conjunction → preposition/-al group
Conjunctive = Minor Process	when = in times of/in...times if = under conditions of/under...conditions

Type of GM 11

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entity → [expansion]	noun → [various] (in 1, 2 above)
Head = Modifier	the government [decided] = the government's [decision], =[a/the decision] of/by the government, =[a] government(al) [decision] the government [couldn't decide/was indecisive] = the government's [indecision] = [the indecision] of the government, =government(al) [indecision]

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## CHAPTER 3

### DATA AND METHODOLOGY

Within the SFG theories briefly described above, this study utilized a binary approach to the analysis of clause complexes to reveal the logical relationship within the texts, and of the investigation of grammatical metaphor distributions throughout the texts. This dual analysis was chosen to reveal patterns of meaning development in the two data sets. To fulfill the objective of this comparative research, the data were collected from the TOEFL iBT reading texts and EFL textbooks. Texts from each passage were separated into individual clauses and lexical items to conduct the analysis and were numbered in order to arrange them in a sequential order. The total number of clauses and lexical items analyzed for this research was 3,051 clauses and 26,814 lexical items in total.

Table 5. Total Number of Clauses and Lexical Items Analyzed

	TOEFL iBT	EFL textbooks	Total
Total # of clauses	318	2,733	3,051
Total # of lexical items	5,110	21,704	26,814

As for the selection of the TOEFL iBT texts, the official practice book (ETS, 2013) published by ETS in 2013 was chosen for this study. The test practice book contains five actual tests that were previously administered with the aims for students to build up learners' EFL skills and to prepare for the TOEFL iBT test. Each test has three different passages with around 700 words. For the purpose of this research, two sets of the reading sections, six passages in total, were selected to conduct a logico-semantic analysis, and three sets of reading sections, nine passages in total and one more additional passage from the fourth set were chosen for the analysis of grammatical metaphors. Each set is labeled as Test 1, Test 2,

and Test 3, and each passage is labeled as *a*, *b*, and *c* as it appears in the book. The total number of clauses is 318 clauses, and the number of each text is shown in Table 6:

Table 6. Total Number of Clauses for Logico-Semantic Analysis

TOEFL iBT	Test 1a	Test 1b	Test 1c	Test 2a	Test 2b	Test 2c	Total
Total # of clauses	56	47	65	55	46	49	318

Table 6 shows the total number of lexical items analyzed for grammatical metaphors. In this analysis, only lexical items were extracted from the original texts in order to compare the density of pure lexical items with their respective semantic meanings. Functional items were not counted such as ‘conjunctions’, ‘determiners’, ‘particles’, and ‘prepositions.’ The total number of lexical items for this logico-semantic analysis was 5,110 words out of 7,045 original words. The Total number of original words and the lexical items in each passage are listed in Table 7.

Table 7. Total Number of Lexical Items Analyzed for Grammatical Metaphors

TOEFL iBT	Test 1a	Test 1b	Test 1c	Test 2a	Test 2b	Test 2c	Test 3a	Test 3b	Test 3c	Test 4a	Total
Total # of words	702	709	689	704	685	673	726	693	723	741	7,045
Total # of lexical items	486	508	488	527	500	511	495	498	551	546	5,110

For the purpose of comparing the data with the TOEFL iBT, the EFL textbooks, *Unicorn English Communication 1, 2, and 3* published by the *Bunei-do* publisher (Ichikawa, 2016, 2017, and 2014), were selected from the list provided by MEXT (2017). The EFL textbooks were designed for high schoolers in Japan in order to improve students’ reading and

communicative abilities throughout the year. As for the research, the total number of clauses analyzed for this study of grammatical metaphor is 2,733 clauses in total. Table 8 shows the figures of analyzed clauses from the EFL textbooks for this study. The labels are from lessons that each EFL textbook has, and labeled 1 to 12.

Table 8. Total Number of Clauses in EFL Textbooks for Clause Complex Analysis

EFL 1	1	2	3	4	5	6	7	8	9	10	Total		
Total # of clauses	57	58	69	71	67	84	79	64	62	70	681		
EFL 2	1	2	3	4	5	6	7	8	9	10	11	12	Total
Total # of clauses	71	94	116	74	141	82	80	72	/	97	86	/	913
EFL 3	1	2	3	4	5	6	7	8	9	10	11	12	Total
Total # of clauses	57	76	144	39	111	46	105	96	112	88	96	169	1139
Total											2733		

By the same process, lexical items were extracted from the original texts for analysis of grammatical metaphor in the EFL textbooks. The total number of lexical items in the EFL textbooks analyzed for grammatical metaphor is 21,704 words out of 26,814 original words. Table 9 describes figures of each passage in the EFL textbooks.



Table 9. Total Number of Lexical Items in EFL Textbooks for Grammatical Metaphor Analysis

EFL 1	1	2	3	4	5	6	7	8	9	10	Total		
Total # of words	433	465	535	638	653	672	664	735	706	561	6,062		
Total # of lexical items	317	354	394	457	482	492	523	543	529	432	4,523		
EFL 2	1	2	3	4	5	6	7	8	9	10	11	12	Total
Total # of words	672	770	765	646	986	761	778	829	998	956	1,010	1,036	10,207
Total # of lexical items	515	588	601	467	712	569	568	607	733	697	763	766	7,586
EFL 3	1	2	3	4	5	6	7	8					
Total # of words	593	798	1,363	494	1,299	610	1,178	978					
Total # of lexical items	455	622	1,033	376	958	444	838	696					
					9	10	11	12	Total				
					1,264	1,267	1,185	2,017	1,3046				
					933	908	844	1,488	9,595				
Total											21,704		

The first step in the analysis of the logical relationships of CCs (Clause complexes) was conducted to identify the structural variations and its distribution within a text. The methodology was such that the whole text is divided into single clauses based on the theory, and each clause was examined for its semantic relationships with the preceding or following clauses. The total number of clause complexes and the ratio of each type of logical relationships were examined and listed for comparison. The following analysis focuses on the configurations of semantic

junctions from interpersonal, experiential, and logical metafunctions in both samples. The methodology was to identify GMs in the texts and to count the total number of their uses within each passage. After the patterns were calculated in the TOEFL texts and the EFL textbooks, the obtained results from these analyses were tabulated and compared in order to examine patterns of the complexity of meanings as embedded at various levels of lexico-grammar. Analysis examples for both clause complex and grammatical metaphor are provided below:

(1) Examples of hypotactic relationships

[Elaboration]

1        The geologic timescale is marked by significant geologic and biological events,  
 =2       including the origin of Earth about 4.6 billion years ago, the origin of life about  
           3.5 billion years ago, the origin of eukaryotic life-forms (living things that have  
           cells with true nuclei) about 1.5 billion years ago, and the origin of animals about  
           0.6 billion years ago.

(TOEFL iBT Test 2c)

[Extension]

1            Everyone's papers were distributed to the class,  
 +2 1        and it was immediately obvious how mine fell short:  
       =2    α       I merely summarized the plot of the book  
           +β       without making any real argument.

(EFL 3 Passage 1)

[Enhancement]

1            The girl had little talent,  
 x2    α       but Alma told an SS officer  
       "β       she was one of the best players.

(EFL 1 Passage 3)

[idea]

1            Fifty years later, an orchestra member said,  
 "2        "Since that time, I haven't spent a day without remembering Alma and  
           thanking her."

[EFL 1 Passage 3]

[Locution]

- 1 I now thought,  
'2 "the rider is the wind!"

(EFL 2 Passage 5)

(2) Examples of paratactic relationships

[Elaboration]

- $\alpha$  Some of those slabs appear to have been painted as much as 28,000 years ago,  
= $\beta$  which suggests that painting in Africa is as old as painting in Europe.  
(TOEFL iBT Test 1b)

[Extension]

- $\alpha$  Pipelines carrying oil can be broken by faults or landslides,  
+ $\beta$  causing serious oil spills.  
(TOEFL iBT Test 1c)

[Enhancement]

- $\times\beta$  And when game moved out of the low lands in early spring,  
 $\alpha$   $\alpha$  the expedition decided  
 $\times\beta$  to return east  
+  $\gamma$  rather than face possible starvation  
(TOEFL iBT Test 1a)

[idea]

- $\alpha$  Secondly, you should realize  
' $\beta$   $\alpha$  that the notion of correctness is not really useful or appropriate  
 $\times\beta$  when describing the language of native speakers.  
(EFL 3 Passage 4)

[Locution]

- $\alpha$  A friend of mine who felt that he had been travelling too much and  
declined to attend one conference was informed  
" $\beta$   $\times\beta$  that unless he attended  
 $\alpha$  1 Japan would not be represented at all,  
+2  $\alpha$  and as a patriotic Japanese he felt  
' $\beta$  it was his duty to go."  
(EFL 3 Passage 5)

(3) Examples of grammatical metaphors

[Interpersonal grammatical metaphor]

Although most plants cannot survive in these soils, certain plants have the **ability** to tolerate high levels of these minerals.

The senior brought a violin to test her **skill**. (TOEFL iBT 2a)

(EFL 1 Passage 3)

Its technical solutions bore all of the features now preferred in new designs, including low-impact materials, quality and **durability**.

(EFL 2 Passage 11)

[Experiential grammatical metaphors of Types 1, 2, 3, 5, and 11]

Much of the **research** on nutrient **deficiencies** is based on **growing plants** hydroponically, that is, in soilless liquid nutrient **solutions**.

(TOEFL iBT 2a)

The **illustrations** by Sidney Paget, for example, greatly contributed to Holmes' **popularity**.

(EFL 1 Passage 2)

We have a lot of serious **problems** now - global **warming**, **deforestation**, and the **exhaustion** of natural resources, to name a few. But we have to take an even broader **view** - the **destruction** of entire **ecosystems**.

(EFL 2 Passage 11)

However, if you happen to think that the **identity** of social psychology lies in the **studies** about group **mind**, you have a **misunderstanding** of the **field**. Social psychology is a branch of psychology, the **study** aiming to clarify the psychological mechanisms behind **human behavior**.

(ELF3 Passage 7)

[Logical grammatical metaphors of Types 4, 7, 8, 9, and 10]

This technique **allows** researchers to create solutions that selectively omit certain nutrients and then observe the **resulting effects** on the plants.

(TOEFL iBT 2a)

Baobabs have thick bark that **allows** them to store water in their trunks.

(EFL 1 Passage 4)

As early as the 1920s, its typographer, Jan Tschichold, thought clarity most important for the new typography, in contrast to the old, whose main **purpose** was to give a beautiful **effect**.

(EFL 2 Passage 6)

As a **consequence**, we come to conform to the majority.

(EFL 3 Passage 7)

## CHAPTER 4

### ANALYSIS

#### 4.1. THE NUMBER OF CLAUSE COMPLEXES IN THE TOEFL TEXTS

The total number of identified clause complexes in the TOEFL texts was 85 within 318 total clauses. The ratio of the use of clause complexes within the whole data set was 26.7%.

Table 10 shows the total number of clauses in each text and of clause complexes. The frequency is converted into percentile values.

Table 10. Frequency of Clause Complexes in the TOEFL iBT Texts

	Total # of Clauses	Clause Complex	Percentage (%)
Test 1a	56	11	19.6
Test 1b	47	12	25.5
Test 1c	65	20	30.8
Test 2a	55	18	32.7
Test 2b	46	14	30.4
Test 2c	49	10	20.4
Total	318	85	26.7

Figure 7 shows the frequency of clause complexes in each text. The highest frequency of clause complexes is found in Test 2a, which is 32.7%. The lowest frequency is Test 1a, which is 19.6%. There is a gap of 13.1%. The average of clause complexes is 26.7% throughout the data set.

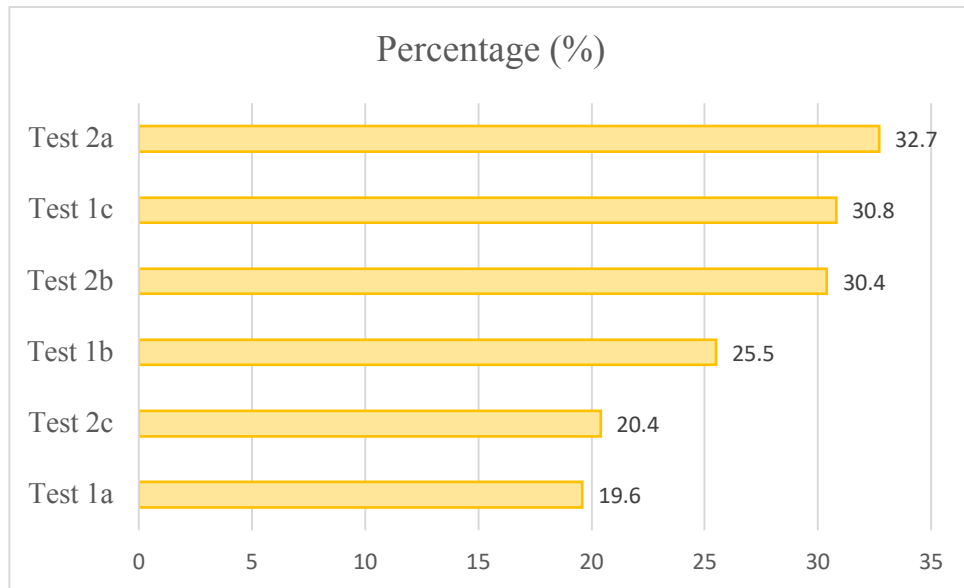


Figure 7. Frequency of Clause Complexes in the TOEFL iBT Texts

#### 4.1.1. PATTERNS OF CLAUSE COMPLEXES IN THE TOEFL TEXTS.

Figure 8 shows the frequency of hypotactic and paratactic relations of clause complexes in the TOEFL texts. The overall result indicates the dominance of hypotactic relations shown as 70.6%. Test 2b has the largest gap between the use of hypotactic and paratactic relations. The least gap is Test 2c and this pair is the only text that the paratactic relations show the higher ratio than the hypotactic relations.

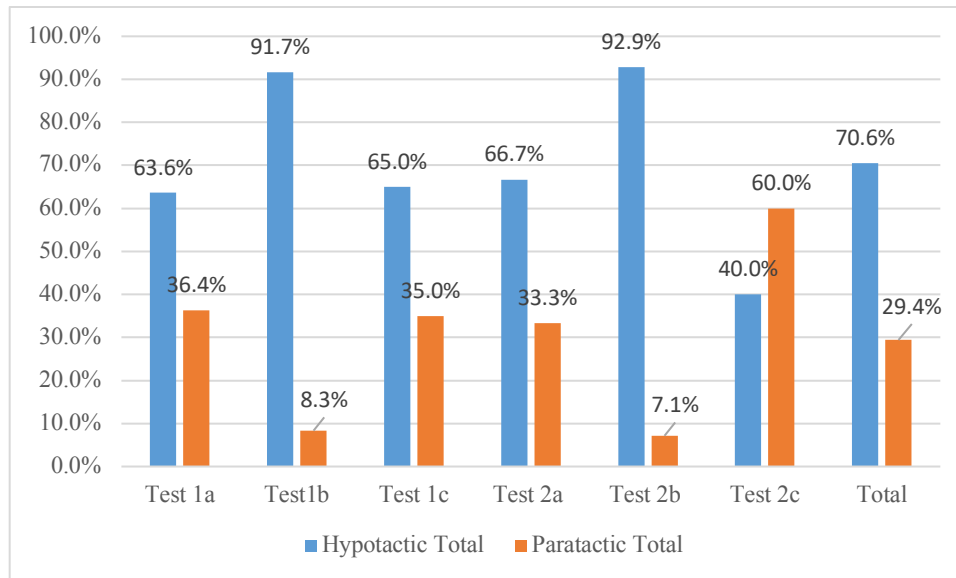


Figure 8. Frequency of Hypotactic and Paratactic Relations in the TOEFL Text

Figure 9 shows the details of hypotactic relations. Test 1a shows that the logical relations of clauses consist only of enhancing relations. Test 1b has the most balanced result, but it lacks extending relations. Test 1c has two components: enhancement as the highest at 84.6%, and extension as the lowest at 15.4%. Test 2a has enhancing as its highest with 75%, followed by elaboration, extension, and idea with 8.3% each, and lacks locution relations. Test 2b has two highest ratios of enhancement and the projection of ideas, which are both at 46.2%. The test also has locution as the lowest at 7.7%. Test 2c contains three types of logical relations: elaboration, enhancement, and idea. As the total result of clause complex analysis, enhancement relations show the highest frequency of its use and locution is the least common type. The percentiles for the highest and lowest are 65% and 3.3%.

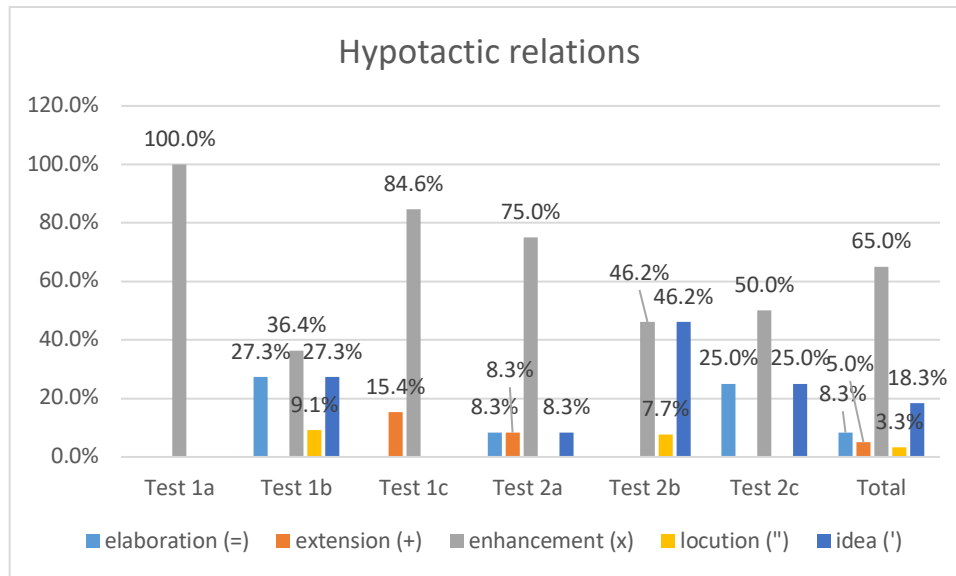


Figure 9. Frequency of Hypotactic Relations in the TOEFL Texts

As can be seen in Figure 10, describing the details of paratactic relations in the TOEFL texts, extension has the most frequent use at 72%. It is followed by idea and enhancement meanings at 12% each, with locution at 4%. No idea relations in paratactic relations were recorded in the TOEFL text. Test 1a has enhancement as the highest at 50% of its use, followed by extension and locution at 25% each. The logical relations of Test 1b are only those of elaborations. Test 1c has two types of paratactic relations: one is extension as the highest at 85.7%, and the other is elaboration at 14.3%. Test 2a and Test 2b are structured only with extension relations. Test 2c has three types of clause complex patterns, 66.7% of extension, and 16.7% of elaboration and enhancement.



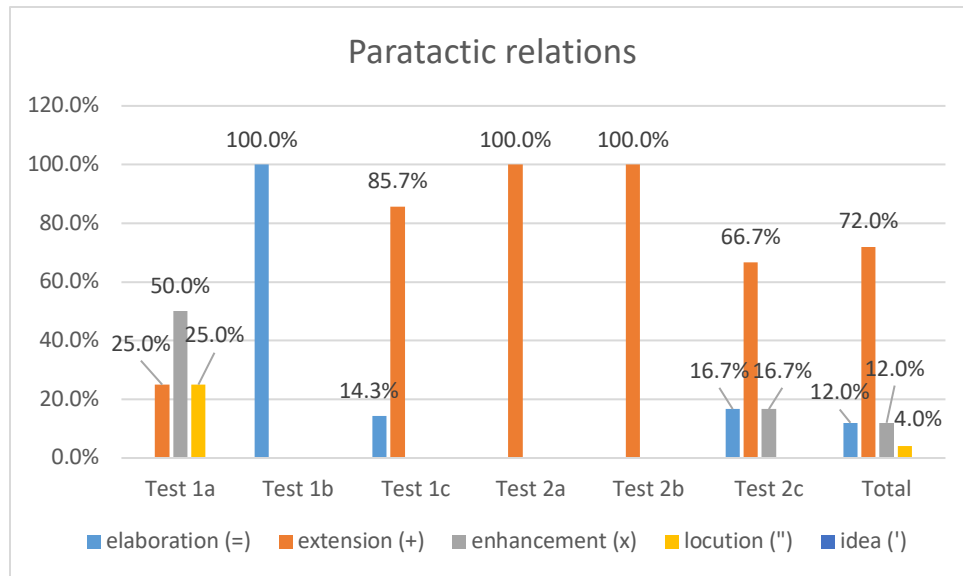


Figure 10. Frequency of Paratactic Relations in the TOEFL Texts

#### 4.1.2. THE NUMBER OF GRAMMATICAL METAPHORS IN THE TOEFL TESTS

Table 11 illustrates three figures: total number of lexical items, total number of detected grammatical metaphors, and the frequency of grammatical metaphors within the total number of lexical items. The lexical items contained in the TOEFL texts are 5,110 words and the total number of grammatical metaphors throughout the data set is 967, with the frequency of 18.9%.

Table 11. Numbers of Grammatical Metaphors in the TOEFL iBT Texts

	Total # of Lexical items	Total # of GM	Percentage (%)
Test 1a	486	78	16.0
Test 1b	508	75	14.8
Test 1c	488	88	18.0
Test 2a	527	121	23.0
Test 2b	500	73	14.6
Test 2c	511	106	20.7
Test 3a	495	102	20.6
Test 3b	498	41	8.2
Test 3c	551	115	20.9
Test 4a	546	168	30.8
<b>Total</b>	<b>5,110</b>	<b>967</b>	<b>18.9</b>

Figure 11 represents the frequency of grammatical metaphors in the TOEFL texts. The highest frequency is in Test 4a at 30.8%. This frequency is 11.9% higher than the occurrences of grammatical metaphors in the whole set. The lowest is Test 3b, which contains 8.2% of grammatical metaphors. The gap between the highest and lowest result is 22.6%.

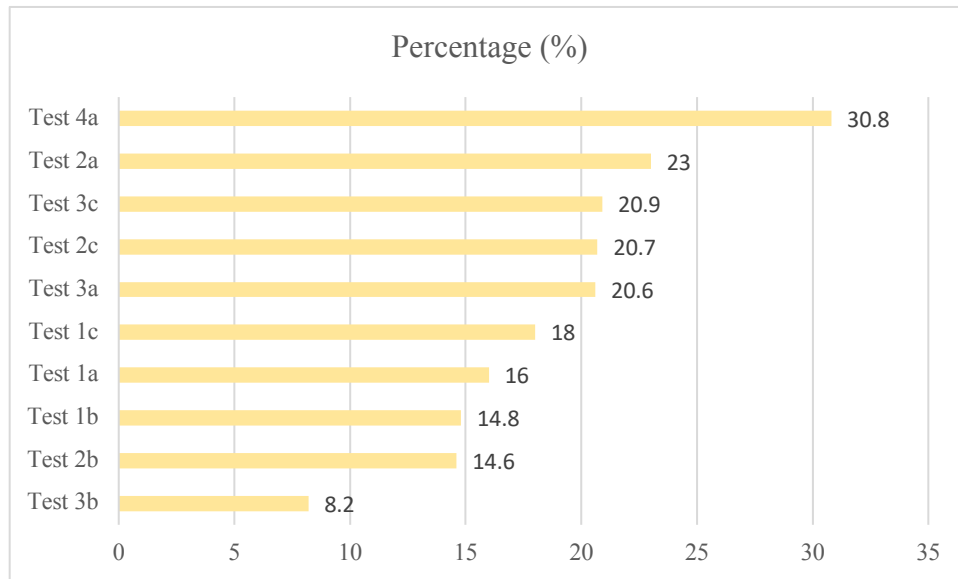


Figure 11. Frequency of Grammatical Metaphors in TOEFL Texts

#### 4.1.3. THE NUMBER OF GRAMMATICAL METAPHORS IN THE TOEFL TEXTS

The distribution of grammatical metaphors analyzed in the TOEFL texts are compared in Table 12. The majority of grammatical metaphors are ideational grammatical metaphors, which include all types of grammatical metaphors discussed above. As can be seen in Table 11, 97.4% of grammatical metaphors are the phenomena at the stratum of the ideational metafunction. The rest of the grammatical metaphors in the TOEFL texts are interpersonal grammatical metaphors, used only 2.6% in the clauses. Tests 1a, 1c, 3b, and 4a do not show any use of interpersonal grammatical metaphors. The highest frequency of the interpersonal

grammatical metaphors is in Test 2b at 6.8%. The frequency and relations of both the grammatical metaphors are quite consistent throughout the data set.

Table 12. Distribution of Grammatical Metaphors in the TOEFL Texts

	Ideational GM (%)	Interpersonal GM (%)
Test 1a	100.0	0.0
Test 1b	96.0	4.0
Test 1c	100.0	0.0
Test 2a	95.0	5.0
Test 2b	93.2	6.8
Test 2c	99.1	0.9
Test 3a	95.1	4.9
Test 3b	100.0	0.0
Test 3c	95.7	4.3
Test 4a	100.0	0.0
Total	97.4	2.6

This study also investigated the distribution of experiential grammatical metaphors (Types 1, 2, 3, 5, and 11) and logical grammatical metaphors (Types 4, 7, 8, 9, and 10) within the ideational grammatical metaphors. Table 13 indicates the distribution of two groups of grammatical metaphors. The results show the obvious high frequency of experiential grammatical metaphors. The ratio of the use of experiential grammatical metaphors is 95.5% in total, and 4.5% for logical grammatical metaphors.

Table 13. Distribution of Experiential and Logical Grammatical Metaphors in the TOEFL

	Experiential GM (%)	Logical GM (%)
Test 1a	93.6%	6.4%
Test 1b	97.2%	2.8%
Test 1c	94.3%	5.7%
Test 2a	95.7%	4.3%
Test 2b	95.6%	4.4%
Test 2c	93.3%	6.7%
Test 3a	99.0%	1.0%
Test 3b	100.0%	0.0%
Test 3c	97.3%	2.7%
Test 4a	93.5%	6.5%
Total	95.5%	4.5%

#### **4.2. THE NUMBER OF CLAUSE COMPLEXES IN EFL TEXTS**

As for the EFL texts, the total numbers of clause complexes in EFL 1, 2, and 3 are 176, 265, and 326 groups as shown in Table 14. The ratio of the clause complexes in the three texts are 25.8%, 29.0%, and 28.6%, respectively. The frequency of clause complexes increases by 3.2% from EFL 1 to EFL 2, but it decreases 0.4% of its frequency from EFL 2 to EFL 3.

EFL 1 has Passage 10 as the highest frequency of clause complexes with 30.0% per clause on average. The lowest frequency is 17.2% in Passage 2. The frequency is not aligned with the developmental stages of the learning materials. This frequency appears rather arbitrary in the data set. The total number of clauses increases as the Passages shift to the next stages, but the density of clause complexes does not accord with this escalation. EFL 2 has higher numbers of clauses than EFL 1. The total number of clauses is 913, out of which 264 clause complexes are used. The frequency varies from 25.7% in Passage 4 to 32.4% in Passage 1. The frequency of clause complexes in EFL 2 is also not aligned with the developmental stages of the language materials. EFL 3 contains 326 clause complexes, which makes up 28.6% in the total set. The variation of the frequency is from the highest 33.3% in Passage 4 to the lowest 20.2% in Passage 11. This frequency seems also quite arbitrary and unpredictable.

Table 14. Numbers of Clause Complexes in EFL 1, 2, and 3

	Total # of clause			Clause Complex			Percentage (%)		
	EFL 1	EFL 2	EFL 3	EFL 1	EFL 2	EFL 3	EFL 1	EFL 2	EFL 3
Passage 1	57	71	57	15	23	17	26.3	32.4	29.8
Passage 2	58	94	76	10	27	23	17.2	28.7	30.3
Passage 3	69	116	144	19	34	39	27.5	29.3	27.1
Passage 4	71	74	39	20	19	13	28.2	25.7	33.3
Passage 5	67	141	111	15	45	36	22.4	31.9	32.4
Passage 6	84	82	46	23	25	12	27.4	30.5	26.1
Passage 7	79	80	105	23	25	30	29.1	31.3	28.6
Passage 8	64	72	96	14	20	30	21.9	27.8	31.3
Passage 9	62		112	16		26	25.8		23.2
Passage 10	70	97	88	21	22	29	30.0	22.7	33.0
Passage 11		86	96		25	28		29.1	20.2
Passage 12			169			43			25.4
Total	681	913	1,139	176	265	326	25.8	29.0	28.6

#### 4.2.1 PATTERNS OF CLAUSE COMPLEXES IN EFL TEXTS

Figures 12,13 and 14 show the frequency of hypotactic and paratactic relations in EFL 1, 2, and 3. These analysis results have the common feature of the superiority of hypotactic relations throughout the texts. EFL 1 has the hypotactic relations at 61.4% over the paratactic relations at 38.6%. The relations remain the same in EFL 2 at 51.3% in hypotactic and 47.8% in paratactic relations. EFL 3 shows that the hypotactic connection is at 66.6% and the paratactic connection is at 33.4%. There are some exceptions in each Passage data set such as EFL 1, Passages 4 and 6 have reversed relations compared with the other data sets. In these sets, the paratactic relations surpass the hypotactic relations. EFL 2 has three Passages, 2, 5, and 10 where paratactic relations surpass hypotactic relations. EFL 3 has the consistent pattern of hypotactic relations exceeding paratactic relations.

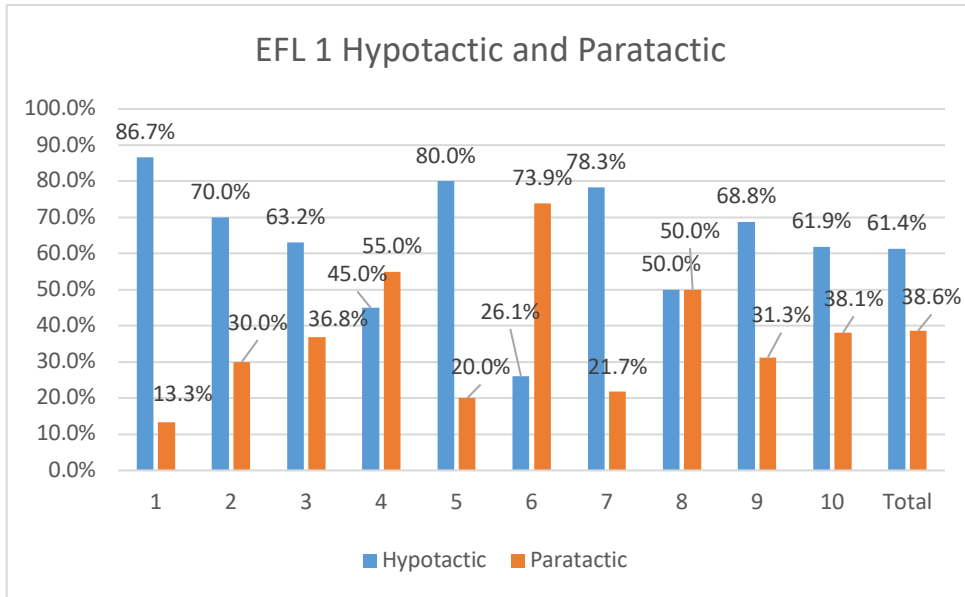


Figure 12. Frequency of Hypotactic and Paratactic Relations in EFL 1

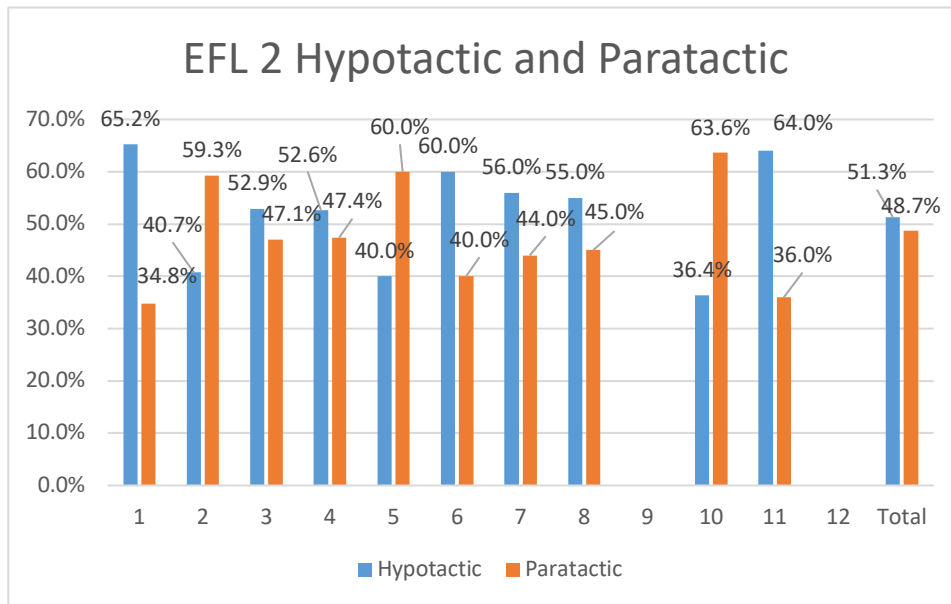


Figure 13. Frequency of Hypotactic and Paratactic Relations in EFL 2

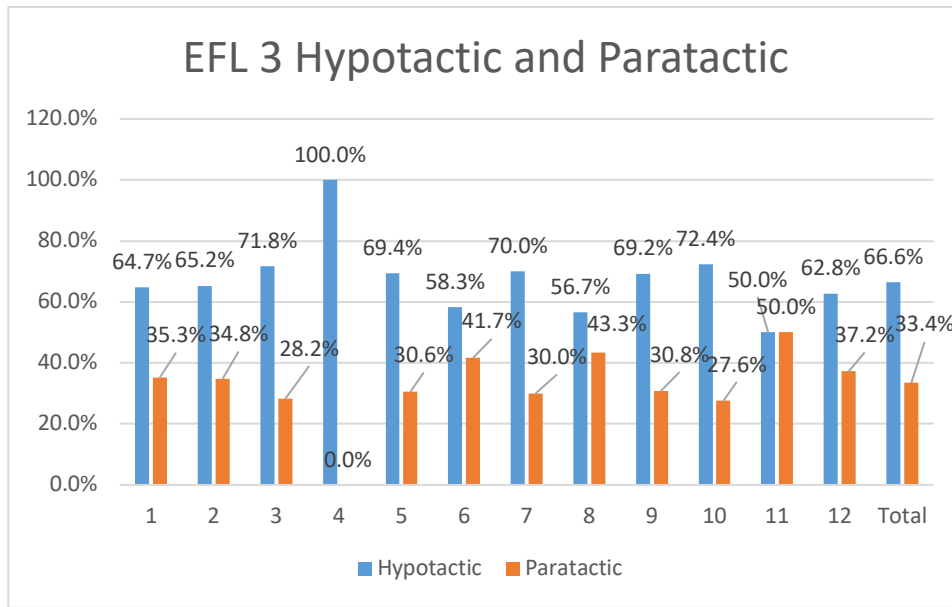


Figure 14. Frequency of Hypotactic and Paratactic Relations in EFL 3

Figures 15, 16, 17, 18, 19, and 20 show the detailed distributions of logical-relations among the textbooks. The overall results from this exhaustive analysis reveal common features in both hypotactic and paratactic relations. In hypotactic relations, the predominance of enhancement meaning is remarkable throughout the data sets, followed by projections of ideas. This pattern is consistent from EFL 1 to EFL 3. In case of paratactic relations, extension meanings are the most frequent logical-relations, followed by meanings of elaboration. This pair of logical-relations are also consistent throughout the data sets.

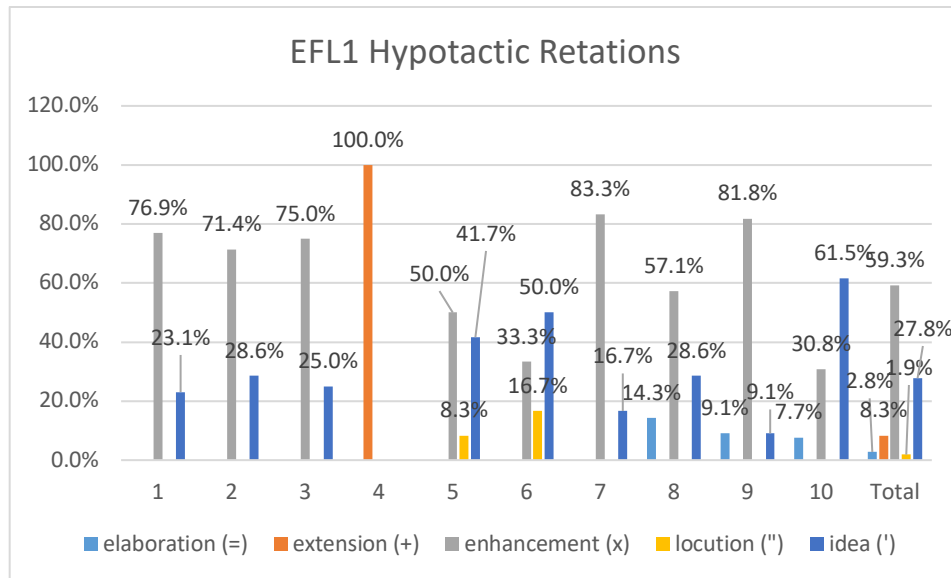


Figure 15. Frequency of Hypotactic Relations in EFL 1

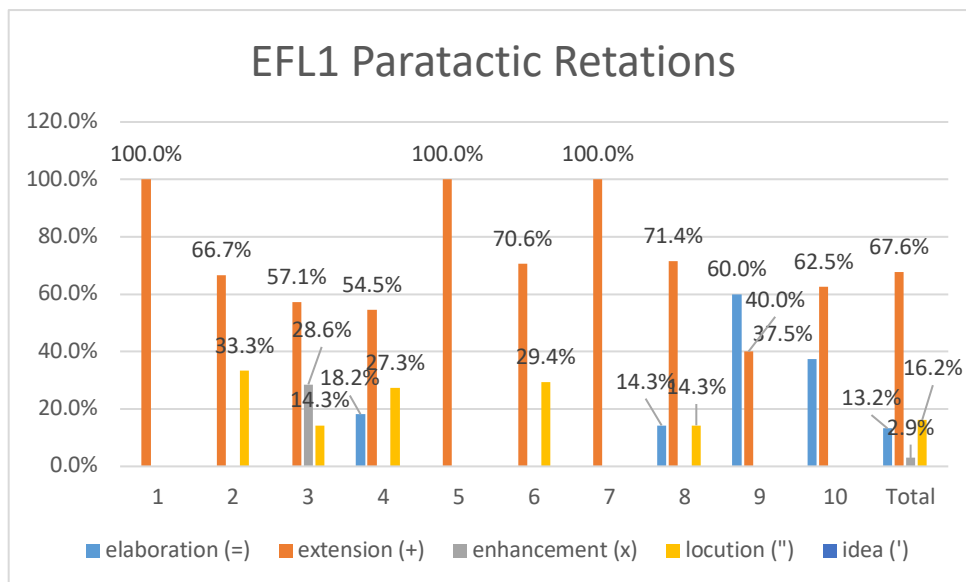


Figure 16. Frequency of Paratactic Relations in EFL 1



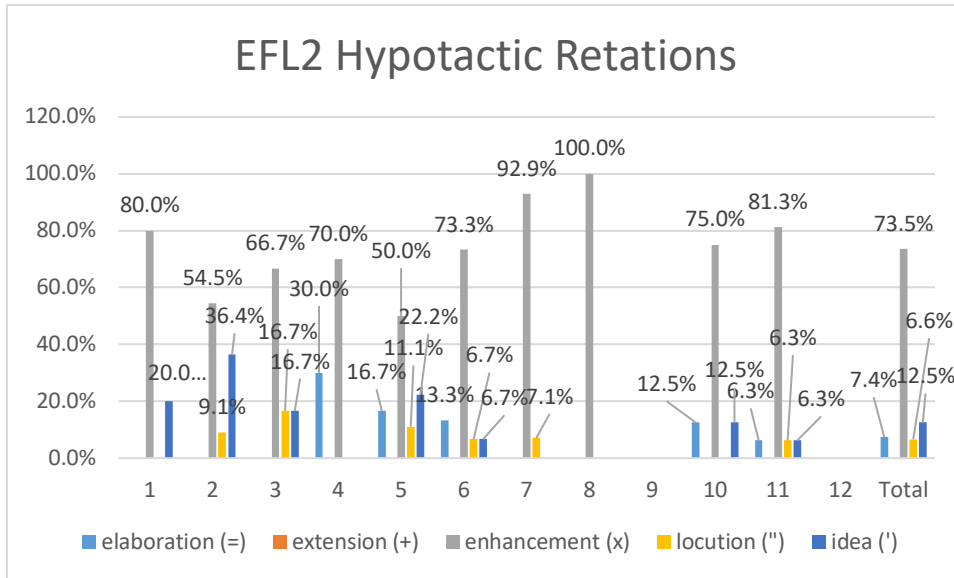


Figure 17. Frequency of Hypotactic Relations in EFL 2

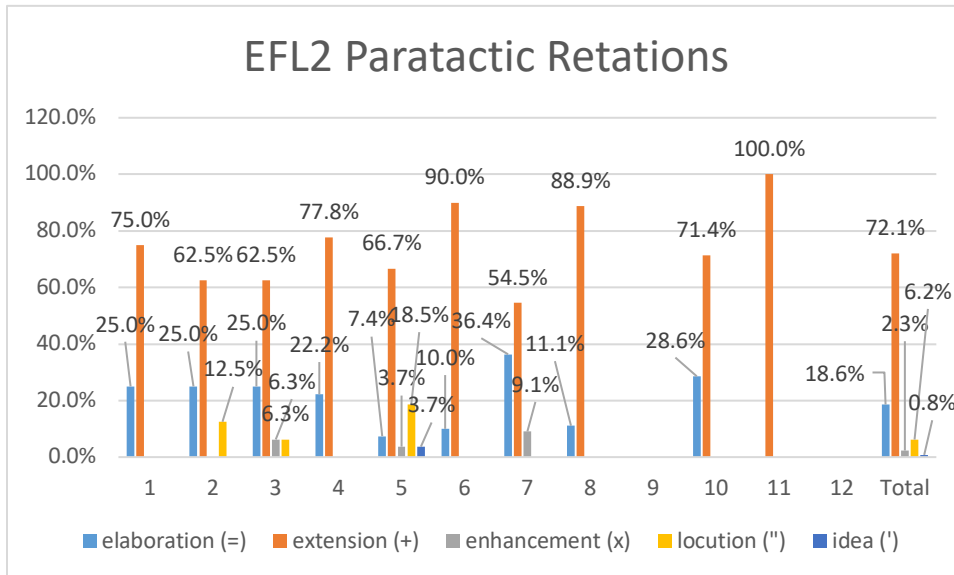


Figure 18. Frequency of Paratactic Relations in EFL 2

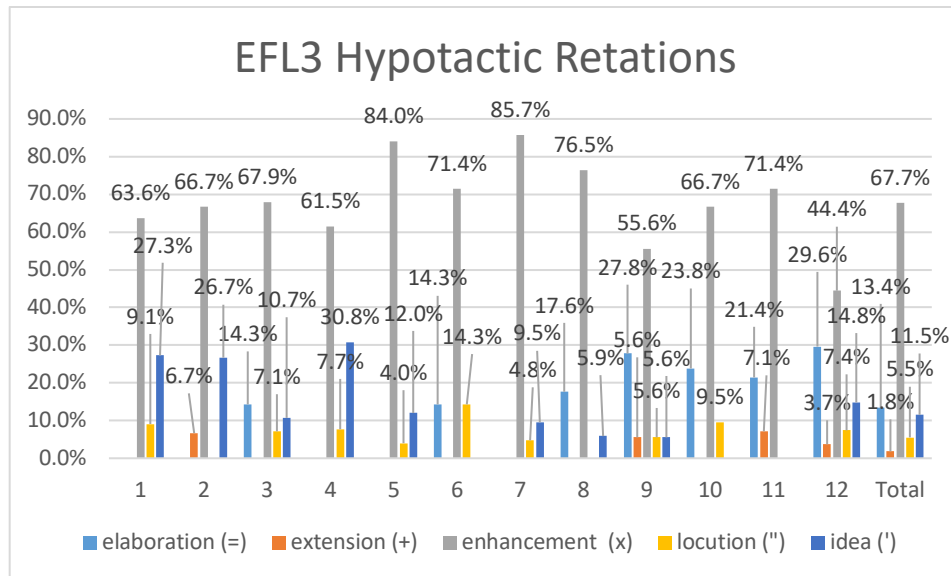


Figure 19. Frequency of Hypotactic Relations in EFL 3

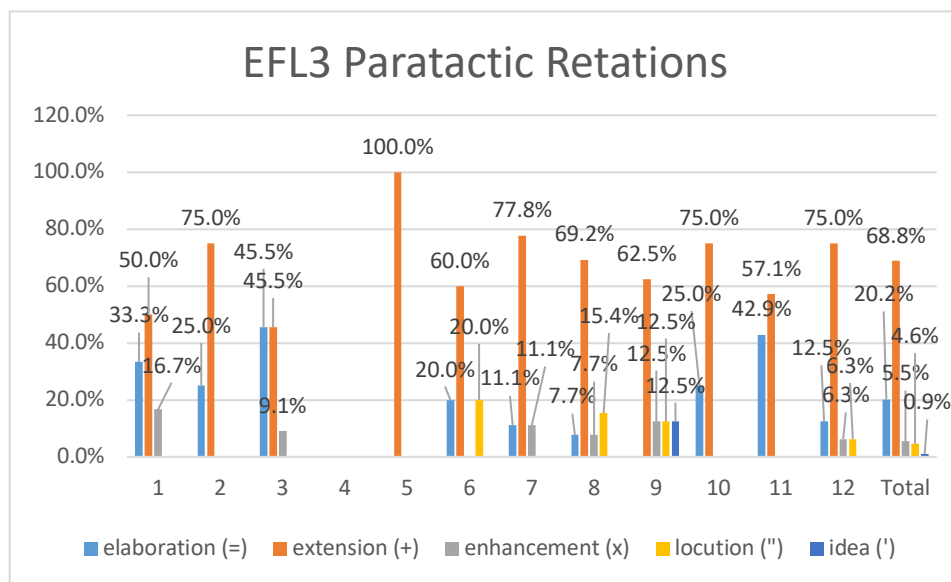


Figure 20. Frequency of Paratactic Relations in EFL 3

#### 4.2.2. NUMBER OF GRAMMATICAL METAPHORS IN THE EFL TEXTS

The numbers of grammatical metaphors used in the EFL texts are shown in Table 15. The list includes three figures: the total number of lexical items, the total number of grammatical metaphors, and the frequency of grammatical metaphors within the total number

of lexical items as percentile values. The total number of lexical items in each data set is 4,523, 7,586, and 9,595. The numbers increase through EFL 1 to EFL 3. As the total number of lexical items increases, the total number of grammatical metaphors in the texts also increases. EFL 1 has 266 grammatical metaphors, EFL 2, 656, and EFL 3, 996. The ratio of grammatical metaphors per text shows the same tendency of increase. The total ratio for each Passage is 5.9% for EFL 1, 8.6% for EFL 2, and 10.4% for EFL 3. This increase in the ratio is 2.7% from EFL 1 to EFL 2, 1.8% from EFL 2 to EFL 3. In the data sets of EFL 1, Passage 7 has the highest frequency of the use of grammatical metaphors, followed by Passage 5 at 7.7%. The lowest frequency is 1.1% in Passage 5. The gap between the highest and the lowest is 6.6%. EFL 2 has Passage 8 as the highest frequency of grammatical metaphors at 20.6%. This ratio is the highest in the entire data sets. The lowest frequency is 1.1% in Passage 5. The gap between the highest and lowest frequency is quite large at 19.5% in EFL 2. EFL 3 has Passage 7 as the highest frequency at 17.1%, followed by 16.1% in Passage 11. The lowest is in Passage 12 at 7.7%. The gap is 9.4%, which is not greater than the gap of EFL 2.

Table 15. Numbers of Grammatical Metaphors in EFL 1, 2, and 3

	Total # of lexical items			Total # of GM			Percentage (%)		
	EFL 1	EFL 2	EFL 3	EFL 1	EFL 2	EFL 3	EFL 1	EFL 2	EFL 3
Passage 1	317	515	455	20	49	28	6.3	9.5	6.2
Passage 2	354	588	622	11	16	77	3.1	2.7	12.4
Passage 3	394	601	1,033	21	21	84	5.3	3.5	8.1
Passage 4	457	467	376	29	37	41	6.3	7.9	10.9
Passage 5	482	712	958	37	8	92	7.7	1.1	9.6
Passage 6	492	569	444	18	20	36	3.7	3.5	8.1
Passage 7	523	568	838	47	59	143	9.0	10.4	17.1
Passage 8	543	607	696	20	125	69	3.7	20.6	9.9
Passage 9	529	733	933	40	67	83	7.6	9.1	8.9
Passage 10	432	697	908	23	65	92	5.3	9.3	10.1
Passage 11		763	844		114	136		14.9	16.1
Passage 12		766	1,488		75	115		9.8	7.7
Total	4,523	7,586	9,595	266	656	996	5.9	8.6	10.4

### 4.2.3. PATTERNS OF GRAMMATICAL METAPHORS IN THE EFL TEXTS

Table 16 show the distribution of grammatical metaphors in EFL 1, 2, and 3. These data sets have a common tendency of the dominance of ideational grammatical metaphors. It is quite noteworthy that it is only in Passages 3 and 4 that interpersonal grammatical metaphors are used 99.2% per Passage on average. The other eight Passages do not contain any interpersonal grammatical metaphors. The highest frequency of the interpersonal grammatical metaphor is in Passage 3 at 4.8%. The lowest is in Passage 4 at 3.4 %. EFL 2 has a more frequent use of the interpersonal grammatical metaphor at 6.1%. This ratio is 5.7% higher than that of EFL 1. The use of the interpersonal grammatical metaphor also can be found in 9 Passages out of 12 Passages. The highest result is in Passage 7 at 16.9% and the lowest is Passage 9 at 1.5%. EFL 3 has the lower frequency of the use of interpersonal grammatical metaphors than that of EFL 2 at 3.7%. This ratio is 2.4% lower than that of EFL 2. This phenomenon is seen in 9 Passages out of the total 12 Passages. The highest frequency is in Passage 4 at 14.6% and the lowest is in Passage 8 at 1.4%.

Table 16. Distribution of Grammatical Metaphors in EFL 1, 2, and 3

	Ideational GM			Interpersonal GM		
	EFL 1	EFL 2	EFL 3	EFL 1	EFL 2	EFL 3
Passage 1	100.0%	100.0%	100.0%	0.0%	0.0%	0.0%
Passage 2	100.0%	100.0%	97.4%	0.0%	0.0%	2.6%
Passage 3	95.2%	95.2%	97.6%	4.8%	4.8%	2.4%
Passage 4	96.6%	91.9%	85.4%	3.4%	8.1%	14.6%
Passage 5	100.0%	100.0%	96.7%	0.0%	0.0%	3.3%
Passage 6	100.0%	90.0%	86.1%	0.0%	10.0%	13.9%
Passage 7	100.0%	83.1%	100.0%	0.0%	16.9%	0.0%
Passage 8	100.0%	90.4%	98.6%	0.0%	9.6%	1.4%
Passage 9	100.0%	98.5%	96.4%	0.0%	1.5%	3.6%
Passage 10	100.0%	95.4%	100.0%	0.0%	4.6%	0.0%
Passage 11		95.6%	94.1%		4.4%	5.9%
Passage 12		96.0%	93.9%		4.0%	6.1%
Total	99.2%	93.9%	96.3%	0.8%	6.1%	3.7%

As stated in the section on grammatical metaphors in the TOEFL iBT texts, the ideational stratum has two distinctive metafunctions: the ideational and logical metafunctions. The incongruent realizations within the stratum from the two perspectives are observed and listed in Table 17. The list contains the distribution of experiential and logical grammatical metaphors in each passage of EFL 1, 2, and 3. The consistent result is the dominance of experiential grammatical metaphors. The ratio shows that EFL 1 has 92.8%, EFL 2 has 95.3%, and EFL 3 has 93.0% of experiential grammatical metaphors. In the data set of EFL 1, Passage 8 shows the highest frequency of logical grammatical metaphors at 20.0%, followed by Passage 4 at 14.3%. This ratio is the highest in the whole data set of the EFL texts. Four Passages do not use any logical grammatical metaphors. EFL 2 has Passage 4 as the highest frequency at 18.8%. The lowest frequency is 0.9% in Passage 11. The range of the frequency of grammatical metaphors varies from 0.9% to 18.8%, with the gap of 17.9%. EFL 3 has the highest frequency in Passage 7 at 11.8%. This ratio is comparatively low if compared with the other two data sets. The lowest is in Passage 2 at 1.3%.

**Table 17. Distribution of Experiential and Logical Grammatical Metaphors in EFL 1, 2, and 3**

	Experiential GM			Logical GM		
	EFL 1	EFL 2	EFL 3	EFL 1	EFL 2	EFL 3
Passage 1	100.0%	98.0%	96.4%	0.0%	2.0%	3.6%
Passage 2	100.0%	81.3%	98.7%	0.0%	18.8%	1.3%
Passage 3	100.0%	90.0%	92.7%	0.0%	10.0%	7.3%
Passage 4	85.7%	82.4%	94.3%	14.3%	17.6%	5.7%
Passage 5	86.5%	87.5%	92.1%	13.5%	12.5%	7.9%
Passage 6	100.0%	83.3%	96.8%	0.0%	16.7%	3.2%
Passage 7	93.6%	93.9%	88.1%	6.4%	6.1%	11.9%
Passage 8	80.0%	98.2%	88.2%	20.0%	1.8%	11.8%
Passage 9	97.5%	93.9%	95.0%	2.5%	6.1%	5.0%
Passage 10	91.3%	98.4%	93.5%	8.7%	1.6%	6.5%
Passage 11		99.1%	93.8%		0.9%	6.3%
Passage 12		97.2%	94.4%		2.8%	5.6%
Total	92.8%	95.3%	93.0%	7.2%	4.7%	7.0%

### 4.3 COMPARISON OF TWO DATA SETS

The final analysis following that of clause complexes and grammatical metaphors was to investigate the compared results obtained in the analysis of each of the data sets. For this analysis, two data sets are illustrated as graphs to observe the differences and similarities.

Figure 21 shows the total frequency of clause complexes in the 4 different language materials: TOEFL iBT, EFL 1, EFL 2, and EFL 3. The ratio of frequency is listed in Figure 21 as 26.7% for TOEFL iBT, 25.8% for EFL 1, 29.0% for EFL 2, and 28.6% for EFL 3. The comparison indicates that EFL 1 has a slightly less frequent use of clause complexes than that of TOEFL iBT. The gap is -0.9%, if investigated on the basis of the frequency in the TOEFL iBT texts. The other two results of EFL 2 and EFL 3 show a higher frequency of clause complexes than TOEFL iBT. EFL 2 has 2.3% higher, and the frequency in EFL 3 is higher at 1.9%. Even though there are gaps among these four data sets, it can be said that these gaps are quite trivial and that these data sets have similarities in the frequency of clause complexes.

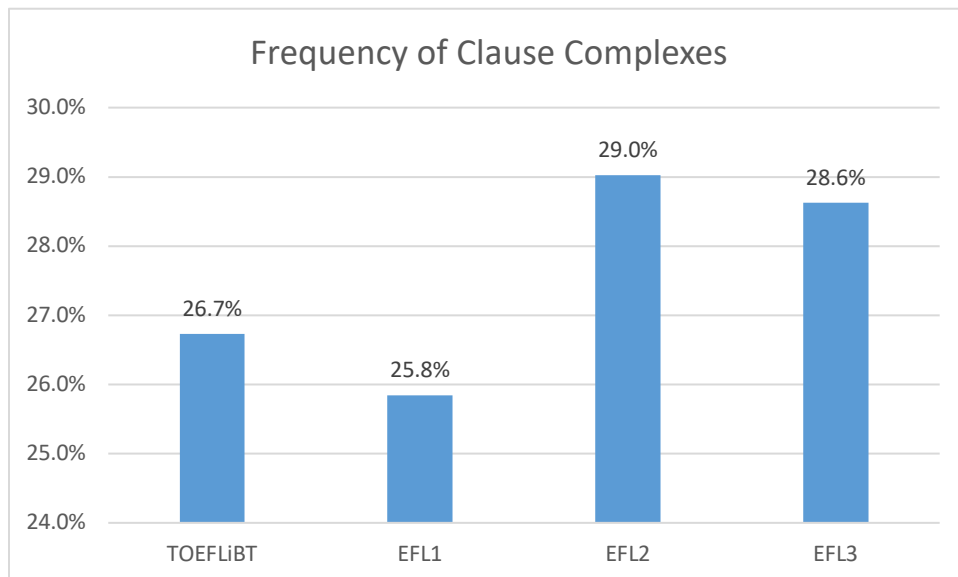


Figure 21. Frequency of Clause Complexes in the Entire Data Sets

In order to provide a further detailed analysis of clause complexes, Figure 22 is presented below. As described, the four data sets show similar patterns; and that is, hypotactic relations consistently surpass paratactic relations. EFL 2 has a balanced distribution of the two relations, but still share the same pattern of the predominance of hypotactic relations. This pattern means that the structural features of logical-relations in these four data sets are quite similar.

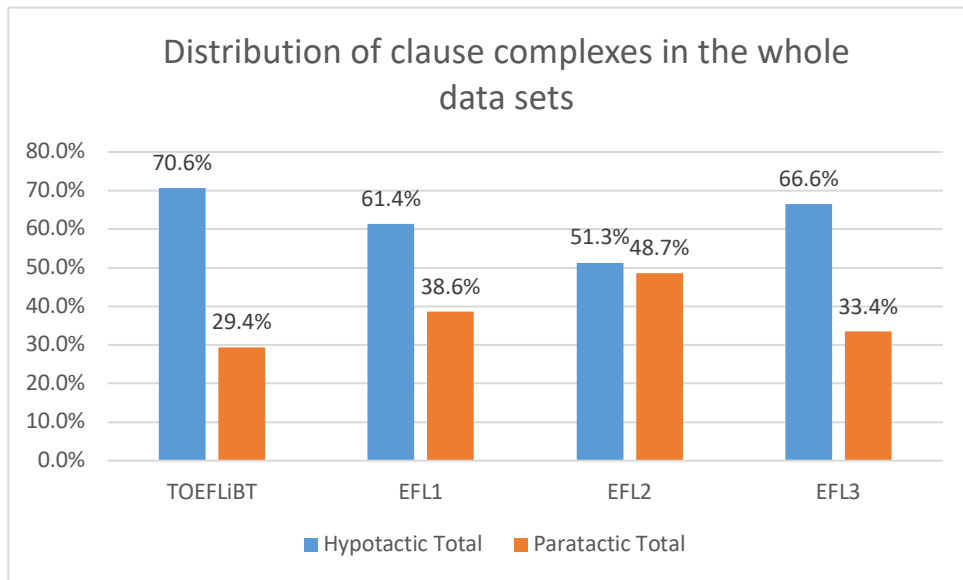


Figure 22. Distribution of Types of Clause Complexes in the Entire Data Sets

Figure 23 provides a comparison chart of the frequency of grammatical metaphors in the whole data sets. It is interesting to point out that the TOEFL iBT text has an extraordinarily high frequency at 18.9%, as compared with the other three data sets. The gap among the TOEFL and EFL texts is prominent. Still further noteworthy is the development of the frequency in EFL 1, 2 and 3, where the frequency increases from 5.9% in EFL 1 to 8.6% in EFL 2, and then 10.4% in EFL 3.

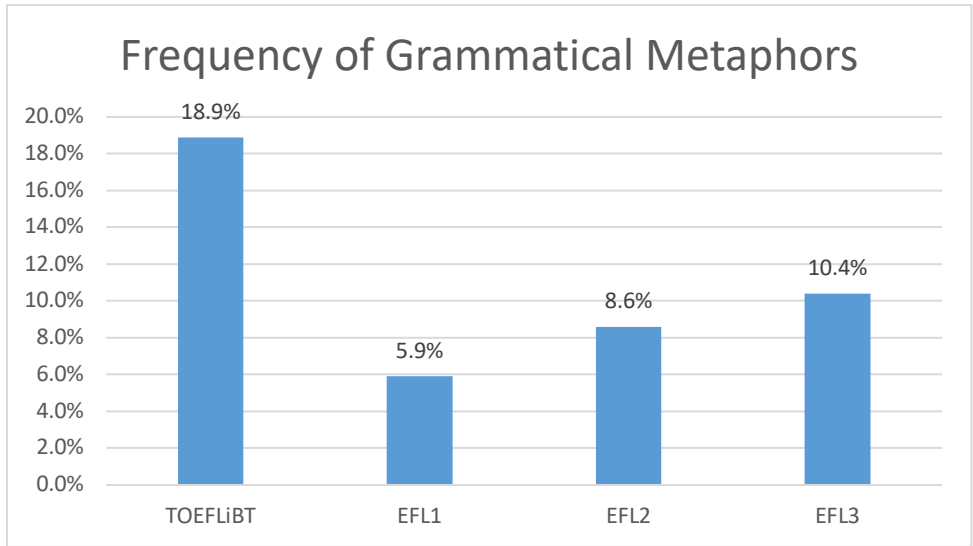


Figure 23. Frequency of Grammatical Metaphors in the Entire Data Sets

Figure 24 provides the distribution of the ideational and interpersonal grammatical metaphors in the Entire data set. The common tendency throughout these data sets is the superiority of the ideational grammatical metaphors. The majority of grammatical metaphors used in both the TOEFL texts and EFL texts are the ideational; and hardly any interpersonal grammatical metaphors are found in the data sets.

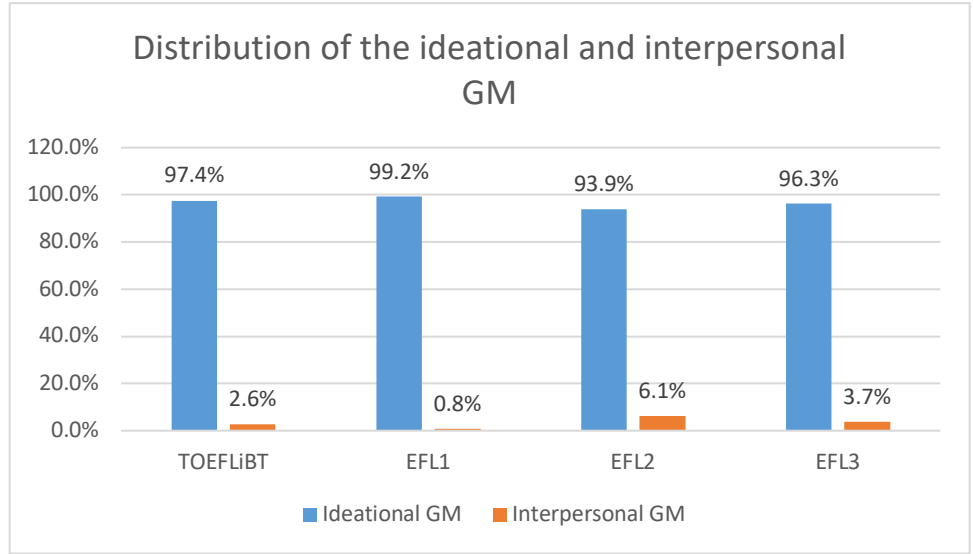


Figure 24. Distribution of the Ideational and Interpersonal Grammatical Metaphors in the Entire Data Sets



## CHAPTER 5

### DISCUSSION AND CONCLUSION

The necessity of communicative language teaching in Japanese Educational settings resulted in the implementation of the TOEFL iBT as one of the assessment scales for students' EFL proficiency. The validity of TOEFL iBT scores as a foreign language proficiency scale to examine the learners' levels of EFL competence has been investigated from multiple perspectives, and the implementation of TOEFL iBT as a EFL learning material as well as an assessment tool has been expanding throughout the world. Japanese EFL high school learners are expected to use EFL textbooks approved by MEXT to achieve the learning objectives that include certain score levels in the TOEFL iBT test. Under these circumstances, this research has attempted to reveal correlations of semantic features between the TOEFL iBT and EFL textbooks in order to explore evidence for lexico-grammatical links between these two text sets.

The current research has approached this research question from two large theoretical frameworks drawn on from the SFL modeling of language. The first step was an investigation of the logical-semantic relations observed in the clause complexes in the data sets. The types of the clause complexes are either hypotactic or the paratactic relations. Each relation contains five different logico-semantic relations: elaboration, extension, enhancement, idea, and locution. The second step involved an examination of the distribution of incongruent realizations referred to as grammatical metaphors. These phenomena were categorized into two types: ideational and interpersonal grammatical metaphors. A further investigation within the ideational grammatical metaphors was also conducted in order to find patterns of the distribution of the experiential and logical grammatical metaphors throughout the data sets. The extracted clause complexes and grammatical metaphors from the two data sets for this research reveal noticeable findings.

As described in Figure 23, the frequency of clause complexes varies from 25.8% to 28.6%. The gap among the TOEFL iBT and EFL textbooks is not quite enormous. The significance of this finding is that there exists a similar level of frequency of clause complexes in each data set. A more detailed investigation into the logical-semantic relations also showed closer similarities of the two data sets in terms of hypotactic and paratactic relations. Figure 24 demonstrates that logical-semantic relations depend highly on hypotactic relations rather than paratactic relations in each data set. The implication from this finding indicates that the correlations of logico-semantic relations between the TOEFL iBT and EFL textbooks are designed well to develop students' language understanding and experiences throughout texts.

The results compared in Figure 23 provide the most prominent findings in this research. The high frequency of grammatical metaphors in the TOEFL iBT at 18.9% shows significant differences between the TOEFL iBT and EFL texts. This high density of grammatical metaphors in the TOEFL iBT texts explains the high level of difficulty of understanding the passages in the TOEFL texts. This difficulty may reflect a direct result of the compactness of meanings within clausal elements that embed dense or hidden meanings that are typically expressed at the level of the clause; and this research has shown the function of one crucial lexico-grammatical mechanism in play whereby this compacting of meaning becomes possible through the reconfiguration of grammatical meanings into lexical ones, the kind of reconfiguration referred to as grammatical metaphors above. Even though the logical-semantic relations share the same features among the data sets, the density of meanings within the TOEFL iBT is much higher when compared with the other data sets. These packed meanings within the TOEFL iBT texts are neither taught at the level of high school, nor acknowledged by educators and students. Another important finding from this research is that the development of grammatical metaphors and their

frequency of use correlate with an increase in the levels of EFL textbooks. The percentages of increase are 5.9% in EFL 1 to 8.6% in EFL 2, and 10.4% in EFL 3. It is this particular pattern of the development of meaning both at the level of grammar and lexical items that allows students using these EFL textbooks to experience the complexity of the target language through the texts; however, their frequency in the EFL texts is not high enough to be at the same level of lexical density as in the TOEFL iBT texts. It is not difficult to imagine that this lack of semantic and lexical density may result in EFL learners who understand each individual lexical item used in textbooks without a concrete grasp of the overall textual meaning.

To conclude, by using the perspectives of SFG, the first clause complex analysis has shown that levels of grammatical density and a variety of logical relationships show similar textual developments. The second part of my analysis, however, has revealed a significant gap among the reading texts in TOEFL iBT and EFL textbooks in Japan, in terms of the density of grammatical metaphors. This finding demonstrates that although these two language materials have similar syntagmatic patterns of development, they differ rather dramatically in terms of the particular patterns of condensed semantic development. This finding provides rather strong evidence to argue that in order to maximize the accomplishment of the initial objectives of the Japanese EFL education as was introduced at the beginning of this thesis, the use of the EFL textbooks aiming to improve TOEFL iBT test scores should be given a serious reconsideration. The learning materials can be a good starting point for beginning to intermediate learners to experience the complexity of meanings of language as embodied in such lexico-grammatical features as grammatical metaphor and lexical density. These findings are also applicable to the language teaching in Japan in general in order for both teachers and students to establish a deeper understanding of the English language. Although there are a number of limitations such as a

necessity for further investigations of some other types of EFL textbooks or deeper qualitative research-based observations in examining other possible types of grammatical metaphors and their EFL-specific contextual functions, the research findings as I have discussed in this thesis make it possible to argue for a renewed examination of the nature of Japanese language education and development of language education system in Japan. In this regard, it may be worthwhile to remind ourselves of what Schleppegrell has to say in regard to the functional and pedagogical connection between language studies and teaching:

*Understanding the linguistic elements that are functional for making the kinds of meanings expected at school is important for effective curricula for student learning.*

Schleppegrell (2004, p. 431)

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## APPENDIX A: LETTER FROM INSTITUTIONAL RESEARCH BOARD



Office of Research Integrity

February 8, 2018


Koshin Fukuyoshi  
1456 4<sup>th</sup> Ave, Apt 301  
Huntington, WV 25701

Dear Koshin:

This letter is in response to the submitted thesis abstract entitled "*Difference of Semantic Density in TOEFLiBT Reading Passage and Japanese English Textbooks (High School)*." After assessing the abstract, it has been deemed not to be human subject research and therefore exempt from oversight of the Marshall University Institutional Review Board (IRB). The Code of Federal Regulations (45CFR46) has set forth the criteria utilized in making this determination. Since the information in this study does not involve human subjects as defined in the above referenced instruction, it is not considered human subject research. If there are any changes to the abstract you provided then you would need to resubmit that information to the Office of Research Integrity for review and a determination.

I appreciate your willingness to submit the abstract for determination. Please feel free to contact the Office of Research Integrity if you have any questions regarding future protocols that may require IRB review.

Sincerely,



Bruce F. Day, ThD, CIP  
Director

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