Compression and Implicitness Through Dependent Phrases in Academic ESL Writing by Filipino Researchers Across Disciplines

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Abstract

Grammatical compression and implicitness have been proven as characteristics of academic writing (Biber & Gray, 2010, 2016), but they are an underexplored area of research particularly in academic ESL (English as a second language) writing. In this study, we explored the dependent phrases that most and least characterize academic ESL writing by cross-analyzing 42 published research articles (RAs) authored by Filipino researchers (FRs) in Curriculum and Instruction, Communication, and Psychology using Biber et al.'s (1999, 2021) framework. Salient findings showed that attributive adjectives, nominal prepositional phrases, and noun premodifiers had the highest frequencies of use, thus most characterizing academic ESL writing across disciplines. In contrast, prepositional phrases as adverbials and appositive noun phrases as noun postmodifiers had the lowest occurrences, hence least characterizing academic ESL

writing. We argue that academic ESL writing regardless of its discipline is highly packed with dense information by the three most common nominal modifiers. Our study has applied implications for teaching academic writing, assessing academic writing, and publishing academic research.

Introduction

The grammar of academic writing has received much attention in English for Academic Purposes (EAP) research over the years. Of the notions about academic writing, grammatical elaboration and explicitness have captured considerable interest. However, past and current researchers have contrasting claims. On the one hand, EAP researchers (e.g., Hughes, 1996; Hyland, 2008; Li & Ge, 2009; Olson, 1977; Wright, 2008) contend that academic writing is elaborated and explicit through embedded adverbial or subordinate clauses, coordinated and complex sentences, and t-units. On the other hand, other EAP researchers (e.g., Biber, 1988, 2006; Biber & Gray, 2010, 2011, 2016; Biber et al., 1999, 2011, 2016, 2021; Gray, 2015) have proven that academic writing is compressed with embedded dependent phrases and inexplicit meaning relations. They argue that academic writing is linguistically complex at the phrasal level, which is an exclusive characteristic of modern academic writing (Biber, 2006; Biber & Gray, 2010, 2011, 2016; Biber et al., 1999, 2011, 2016, 2021; Gray, 2015). Although these researchers have clarified the actual discourse style of academic writing, they concentrated more on academic ENL (English as a native language) writing and not academic ESL (English as a second language) writing. Academic ENL writing involves L1 English users whereas academic ESL writing includes L2 English users. We do not imply that studies on academic ENL writing lack relevance to academic writing in contexts where English is a second/foreign language or is a lingua franca. In fact, advanced academic writing in Englishized contexts (e.g., China, Japan, the Philippines) generally conform to academic writing of English worlds (e.g., USA, UK). However, L2 English users have outnumbered L1 English users across the globe (Crystal, 2008; Jenkins, 2015). This point leads us to argue that academic writing is largely carried out by L2 English academic writers. Backed up by Gray (2015) and Hyland (2008), we also assert that language use differs from one context to another and varies from one discipline to another. These gaps have led us to raise an

important question that is how grammatically compressed and implicit academic ESL writing is.

In this study, we investigate the use of dependent phrases in academic ESL writing by Filipino researchers in education science, humanities, and social science. No study in EAP research has yet focused alone on grammatical compression and implicitness by dependent phrases in academic ESL writing. We aver that research on the characteristic grammatical features of academic writing should be extended by cross-examining them in academic ESL writing, so we may widen and deepen our knowledge about academic writing in the ESL context. Our study could enlighten academic writing teachers to make informed decisions on what dependent phrases to teach and assess. Also, it may inform students on what phrasal features to use. Moreover, it could help research publishers in enhancing their submission guidelines in terms of language use.

Literature Review

Compression and Implicitness Through Dependent Phrases

Dependent phrases are key linguistic resources in academic writing (Biber & Gray, 2016). These phrases are grammatical constituents used as noun pre- and postmodifiers (Biber & Gray, 2016). Today, they have received a significant consideration in EAP research and are considered indices of grammatical complexity (Biber, 1988, 2006; Biber & Clark, 2002; Biber & Gray, 2010, 2011, 2016; Biber et al., 1999, 2011, 2016, 2021; Gray, 2015; Ruan, 2018; Wu et al., 2020). Compression and implicitness are interrelated features of academic writing. Compression refers to expressing paramount information in the least number of words possible, resulting in the implicitness of meaning relation (Biber & Gray, 2016). Implicitness or inexplicitness refers to the lack of overt meanings carried by dependent phrases. Dependent phrases have no constituents that help reveal the exact meaning relation between them and the noun or verb they modify (Biber & Gray, 2010, 2016; Gray, 2015). Recent studies on these phrases have deflated the beliefs of elaboration and explicitness as they found that academic writing is filled with compressed and implicit grammatical features. For example, Biber and Clark (2002) and Biber and Gray (2010, 2016) claim that language use in academic writing has changed to reduced grammatical forms in the sense that it has shifted to

an implicit discourse style (Ruan, 2018). They argue that this style is determined by authors' heavy reliance on phrasal modifiers.

Between nominal and verbal dependent phrases, nominal dependent phrases as pre- and postmodifiers are more frequent in academic writing (Ansarifar et al., 2018; Biber & Gray, 2010, 2016; Biber et al. 1999, 2011, 2021; Halliday & Martin, 1993/1996; Ruan, 2018; Wu et al., 2020; Yin et al., 2021). Biber and Gray (2010, 2016) and Biber et al. (2011) discovered that noun premodifiers succeeded by attributive adjectives and nominal prepositional phrases are the most common dependent phrases in academic writing. In their studies, adverbial prepositional phrases and appositive noun phrases occurred the least. Halliday and Martin (1993/1996) emphasize that these dependent phrases especially nominal phrases are difficult to process because they consist of multiple lexical words with absent grammatical elements between them (Biber & Gray, 2010, 2016). These dependent phrases have bewildering internal meaning relations in the sense that they could modify other premodifiers in the noun phrase instead of the head noun (Ruan, 2018). For instance, in ***public*** school *teachers*, the attributive adjective ***public*** pre-modifies school rather than *teachers*).

While these studies concentrated on academic ENL writing, other studies had focused on academic EFL (English as a foreign language) and ELF (English as a lingua franca) writing, whose results were comparative to the findings of the preceding studies. Ansarifar et al. (2018) found that premodifying nouns, attributive adjectives with premodifying nouns, and nominal prepositional phrases significantly differed in research article abstracts of Persian experienced writers and master's and dissertation abstracts of Persian emerging writers. Ruan (2018) reported that these phrasal structures are recurrent in applied linguistics research article abstracts written by Chinese and L1 English academic writers. Wu et al. (2020) found the prominent use of complex noun phrases in sciences, social sciences, and humanities academic ELF writing. Moreover, Yin et al. (2021) discovered that more dependent phrases comprise research article part-genres authored by Chinese proficient and novice academic writers. Other studies concentrated on academic ESL writing by examining academic essays written by L2 English international students and advanced learners (e.g., Rosmawati, 2019; Yang, 2015). Rosmawati (2019) and Yang (2015) revealed that these essays are characterized by phrasal features resulting in compact language.

Clearly, these academic writing studies have shown that academic texts are syntactically more compressed and semantically less explicit. Biber and Gray (2010, 2016) identified that attributive adjectives (e.g., **different** forms [Communication research article]), nominal prepositional phrases (e.g., the development **of the important competencies** [Curriculum and Instruction research article]), noun premodifiers (e.g., **channel** variables [Communication research article]), and appositive noun phrases (e.g., a participant, **a theology professor** [Psychology research article]) carry very dense information. Another dependent phrase is adverbial prepositional phrases (e.g., participate **in the elections** [Psychology research article]) (Biber & Gray, 2016). Although these are intermediate grammatical forms, they also syntactically function as phrasal constituents (Biber & Gray, 2016). Thus, adverbial prepositional phrases have some degree of compression. These five dependent phrases are the foci of the study.

Of the sub-registers of academic writing, the research article (RA) has received the highest recognition and has been the master of academic texts (Biber & Gray, 2016; Gray, 2015; Swales, 2004). RAs are scholarly papers which disseminate newly but systematically produced knowledge or viewpoint (van Enk & Power, 2017). Studies (e.g., Biber, 1988, 2006; Biber & Clark, 2002; Biber & Gray, 2010, 2011, 2016; Biber et al., 1999, 2011, 2016, 2021; Gray, 2015; Ruan, 2018; Wu et al., 2020) have considered RAs as representative texts of academic ENL, EFL, and ELF writing. Hence, they are a perfect locus for examining dependent phrases in academic ESL writing. Though compressed and implicit dependent phrases were examined in the past studies, further research on these grammatical features may give a more comprehensive account of how academic ESL writers particularly Filipino researchers (FRs) use dependent phrases to construct highly specialized academic RAs across disciplines.

There exists a significant difference in the use of the compressed and implicit grammatical resources in twenty-first century academic writing across disciplines (e.g., Biber & Gray, 2016). Biber and Gray (2016) point out that humanities academic writing employs more attributive adjectives than noun premodifiers and appositive noun phrases; social science academic writing uses premodifying nouns relatively frequently and prefers extremely compressed phrasal features (Biber & Gray, 2016). Nonetheless, none so far has been charted on the characteristic phrasal features of education science academic writing as the past studies

incorporated it either within the register of academic writing (e.g., Biber et al., 1999, 2021) or under education as a general discipline (e.g., Biber & Gray, 2010; Biber et al., 2011); other studies considered education as a sub-discipline of social sciences (e.g., Biber & Gray, 2016). These points have led us to argue that there is a dearth of research focusing on compression and implicitness through the five dependent phrases with emphasis on academic ESL writing by FRs across disciplines. Cross-examining the five phrasal structures in academic ESL writing is even more significant because it has positive implications for academic writing instruction, academic writing assessment, and research journal publication.

Objectives

In this study, we aimed to cross-analyze the five dependent phrases in academic ESL writing by FRs across three disciplines: Curriculum and Instruction (CI) (education science), Communication (COM) (humanities), and Psychology (PSY) (social science). Specifically, we sought to determine the dependent phrases that most and least characterize academic ESL writing.

Research Methodology

Research Design, Data Sources, and Corpus Description

We employed descriptive research design to cross-examine the dependent phrases in academic ESL writing by FRs across the three disciplines. The data sources were 42 randomly selected published RAs in CI (14 RAs), COM (14 RAs), and PSY (14 RAs) (consisting of 195,049 tokens) sampled from Open Access (OA) Philippine research journals. Before the random selection, all RAs published RAs were downloaded and were grouped according to the three disciplines. The number of RAs (14) per discipline was adopted from Hernandez's (2022) study. The 42 RAs were selected using Gray's (2015) adapted criteria: a. participants; b. educational attainment; c. local affiliation; d. textual layout and organization; e. setting; f. subject/topic and journal; g. purpose; h. nature of data/evidence; i. methodology, j. results and discussion; and k. conclusions. We chose OA Philippine research journals so that academic ESL writing across the country could be represented. The rationale behind

choosing the three disciplines is two-fold: first, they are in-demand research disciplines in the Philippines; second they are the Philippine Commission on Higher Education's (2009) prioritized disciplines.

Table 1 shows the description of the corpus of disciplinary RAs in the study.

Table 1

Description of the Corpus of Disciplinary RAs

Years	Discipline	Number of Texts	Tokens
2008-2019	CI	14	62,944
2007-2018	COM	14	64,570
2008-2018	PSY	14	67,535
Total	3	42	195,049

The disciplinary RAs were published in a 10-year period to reflect the compressed and implicit grammatical features of modern academic ESL writing especially by FRs. The OA Philippine research journals are hereby listed:

a. Curriculum and Instruction
Alipato, Asia Pacific Higher Education Research Journal, Asia Pacific Journal of Education, Arts and Sciences, Asia Pacific Journal of Multidisciplinary Research, CNU Journal of Higher Education, Development Education Journal of Multidisciplinary Research, International Journal of Education Research for Higher Learning, JPAIR Multidisciplinary Research, MSEUF Research Studies, The Normal Lights;

b. Communication
Antorcha, Asia Pacific Journal of Multidisciplinary Research, CNU Journal of Higher Education, FEU Communication Journal, International Journal of Education Research for Higher Learning, LPU Laguna Journal of Arts and Sciences, Plaridel, Recoletos Multidisciplinary Research Journal, Southeast Asian Media Studies, SPUQC Research Journal, The Paulinian Compass [The Asia-Pacific Journal on Compassion Studies]

c. Psychology

Alipato, Antorcha, Asia Pacific Journal of Multidisciplinary Research, Asia-Pacific Social Science Review, COGNOSCERE: SPUQC Student Research Journal, JPAIR Multidisciplinary Research, Philippine Journal of Counselling Psychology, Philippine Journal of Psychology, Philippine Social Science Review, Plaridel, Tilamsik, The Normal Lights, WMSU Research Journal

An essential consideration in the selection of the disciplinary RAs is the participants' or writers' nationality and affiliation. To determine whether the disciplinary RAs are of Filipino origin, we examined the authors' surnames and affiliations (Ruan, 2018). Adapting Ruan's (2018) study, we selected surnames which are common in the Philippines and academic institutions which are located only in the Philippines. In the Philippines, it is banal that surnames of Filipinos sound like Spanish and Chinese, but it does not necessarily mean that the authors' nationality is problematic for two important points. First, the Philippines was colonized by Spain for 333 years (Mabayo, 2019). Second, a population of Filipinos is of Chinese descent but the majority of them are born and raised in the Philippines (Senate of the Philippines, 2013). In other words, Spanish and Chinese surnames have been part of Filipino culture. They are common surnames of Filipinos aside from the surnames that sound like native in the Philippines. Though this area of the selection process was not perfect, the researchers were confident that the examined RAs represent FRs as ESL research writers.

A noticeable comparison among the three datasets is their close tokens (i.e., CI RAs [62,944], COM RAs [64,570], and PSY RAs [67,535]), indicating that they are comparable. These disciplinary RAs were compared and/or contrasted as separate datasets.

Data Analysis

We used Biber et al.'s (1999, 2021) framework of five grammatical forms linked to compression and implicitness. The framework has been employed in grammatical studies of academic English (e.g., Biber & Gray, 2010, 2016; Gray, 2015). Table 2 shows the five dependent phrases with corresponding examples, used as the coding scheme.

Table 2

Compressed and Implicit Dependent Phrases

Dependent phrases	Sample dependent phrases
Attributive adjectives	**simple** life, **basic** needs, **local** culture
Nominal prepositional phrases	the car keys **on the table**, this list **of requirements**, turbulence **in lasers and other optical systems** (Biber et al., 2021, p. 629)
Noun premodifiers	**cell** division, **information** literary, **work** hours
Adverbial prepositional phrases	are shown **in Table 3.7**, is shown **in figure 6.24**, not constant **across the annulus** (Biber et al., 2021, p. 1013)
Appositive noun phrases	the mill **(a term introduced by Babbage)**, the valves on the pressure side **(V1 and V2)** (Biber et al., 2021, p. 634)

Each disciplinary RA was coded using corpus application and hand-coding. We utilized LancsBox (Brezina et al., 2021) to locate attributive adjectives, nominal prepositional phrases, noun premodifiers, and adverbial prepositional phrases. Each of which was traced using smart searches (ADJECTIVE for attributive adjectives, NOUN for noun premodifiers, and PREPOSITIONAL PHRASE for nominal and adverbial prepositional phrases) per disciplinary RA. Then, the traced dependent phrases per discipline were extracted in Excel documents. Manual coding (led by the corresponding author) was done as corpus tools are not always reliable in analyzing linguistic features (Egbert et al., 2020). For example, adjectives could function as attributive or predicative, and prepositional phrases could function as nominal or adverbial. Only appositive noun phrases had to be hand-coded alone because they cannot be automatically traced by the corpus tool.

Three expert inter-coders (PhD holders in Applied Linguistics) independently examined all dependent phrases which were initially coded by the corresponding author. Inter-coding sessions yielded twice. In the first session, each inter-coder and the authors separately met and found contradicting judgments. Inconsistent judgements were resolved after further deliberations until they reached common decisions. After a week in the second session, they re-evaluated their judgments until they arrived at final decision, resulting in an inter-coder reliability of 0.96 (almost perfect reliability agreement) calculated through Fleiss Kappa.

Statistical Treatments

Although the total number of words per disciplinary RA is close to each other, we normalized the raw frequency count of each dependent phrase by dividing it to the token of each disciplinary RA. Then, each quotient was multiplied by 1,000, thus making the frequencies of use of dependent phrases directly comparable. This approach was adopted from related corpus-based studies (e.g., Biber & Gray, 2010, 2016; Biber et al., 2016; Gray, 2015). To determine whether certain dependent phrases truly characterize academic ESL writing, one-way ANOVA between groups was used.

Results and Discussion

This section presents the findings and their interpretations. Main findings are compared and/or contrasted with the results of the previous studies.

Results

Dependent Phrases Most Characterizing Academic ESL Writing

The three leading compressed and implicit dependent phrases were attributive adjectives, followed by nominal prepositional phrases and noun premodifiers (Figure 1). Adverbial prepositional phrases and appositive noun phrases ranked last. One-way ANOVA between groups was run to determine whether the three nominal phrases truly characterize the disciplinary RAs and whether there was a significant difference between and among the five dependent phrases. Results revealed that the five dependent phrases were significantly different at the $p<.05$ level [F (4,10)] = 83.78, p = <.0] (Table 3). This result hints that significant difference exists on the use of the dependent phrases in disciplinary RAs.
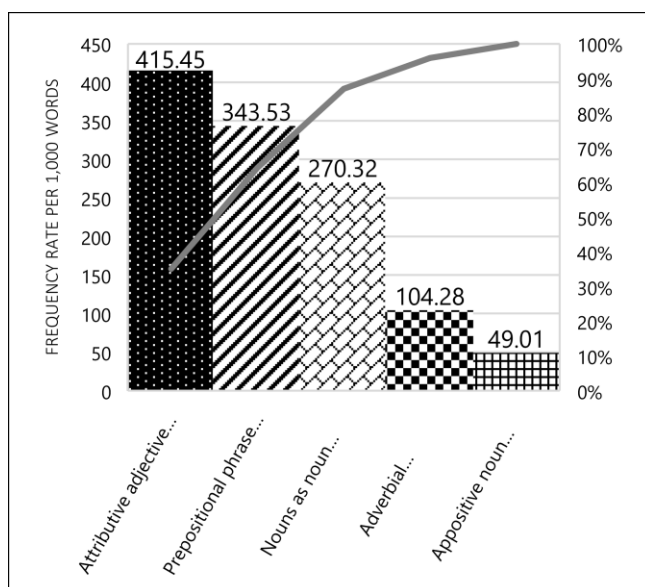
Figure 1

Ranking of Dependent Phrases

Table 3

ANOVA Result

| Source	Degrees of Freedom	Sum of Squares	Mean Square	F-stat	P-value
Between Groups	4	32418.96	8104.74	83.78	0
Within Groups	10	967.35	96.73		
Total	14	33386.31			

From the results above, attributive adjectives, nominal prepositional phrases, and noun premodifiers display a significant difference from adverbial prepositional phrases and appositive noun phrases in terms of frequencies of use. These findings strongly show that the three compressed and implicit nominal phrases characterize academic ESL writing by FRs.

Table 4

Post-hoc Tukey HSD Test

Dependent Phrases	Number of Disciplines	Mean	Standard Deviation	Standard Error
Adverbial Prepositional Phrases	3	36.76	5.74	3.1006
Attributive Adjectives	3	138.48	5.10	2.9463
Noun Premodifiers	3	90.11	17.57	10.1441
Nominal Prepositional Phrases	3	114.51	10.91	6.2977
Appositive Noun Phrases	3	16.34	1.05	0.6065

Table 4 shows that Post-hoc Tukey HSD test yielded that the mean scores between the dependent phrases were significantly different: adverbial prepositional phrases (M = 36.76, SD = 5.74) and attributive adjectives (M = 138.48, SD = 5.10); adverbial prepositional phrases (M = 36.76, SD = 5.74) and noun premodifiers (M = 90.11, SD = 17.57); adverbial prepositional phrases (M = 36.76, SD = 5.74) and nominal prepositional phrases (M = 114.51, SD = 10.91); attributive adjectives (M = 138.48, SD = 5.10) and noun premodifiers (M = 90.11, SD = 17.57); attributive adjectives (M = 138.48, SD = 5.10) and appositive noun phrases (M = 16.34, SD = 1.05); noun premodifiers (M = 90.11, SD = 17.57) and appositive noun phrases (M = 16.34, SD = 1.05); and nominal prepositional phrases (M = 114.51, SD = 10.91) and appositive noun phrases (M = 16.34, SD = 1.05).

Figure 2

Dependent Phrases
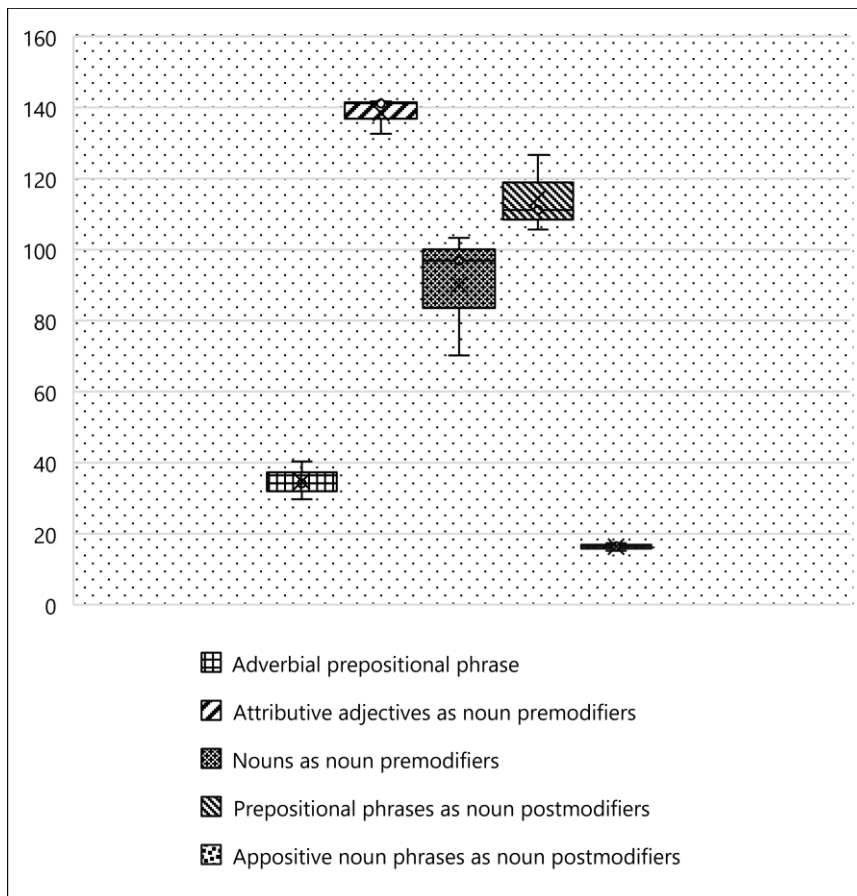
As shown in Figure 2, attributive adjectives, nominal prepositional phrases, and noun premodifiers are plotted in the upper portion farther than adverbial prepositional phrases and appositive noun phrases. Such position further indicates that the three dependent phrases most characterize the disciplinary RAs. Thus, we claim that academic ESL writing heavily relies on the leading nominal phrases.
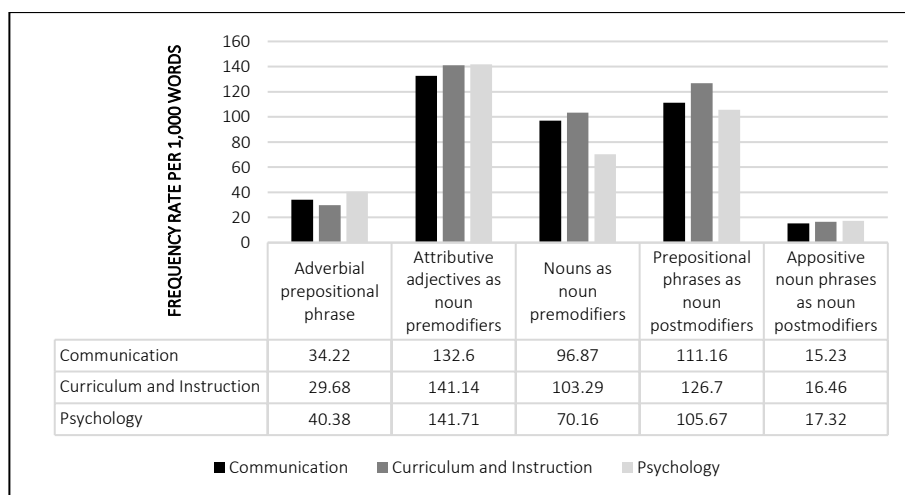
Figure 3

Distributions of Dependent Phrases

	Adverbial prepositional phrase	Attributive adjectives as noun premodifiers	Nouns as noun premodifiers	Prepositional phrases as noun postmodifiers	Appositive noun phrases as noun postmodifiers
Communication	34.22	132.6	96.87	111.16	15.23
Curriculum and Instruction	29.68	141.14	103.29	126.7	16.46
Psychology	40.38	141.71	70.16	105.67	17.32

■ Communication   ■ Curriculum and Instruction   ■ Psychology

Figure 3 shows the frequency distributions of the five dependent phrases in RAs across disciplines. The leading of attributive adjectives, nominal prepositional phrases, and noun premodifiers in disciplinary RAs denotes that FRs employ these dependent phrases more than other dependent phrases. Thus, academic ESL writing by FRs promotes implicit meaning relations (Biber & Gray, 2010, 2016; Gray, 2015). In our data analyses, we found that this implicit meaning is observable in all dependent phrases (except in adverbial prepositional phrases), as discussed in the following sections.

Attributive Adjectives. As the most frequent dependent phrases across disciplinary RAs, attributive adjectives were almost equally frequent in PSY RAs (141.71) and CI RAs (141.14) but relatively lower in COM RAs (132.6). The lack of grammatical elements which link attributive adjectives and the head nouns makes them grammatically compressed and implicit (Biber & Gray, 2010, 2016; Ruan, 2018). Meaning relations in compressed and implicit dependent phrases could be revealed by their alternative elaborated and explicit dependent clauses (Biber & Gray, 2010, 2016). For the following attributive adjectives from the three disciplinary RAs, finite relative clauses serve as their alternatives (italicized).

(1) strong emotional ties [PSY RA] →

strong	emotional	ties
Descriptor: Miscellaneous Descriptive	Descriptor: Evaluative/Emotive	Abstract/Process Noun

ties *that are strong and emotional*

(2) greater personal accomplishment [PSY RA] →

greater	personal	accomplishment
Descriptor: Size/Quantity/Extent	Classifier: Topical	Abstract/Process Noun

accomplishment *that is greater and personal*

(3) different significant experiences [CI RA] →

different	significant	experiences
Classifier: Relational/Classificational/ Restrictive	Descriptor: Evaluative/Emotive	Abstract/Process Noun

experiences that are different and significant

(4) rapid technological change [CI RA] →

rapid	technological	change
Descriptor: Miscellaneous Descriptive	Classifier: Topical	Abstract/Process Noun

change *that is rapid and technological*

(5) distracting conventional commercial [COM RA] →

distracting	conventional	commercial
Descriptor: Evaluative/Emotive	Classifier: Relational/Classificational / Restrictive	Abstract/Process Noun

commercial *that is distracting and conventional*

(6) digital electronic editions [COM RA] →

digital	electronic	editions
Classifier: Relational/Classificational/ Restrictive	Classifier: Topical	Abstract/Process Noun

editions *that are many and different*

With relative *that* clauses, overt meaning relations between attributive adjectives and the head nouns are made explicit. For instance, samples 1, 3, and 5 have 'ties *that are strong and emotional*', 'experiences *that are different and significant*', and 'commercial *that is distracting and conventional*' as their corresponding alternatives. Disciplinary RAs employ descriptors and classifiers as two semantic groupings of attributive adjectives, co-occurring in sequence before the head nouns. Descriptors specify "color (e.g., green, yellow), size/quantity/extent (e.g., big, deep, heavy), time (e.g., annual, daily), emotion/evaluation (e.g., beautiful, best),

and miscellaneous descriptions (e.g., appropriate, cold)" and are "typically gradable" (Biber et al., 2021, pp. 506-507). In contrast, classifiers "delimit or restrict a noun's referent, by placing it in a category in relation to other referents", are "typically non-gradable", and can be "relational/classificational/restrictive (e.g., average, different), affiliative (e.g., Christian, Philippine), or topical/other" (e.g., environmental, human) (Biber et al., 2021, pp. 506-507). For example, samples 2 to 5 above contain descriptors and classifiers to premodify the head nouns. Attributive adjectives under one semantic class can also co-exist before the head nouns, as in samples 1 and 6. As can be seen in the six examples, FRs use different sub-classes of descriptors and classifiers. However, the descriptions assigned by the above attributive adjectives to the head nouns would not be as clear as they could be unless the entire attributive adjectives as noun premodifiers are paraphrased into elaborated and explicit grammatical forms.

Nominal Prepositional Phrases. Nominal prepositional phases were most frequent in CI RAs (126.7). They occurred closely frequently in COM RAs (111.16) and PSY RAs (105.67). These phrases have less explicit meaning relations compared to their equivalent clausal features (Biber & Gray, 2010, 2016; Ruan, 2018). Consider the following *in-* and *for*-phrases across the disciplinary RAs.

> *In*-phrases
> (7) assessment in each competency [CI RA] → each competency
>   *that is being assessed*
> (8) principle in discourse analysis [COM RA] → principle *that is*
>   *used in analyzing discourse*
> (9) women in correctional facilities [PSY RA] → correctional
>   facilities *that are intended for women*

> *For*-phrases
> (10) struggle for the Senior High School facilitators [CI RA] →
>   struggle *that the Senior High School facilitators face*
> (11) guidelines for native advertising [COM RA] →
>   guidelines *that native advertising companies follow*
> (12) room for long term achievement goals [PSY RA] →
>   room *that leads to long term achievement goals*

These nominal prepositional phrases could be rewritten as finite dependent clauses (italicized). For example, 7 and 10 have equivalent relative *that* clause and noun-controlled complement *that* clause–'each competency *that is being assessed*' and 'struggle *that the Senior High School facilitators face*', respectively. However, these prepositional phrases do not always have alternative elaborated and explicit grammatical features. For instance, *of*-phrases are longer equivalent structures of *s'* genitives and noun premodifiers (Biber & Gray, 2016). This is illustrated in the following *of*-phrases with alternative *s'* genitives and noun premodifier (underlined).

> *Of*-phrases
> (13) knowledge and understanding of the learners [CI RA] →
>   learners' knowledge and understanding
> (14) particular experiences of the speech therapists [COM RA] →
>   the speech therapists' particular experiences
> (15) four types of goal orientation [PSY RA] →
>   four goal orientation types

Samples 13 and 14 both have alternative *s'* genitives (i.e., 'learners' knowledge and understanding' and 'the speech therapists' particular experiences'). Sample 15 has alternative noun premodifiers 'four goal orientation types' with a string of multiple nouns (four, goal, and orientation), premodifying the head noun 'types'. Given that nominal prepositional phrases could have elaborated and explicit and compressed and implicit alternatives, prepositional phrases sustain a balance between compression and explicitness in academic texts (Biber & Gray, 2010, 2016; Wu et al., 2020). This balance is further illustrated in prepositional phrases with *–ing* clauses. Nominal prepositional phrases with *–ing* clauses convey a process in a nominal form and syntactically function as prepositional objects (Biber & Gray, 2016). The *in*- and *for*-phrases with *–ing* clauses (underlined) below could have noun-controlled complement *when* clause (as in 15 to 17), relative *that* clause (as in 18 and 20), and noun-controlled complement *that* clause (as in 19) alternatives (all italicized).

> *In*-phrases
> (15) high value in importing information [CI RA] →Instructional
>   materials have high value *when teachers import information.*

(16) primary motivations <u>in using Facebook</u> [COM RA] → Students have primary motivations *when they use Facebook.*

(17) efforts <u>in achieving goals</u> [PSY RA] → One exerts efforts *when he/she (tries to) achieve goals.*

For-phrases

(18) tool <u>for teaching Grade 7 science</u> [CI RA] → tool *that is used for Grade 7 science teaching*

(19) reasons <u>for using the media</u> [COM RA] → reasons *that students have when they use the media*

(20) a precondition <u>for gaining knowledge</u> [PSY RA] → a precondition *that is instrumental to gain knowledge*

These prepositional phrases with *–ing* clauses show how compressed nominal prepositional phrases are compared to attributive adjectives, noun premodifiers, and appositive noun phrases. Unlike nominal prepositional phrases, other nominal phrases exhibit denser packaging of information as they lack grammatical elements which help uncover the meaning or logical relations between them and the head nouns (Biber & Gray, 2010, 2016; Gray, 2015). An instance is the noun premodifiers which make academic ESL writing more informationally dense.

Noun Premodifiers. Noun premodifiers were most dominant in CI RAs (103.29), succeeded by COM RAs (96.87). They were least frequent in PSY RAs (70.16). These nominal modifiers convey a variety of confusing logical relations (Biber et al., 1999, 2021). The following noun premodifiers (N1) from disciplinary RAs illustrate problematic meaning relations with their head nouns (N2):

<div style="text-align:center">

N1   N2   N2   N1

(21) education system [CI RA] → *system for education*
(N2 is for the purpose of N1)

N1   N2   N2   N1

(22) literacy skill [COM RA] → *skill that is about one's literacy*
(N2 is about N1)

N1   N2   N2   N1

</div>

(23) assessment tools [PSY RA] → *tools for the assessment of learning*

(N2 is for the purpose of N1)

These noun premodifiers are made explicit by *for*-phrases (as in 21 and 23) and relative *that* clause (as in 22). The lack of grammatical elements which link the premodifying noun and the head noun makes complicated and different meaning relations especially when a noun premodifier and another noun premodifier co-occur or when a noun premodifier and an attributive adjective co-exist to premodify the head noun (Ruan, 2018). This is shown in the following nouns and attributive adjectives as noun premodifiers, bracketed to separate them from their head nouns and marked with curved down arrows to point which among them premodifies the head nouns.
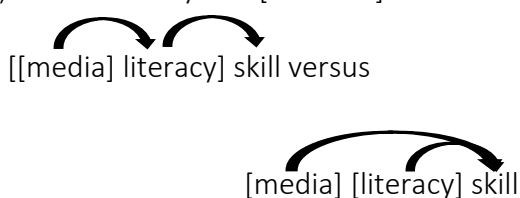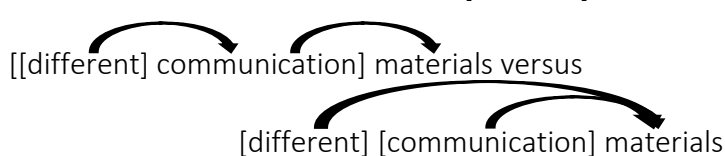
(24) university education system [CI RA] →

[[university] education] system versus

[university] [education] system
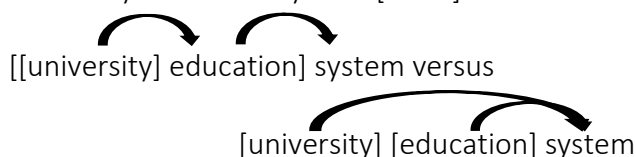
(25) unsustainable community practice [CI RA] →

[[unsustainable] community] practice versus

[unsustainable] [community] practice

(26) media literacy skill [COM RA] →

[[media] literacy] skill versus

[media] [literacy] skill

(27) different communication materials [COM RA] →

[[different] communication] materials versus

[different] [communication] materials

(28) pre-intervention assessment tools [PSY RA] →

[[pre-intervention] assessment] tools versus

[pre-intervention] [assessment] tools
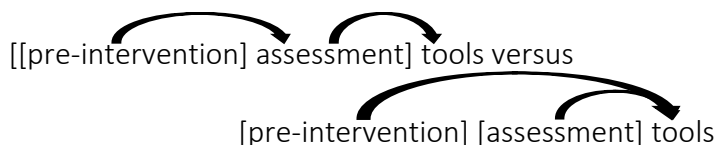
(29) final elections results [PSY RA] →

[[final] elections] results] versus

[final] [elections] results
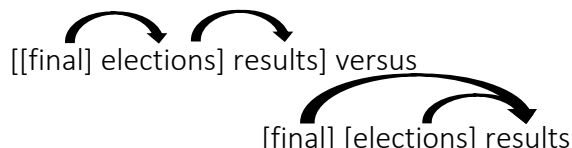
For instance, sample 24 poses two different meaning associations. First, 'university' could be interpreted as a noun, premodifying 'education' while 'education' is another noun, premodifying 'system'; second, 'university' and 'education' could be perceived as separate nouns, premodifying 'system'. Similar relations could be analyzed in 27 and 29. In 27, 'different' premodifies 'communication' while 'communication' premodifies 'materials', or each of these adjectives and nouns independently premodifies 'materials'. In 29, 'final' premodifies 'elections' while 'elections' premodifies 'results', or each of these describes 'materials'. In the following section, the remaining two dependent phrases are presented.

Dependent Phrases Least Characterizing Academic ESL Writing

Since adverbial prepositional phrases and appositive noun phrases had lower frequencies of use, they least characterize academic ESL writing. Their occurrences were relatively two times lower than the frequencies of attributive adjectives, nominal prepositional phrases, and noun premodifiers.

Adverbial Prepositional Phrases. Adverbial prepositional phrases had the highest frequencies in PSY RAs (40.38), followed by COM RAs (34.22). However, they had the lowest occurrences in CI RAs (29.68). In terms of adverbial prepositional phrases, COM RAs were succeeded PSY RAs which come from behavioral sciences. Our analyses revealed that adverbial

prepositional phrases normally contain attributive adjectives (boldfaced) and nouns (italicized) as noun premodifiers, as shown in the following:

(30) <u>resulted</u> in **better** *school* performance [PSY RA]
(31) <u>significant</u> in **romantic** relationships [PSY RA]

(32) <u>marketed</u> in **provocative** *print* ads [COM RA]
(33) <u>available</u> in **social** media [COM RA]

(34) <u>participate</u> in **electoral** process [CI RA]
(35) <u>fair</u> in *school* performance [CI RA]

(36) <u>pay</u> for **wrong** decisions [PSY RA]
(37) <u>appropriate</u> for *Filipino* students [PSY RA]

(38) <u>designed</u> for *course* enrichment and *communication* space
[COM RA]
(39) <u>available</u> for **constant** reference [COM RA]

(40) <u>aimed</u> for *mastery* development [CI RA]
(41) <u>necessary</u> for **effective** participation [CI RA]

The existence of attributive adjectives and noun premodifiers in these adverbial prepositional phrases signals that the latter commonly involve nominal phrases. Nominal premodifiers' frequent occurrences could be associated to the low occurrences of adverbial prepositional phrases. Hence, academic ESL writing in the three disciplines could be perceived to have full of nominal phrases rather than other phrase types (e.g., verbal phrases or adjectival phrases). The more frequent use of adverbial prepositional phrases over appositive noun phrases could be linked to the former's ability to specify a variety of meanings such as result, place, recipient, and others (Biber et al., 1999, 2021). For example, sample 30 communicates result whereas samples 33 and 34 convey places. Moreover, 37, 39, and 40 express receivers.

Appositive Noun Phrases. Appositive noun phrases were the very least occurring compressed and implicit dependent phrases across disciplinary RAs. Their frequencies were almost equal in PSY RAs (17.32), CI RAs

(16.46), and COM RAs (15.23). Due to their low frequencies, it appears that they are not as important as attributive adjectives, noun premodifiers, and nominal prepositional phrases. However, appositive phrases also carry dense packaging of information like the three nominal modifiers (Biber & Gray, 2010, 2016). We found that these phrases take different structural patterns, as in:

(42) **paranoid** schizophrenia, a **psychic** disorder [PSY RA]
(43) predictor (procrastination) [PSY RA]

(44) **interactive** *learning* module (ILM) [CI RA]
(45) the topic Diversity of Materials [CI RA]

(46) John Grierson, the founder of the **National** *Film* Board [COM RA]
(47) **popular** video of Psy "The *Gangnam* Style" [COM RA]

Appositive noun phrases are two co-referential noun phrases (Biber & Gray, 2010, 2016). The most frequent pattern of appositive noun phrases in academic writing is NP + (NP) (Biber & Gray, 2016) like sample 43. We also found the following patterns: NP + , + NP as in 42 and 46; NP + (ACRONYM) as in 44; and NP + NP as in 45 and 47. Like adverbial prepositional phrases, the appositive phrases above contain attributive adjectives (boldfaced), noun premodifiers (italicized), and nominal prepositional phrases (underlined). Appositive phrases could also involve a colon which normally connects specialized information (Biber & Gray, 2010), as in the following:

(48) Participant narratives revealed thematic lines along which further investigation and inquiry can be made: the interconnected elements of the *pagdududa* story and juxtaposition of context and language of description. [PSY RA]

(49) It is grouped according to the lesson coverage represented by different colors: green for Module 1, blue for Module 2), red for Module 3, orange for Module 4, and violet for Module 5. [CI RA]

(50) Film viewing had two parts: First is for familiarization.

Second, the film was re-played as part of the discussion on intonation. [COM RA]

Like the three most common nominal modifiers, no overt grammatical devices are used to express the meaning associations in appositive noun phrases (Biber & Gray, 2010, 2016). As can be seen, the appositive phrases above lack grammatical constituents, but only a colon assigns different meaning relations between the two noun phrases. The colon was found to perform different functions: to link two distant noun phrases (as in 48), as an alternative to a comma and simultaneously as a signal to list items in phrasal form (as in 49), and as an indicator to list parts of a whole in sentence form (as in 50).

Discussion

Our study explored compression and implicitness through the five dependent phrases in academic ESL writing by FRs. This section discusses important points for discussion.

FRs used more attributive adjectives, nominal prepositional phrases, and noun premodifiers to convey information in compact grammatical structures. Generally, this finding corroborates the past studies which also reported the importance of these dependent phrases in academic writing (Ansarifar et al., 2018; Biber & Gray, 2010, 2016; Gray, 2015; Rosmawati, 2019; Ruan, 2018; Wu et al., 2020; Yang, 2015; Yin et al., 2021). More specifically, the dominance of attributive adjectives is similar to Ansarifar et al.'s (2018) and Ruan's (2018) findings. Such congruency could be associated to the fact that our study and theirs analyzed research texts written by L2 English academic writers. FRs' preference for attributive adjectives over the other two frequently used dependent phrases is probably due to adjectives' ability to assign specific description or limited meaning to the head noun (Wu et al., 2020), despite their complicated logical relations especially when they co-occur with noun premodifiers.

Although the leading of the three nominal phrases substantiates the claim of previous studies, our results and past studies' findings also have discrepancies. The dominance of attributive adjectives over nominal prepositional phrases and noun premodifiers is divergent to Biber and Gray's (2010, 2016) result. This inconsistency could be attributed to the number of disciplines and users of English considered in our study and in

theirs. First, we examined RAs in COM, CI, and PSY whereas Biber and Gray (2010, 2016) explored RAs in a wide array of disciplines. Second, we considered FRs as academic ESL writers while Biber and Gray (2010, 2016) involved academic ENL writers. In addition, the dominance of attributive adjectives over noun premodifiers is disparate to Wu et al.'s (2020) finding. This incongruence could be linked to the examined corpora. We cross-analyzed purely disciplinary RAs written by FRs while Wu et al. (2020) considered SciELF (one of the corpora in Written English as a Lingua Franca in Academic settings corpus) composed of unedited RAs authored by 10 different ELF writer groups and RAs from COCA (Corpus of Contemporary American English). The different data sources could have influenced the results of this research and Wu et al.'s (2020) study.

The frequencies of use of the three characteristic nominal phrases differ from one another. Attributive adjectives were more frequent in CI and PSY RAs, suggesting that they are generic in social and education science academic ESL writing. Although attributive adjectives are very common in humanities academic writing (Biber & Gray, 2016), they could be much more frequently employed in the two social and education science disciplines as we found in this study. Nominal prepositional phrases were more dominant in CI RAs than in COM and PSY RAs, indicating that they are especially common in education science academic ESL writing. Noun premodifiers occurred more in CI and COM RAs than in PSY RAs, signposting that they are particularly frequent in education science and humanities academic ESL writing. With the highest frequencies of these dependent phrases, almost all sentences in the disciplinary RAs probably contain these grammatical devices. For example, these sentences have repeated attributive adjectives (boldfaced), embedded nominal prepositional phrases (underlined), and nominal premodifiers (italicized).

(51) With the **fast-paced** advancement of technology and the **changing** *value* system in the Philippines, teenagers have a **hard** time dealing with the **more practical** things in life such as studying, *family* and *peer* relationships, and the like. [PSY RA]

(52) The *Hotel* and *Restaurant Management* Curriculum involves the study on **professional** application of **managerial** and **practical** knowledge and **other** functions such as *business*
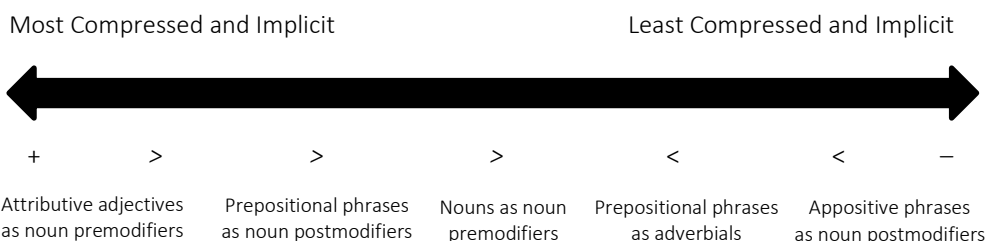
strategies, *hotel* and *food service* operations, *hospitality* research, **culinary** arts, and *revenue* management. [CI RA]

(53) Indeed, **many** predictors <u>of enjoyment</u>, <u>like happiness</u>, **parasocial** relationships, **social** comparison, self-awareness, **negative** outcome, and **dramatic** challenge, varied as much among types <u>of *reality* programs</u> as between reality and fiction. [COM RA]

These recurrent nominal modifiers disprove the long-time notions of elaboration and explicitness in academic ESL writing because they signify compression and implicitness (Biber & Gray, 2010, 2016; Biber et al., 1999, 2021). Also, they denote informational discourse (Biber, 1988, Biber & Gray, 2010, 2016). Moreover, they contain multiple phrasal embeddings, as in *study [on professional application [of managerial and practical knowledge and other functions [such as business strategies, hotel and food service operations, hospitality research, culinary arts, and revenue management]]]* [CI RA]. Hence, academic ESL writing by FRs reflects the written discourse style of academic research writing. Biber and Clark (2002) and Biber and Gray (2016) note that the grammatical features of academic writing could be put in a continuum where the three nominal modifiers are in the left end of it. However, they seemed to have overlooked that the dependent phrases could also be ranked in a cline of compressed and implicit grammatical features. Thus, we attempted to generate a cline of the five dependent phrases depicting the compressed and implicit features which most and least characterize academic ESL writing (Figure 4).

Figure 4

A Cline of Dependent Phrases in Academic ESL Writing

Most Compressed and Implicit   Least Compressed and Implicit

+	>	>	>	<	<	−
Attributive adjectives as noun premodifiers	Prepositional phrases as noun postmodifiers	Nouns as noun premodifiers	Prepositional phrases as adverbials	Appositive phrases as noun postmodifiers		

Unlike Biber and Clark's (2002) and Biber and Gray's (2016) continuum, we have added in our cline the plus (+) sign on the left end, representing the compressed and implicit dependent phrases (attributive adjectives as noun premodifiers) which most characterize academic ESL writing. Also, we have added the minus (−) sign on the right end, depicting the compressed and implicit dependent phrases (appositive noun phrases as noun postmodifiers) which least characterize academic ESL writing. As can be seen on the cline, the greater than symbol (>) signifies the dependent phrases, occurring more frequently while the less than symbol (<) means the dependent phrases, occurring less frequently. That is, attributive adjectives, nominal prepositional phrases, and noun premodifiers marked with > occur more frequently while adverbial prepositional phrases and appositive noun phrases with < occur less frequently in academic ESL writing. The three leading grammatical features signify that the disciplinary RAs written by FRs are implicit or inexplicit texts. In other words, they frequently communicate covert or ambiguous information.

Although adverbial prepositional phrases and appositive noun phrases had lesser frequencies of use, they also deserve elucidations. The dominance of adverbial prepositional phrases in PSY RAs contradicts Biber and Gray's (2016) claim that they are more common in humanities academic texts, such as COM RAs in this study. Nevertheless, the low frequencies of adverbial prepositional phrases could be explained by two factors. First, academic texts like RAs contain more nominal phrases and nominalizations and employ the nominal style of written discourse (Halliday & Martin, 1993/1996; Fang et al., 2006). Hence, it is nearly impossible that adverbial prepositional phrases would have greater occurrences in academic ESL writing because they usually postmodify verbs. Second, adverbial prepositional phrases have recently declined in use and have been replaced with noun premodifiers in the last century (Biber & Gray, 2016). Thus, it could be said that adverbial prepositional phrases are not universal grammatical devices in modern academic ESL writing. The lowest occurrences of appositive noun phrases in disciplinary RAs could be explained by the fact that they are so common in academic writing in the hard sciences (i.e., biology, ecology, medicine, and physiology) (Biber & Gray, 2016). Since we concentrated on CI, COM, and PSY, it is unlikely that appositive phrases would be prevalent in the disciplinary RAs because the three disciplines belong to the soft sciences.

Conclusions and Implications

With the impetus that compression and implicitness through dependent phrases are hardly explored in academic ESL writing and EAP research, we cross-analyzed dependent phrases in RAs authored by FRs in CI, COM, and SOC. Main results revealed that attributive adjectives, nominal prepositional phrases, and noun premodifiers most characterize, whereas adverbial prepositional phrases and appositive noun phrases least characterize academic ESL writing. Therefore, we draw the following conclusions:

1. The three compressed and implicit dependent phrases are universal in academic ESL writing regardless of disciplines;
2. With these dependent phrases, FRs in the three disciplines maintain economy of expression in writing academic research; and
3. Not all dependent phrases are dominant compressed and implicit grammatical features of academic writing particularly in the ESL context.

We claim that attributive adjectives, nominal prepositional phrases, and noun premodifiers are the compressed and implicit grammatical features of academic ESL writing by FRs. Our study has implications for academic ESL writing instruction and assessment, and academic research journals. On instruction, the three compressed nominal phrases should be allotted extensive writing practice. Teachers handling (advanced) academic writing courses in the graduate and undergraduate levels need to provide more consciousness-raising exercises and writing activities on the structures, meaning relations, and functions of phrasal modification. Exemplars of the three nominal modifiers should also be culled from research texts written by academic ESL/EFL/ELF research writers. By so doing, students may improve their academic writing skills and academic ESL classes could be more contextualized. On assessment, teachers and researchers ought to develop a rubric for academic ESL research writing. One of the criteria of such rubric should be the use of the three nominal phrases as indices of writing quality. Hence, phrasal modification could be emphasized as a significant writing indicator which assessors should examine, and students should employ. On research journals, publishers should specify the use of the three nominal phrases in

their submission guidelines. Thus, authors could be guided of the grammatical devices and discourse style to employ upon writing their RAs. In addition, they could submit publishable papers and be successful research writers.

Although this paper has contributed to EAP research, it offers directions for future studies. Researchers aiming to do a similar study may consider examining the dependent phrases in a one-million-token corpus of disciplinary RAs so that findings could lead to more robust generalizations. More soft disciplines (applied linguistics, anthropology) and hard disciplines (medicine, physics) should be considered; thus, the use of dependent phrases in academic ESL writing in these disciplines could be sharply compared and starkly contrasted. Cross-examining phrasal modification in disciplinary RAs authored by academic ESL writers and those written by academic EFL/ELF writers may also uncover the comparisons and/or contrasts of academic writing from different contexts. Other researchers may add other phrasal structures (e.g., adverbs as initial, medial, and final modifiers) into their analyses; hence, more studies of dependent phrases in academic ESL writing can be charted. Comparing compressed and implicit grammatical features against elaborated and explicit grammatical features (finite and non-finite dependent clauses) in disciplinary RAs may equally give profitable results and richer interpretations. Moreover, future studies may concentrate on other perspectives: whether academic writers' L1 has an influence in writing their RAs; whether processes in teaching academic ESL writing differ from those in teaching academic writing in English as an international language; and whether academic ESL writing itself varies from academic writing in inner and expanding English circles.

These research trajectories if fulfilled may abundantly inform academic writing in contexts where English functions as a second/foreign language or as a lingua franca. Also, they could result in more positive implications not only for academic writing instruction and assessment and academic research journals but also for academic textbook writing and research writing curricula. As L2 English users have exceeded L1 English users around the world (Crystal, 2008; Jenkins, 2015) and as dependent phrases in academic ESL writing have received limited exploration in EAP research, further studies about compression and implicitness through dependent phrases need to be done outside the viewpoint of academic ENL writing.

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