



Syntactic Complexity Analysis of Applied linguistics and Literature Research Article Abstracts: A Cross-disciplinary Study

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Abstract: Aim: Earlier research still lacks focused investigation into syntactic complexity patterns in research article abstracts. In response, this study explores whether disciplinary variation impacts the employment of syntactic complexity patterns in drafting abstracts of applied linguistics and literature research articles, an issue that has been rarely addressed.

Methodology: To this end, the present study adopts 14 patterns of phrasal and clausal complexity, as identified by the online L2 Syntactic Complexity Analyzer proposed by Lu (2011), which are divided into four aspects: production span, amount of subordination, amount of coordination, and phrasal complexity. **Findings:** The findings of this study showed no statistically significant differences in the use of those patterns between the two groups of abstracts. **Conclusion:** Consequently, abstracts are deemed an important indicator for investigation guided by both reading and writing motivations. **Recommendation:** The study calls for further efforts in the traditional but ongoing debate over whether academic writing in general is characterized by clausal complexity, phrasal complexity, or both.

Keywords: SC, Abstracts, Phrasal Complexity, Clausal Complexity, Academic Writing.

تحليل البناء النحووي لمُلخصات مقالات بحثية في اللغويات التطبيقية والأدب: دراسة متعددة التخصصات

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الملخص: الهدف: لاتزال الدراسات السابقة تقصر في دراسة أنماط البناء أو التركيب النحووي لمُلخصات المقالات البحثية. استجابةً لذلك، تتناول هذه الدراسة تأثيرات التباين التخصصي على أنماط البناء النحووي في كتابة مُلخصات المقالات البحثية الخاصة بعلم اللغة التطبيقي والأدب، وهي قضية نادراً ما تتناولها سابقاً. **المنهج:** لهذا الغرض، تبني هذه الدراسة 14 نمطاً من التركيب النحووي على مستوى الجملة والعبارة استناداً إلى برنامج محل التركيب النحوية الموجود عبر الإنترنت الذي طوره لو (2011)، مقسمة إلى أربعة جوانب تتعلق بالتركيب النحووي: طول الجملة أو العبارة، كمية التبعية، كمية التسقية، والتركيب على مستوى العبارة. **النتائج:** لم تكشف النتائج عن فروق مهمة إحصائياً في تلك الأنماط أو التركيب بين هذه المجموعات من المُلخصات. **الاستنتاجات:** ومن ثم، تعتبر المُلخصات مؤشراً مهماً للبحث الذي يسترشد بذوق القراءة والكتابية. **الوصيات:** تدعى الدراسة إلى بذل المجهودات في النقاش التقليدي المستمر حول ما إذا كانت الكتابة الأكademية بشكل عام تنسى البناء على مستوى الجملة أو العبارة، أو كليهما. **الكلمات المفتاحية:** البناء النحووي، المُلخصات، البناء على مستوى العبارة، البناء على مستوى الجملة، الكتابة الأكademية.

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Introduction

Academic journals are aimed to widely spread knowledge and scientific production (Tankó, 2017). Because searchers and producers of scientific knowledge are increasing especially in our age of ‘information explosion’, research articles (RAs) are constantly kept under the quest of academic researchers. To market the academic prose in the scientific community, abstracts are well serving and appreciated (Lorés, 2004). Dubbed recently as a part-genre in Swales and Feak’s (2009), research article (RA) abstracts have turned to be the gateway to academia (Tseng, 2011) and the initial and the most read genre of research literature (Busch-Lauer, 2014; Swales & Feak, 2009; Pho, 2008); that is, RA abstracts have become an incentive (Bordet, 2014) and a decisive device at which readers make up their minds about reading the whole article or not (Swales & Feak, 2009). All these functions make the abstract an effective ambassador to clearly and briefly mirror the RA (Bordet, 2014). Crafting a well-researched abstract becomes a critical and vital step of the RA (Pho, 2008) to get it published and disseminated to audience (Bordet, 2014). Given these multi-faceted functions of RA abstracts, this part-genre has kept attracting considerable interest of academic researchers recently.

Literature Review

Studies on RA abstracts

Throughout the last thirty years, a lot of attention was allocated to the investigation of RA abstracts under the umbrella of academic prose (Ruan, 2018). They have been approached from various viewpoints by various researchers, as they have focused on various aspects of RA abstracts. Studies on two facets of English RA abstractions were merged in one work: the moves and some linguistic characteristics of these moves (Bhatia, 1993; Hyland, 2000; Lau, 2004; Lorés, 2004; Pho,

2008; Tseng, 2011; Cortes, 2013; Cavalieri, 2014; Tankó, 2017; El-Dakhs, 2018; Fauzan *et al.* 2020; Khany and Malmir, 2020; Li *et al.* 2020; Maporn and Chaiyasuk, 2023; Mohammed, 2023). Genre-based studies of RA abstracts have been extended to attract scholarly concern towards analysis of abstracts across cultures (Diani, 2014). These comprise studies presenting contrastive investigations of RA abstracts written in various languages as L1 (Berkenkotter and Huckin, 1995; Martín, 2003; Van Bonn and Swales, 2007; Alharbi and Swales, 2011; Diani, 2014; Farzannia and Farnia, 2017; Ruan, 2018; Bouziane and Metkal, 2020; Fatma and Yağız, 2020; 2020; Gobekci, 2023; Yin *et al.* 2023). Another direction of genre-based research has been aimed to concentrate on the contrasting analysis of RA abstracts of different disciplinary fields (Hyland, 2000; Samraj, 2005; Martín, 2003; Lorés, 2004; Pho, 2008; Swales and Feak, 2009; Cavalieri, 2014; Yang and Tian, 2015; Friginal and Mustafa, 2017; Kosasih, 2018; Bhatti *et al.* 2019; Khany and Malmir, 2020; Malekzadeh, 2020; Khairani *et al.* 2023). Apart from the move structure of abstracts, few studies have also attempted to inquire the linguistic specifications of abstracts (Lorés, 2004; Pho, 2008; Bordet, 2014; Omidian *et al.* 2018; Tovar, 2018; Bhatti *et al.* 2019; Montkhongtham, 2021). Each of these studies was criticized as being focusing on only two or three linguistic features of the abstract (pho, 2008).

As seen above, research studies examining the lexico-grammatical features in relation to the syntactic complexity (SC) of RA abstracts writing have received little attention (Tankó, 2017; Ruan, 2018). Responding to this apparent research gap, Ansarifar *et al.* (2018) has focused on comparing phrasal complexity (PC) level in abstracts of three academic writing (AW) groups: abstracts of master-level L1 Persian authors, doctoral-level L1 Persian

authors and offered RAs produced by expert authors in applied linguistics. A meticulous and thorough inquiry of the SC of complex noun phrases is also surfaced in Ruan's (2018) seminal work. The aim of Ruan's (2018) work was to compare the phrasal structures of complex noun phrases in abstracts produced by English native and Chinese authors specialized in applied linguistics. Although Ansarifar *et al.* (2018) and Ruan's (2018) studies have focused on exploring SC in RA abstracts in one field i.e. applied linguistics, Youssef's (2019) study investigated the cross-disciplinary effects on the different patterns of lexical diversity and SC between abstracts presented to conferences in two separate academic domains, Linguistics and Nuclear Science, written by Egyptian and native English writers.

RA abstracts in disciplinary variation

The shortage of literature about the analysis of SC in applied linguistics and literature RA abstracts in general (Ansarifar *et al.* 2018; Ruan, 2018) has affected our understanding of composing this part-genre and made it an apparent and substantial research gap requesting the researchers' attention (Ruan, 2018). What accentuates this gap is the scarcity of cross-disciplinary researches that compare SC in applied linguistics and literature RA abstracts as two different disciplines, yet related under one field, social sciences and humanities. As such, the present study was raised as a response to this lack of literature.

Lately, AW in specific disciplines has been characterized by adherence to a certain set of linguistic conventions tailored to academic audiences (Nasseri, 2021). According to Tseng (2011), Lu *et al.* (2021), and Nasseri (2021), these discipline-specific linguistic conventions play a crucial role in shaping syllabus design, genre requirements, and teaching methodologies. Likewise, Cavalieri (2014) emphasised that abstracts, in particular, exhibit

distinct linguistic preferences based on disciplinary variation and the inherently argumentative nature of academia discourse, as evidenced by empirical research of cross-disciplinary differences of discourse structures and their linguistic features in RA abstracts.

Put differently, the nature of discipline affects the manifested structures of RA abstracts. Evidence from earlier literature (e.g., Pho, 2008; Frigial and Mustafa, 2017; Omidian *et al.* 2018; Ruan, 2018) has claimed that abstracts can draw precisely and obviously the distinctive lines between disciplinary academic discourses and how the disciplines influence how writers craft and structure their RA abstracts. As indicated in the above-reported studies, literature exploring the effects of disciplinary variation on writing RA abstracts has been extensively carried out and has fruitfully enriched the literature (Bhatti *et al.* 2019). However, most of the literature has basically concentrated on the rhetorical moves and their related lexico-grammatical characteristics of RA abstracts (Omidian *et al.* 2018; Fauzan *et al.* 2020), (Tankó, 2017). Fewer studies have paid attention to discipline effect taking into account the forms of SC in crafting the abstract or other section of AW (Ruan, 2018; Staples *et al.*, 2016). In response to this call, one of the aims of the current work is to scrutinize if disciplinary variation has real effects on the writing of RA abstracts in applied linguistics and literature in view of the extent of SC patterns utilized.

Views of syntactic complexity measures in academic writing

SC, as an important construct, has been widely defined with reference to applied linguistics and writing research (Rosmawati, 2019). Ellis (2003) states that SC is the degree to which the language used to complete a task is complex and diverse. SC was previously viewed by Foster and Skehan (1996) as a wide

variety of sentence patterns and more elaboration in language use.

With regard to linguistic theory, Biber and Gray (2016) argue that grammatical complexity is often connected and clearly interpreted with explanation and Nested clauses. A clause is seen as simple when it includes a subject, verb, and object or complement whereas a simple noun phrase consists of a determiner and head noun. Any change in such simple patterns means additions to these patterns which are interpreted by modification and clausal elaboration leading to 'complex' grammar or what is so called SC (Biber & Gray 2016). Consequently, to gauge SC of any text is to examine the number of such additions and the degree of elaboration and modification (Delić and Jašić, 2017).

Deemed as the level of complexity of syntactic patterns seen in language creation (Ortega, 2003), and a signal of syntactic and cognitive complexity in content analysis (Suleiman and Elmula, 2025), SC is viewed by Nasseri (2021) as a multi-faceted construct in studies of linguistic proficiency and development. SC was frequently examined and discussed in the first language (L1) (see also Bulte and Housen, 2014) and second language (L2) and in AW research as well (Nasseri, 2021; Kyle and Crossley, 2018; Lu, 2011; Ai and Lu, 2013).

The traditional trend of SC analysis has focused on the minimal terminal unit (T-unit) to gauge SC in L2 and L1 writing (Shadloo and Ghonsooly, 2019; Lan and Sun, 2019). T-unit has been viewed as "one main clause plus any subordinate clause or non-clausal structure that is attached to or embedded in it" (Hunt, 1970, p. 4). Specifically, previous studies have primarily operationalized SC analysis through T-unit based measures and/or clausal subordination measures. These two metrics were represented by clauses for each T-unit

(C/TU), which accounts for "the number of dependent clauses per T-unit, again averaged across all T-units in a text," and mean length of T-unit (MLTU), which accounts for "the overall length in words of the T-unit, averaged across all T-units in a text." (Biber, Gray & Poonpon 2011, p. 7) to gauge this type of complexity in L1 and L2 writing (Ortega, 2003; Wolfe-Quintero *et al.*, 1998).

In their extensive and comprehensive review of SC investigations, Wolfe-Quintero *et al.* (1998) reported Clause-based and T-unit-based indices as strong and vital descriptors of linguistic competence, quality and progress. Especially in Chapter 4, Wolfe-Quintero *et al.* (1998, p. 118-9) documented (C/TU) and dependent clauses for each independent clause as the "best...complexity measures so far". Through their extensive investigation of complexity research in 39 researches on L2 writing, Wolfe-Quintero *et al.* (1998) accentuated the importance of clauses and T-unit to language proficiency and development. Biber *et al.* (2011) ascribed the dependence on clausal subordination and T-unit as two widely indicators of SC to the tendency of previous studies of writing competence and development (Beers and Nagy, 2009) to use T-unit measures and the frequency of subordinate clauses assuming that AW takes its SC from the intricate employment of such units (Biber and Gray, 2010).

In the same line, previous studies of SC analysis in AW (Brown and Yule, 1983; Halliday and Martin, 2003; Hughes, 1996; O' Donnell, 1974; cited in Wu *et al.* 2020) concluded that AW is commonly characterized by longer T-units and big numbers of clausal subordinations, and nominalizations. Thus, T-units and clausal subordination were regarded deep-rooted measures of L1 and L2 development and acquisition and were frequently relied on as a reflection of more proficient AW (Ortega, 2003; Wolfe-Quintero

et al. 1998). The employment MLTU and C/TU as widely accepted measures of SC were also documented by Ortega's (2003) meta-analysis of SC in L2 writing research. Among a total of 27 works examined in her research synthesis, 25 works used the MLTU as the only index to measure SC while 11 studies relied on the MLTU along with the related measure of C/TU.

Such T-unit-based views and clause-based views of analysis came under scrutiny from many academics (e.g. Bardovi-Harlig, 1992; Rimmer 2006; Lu, 2011; Kyle and Crossley, 2018) asserting that high proficiency L2 writings are not necessarily characterized with long T-units and clausal subordination. Likewise, Rimmer (2006) claimed that noun modification and phrasal compression are more important and logical when measuring SC. In relation, using T-unit as an indicator has recently been criticized and tested in Biber *et al.* (2011) study for falling short of offering data about the kind(s) of syntactic expansion employed if the phrasal or clausal expansions might inspire them (Rosmawati, 2019). Biber *et al.* (2011) adopted PC (complex noun phrases) as the chief index for analyzing SC in L2 writing research arguing that T-unit elaboration and clausal subordination are features of SC associated with conversation rather than with AW. In other words, Biber and Gray (2010; 2016), based on large-scale data analysis, observed that each of conversation and AW have their own syntactic complexities. Thus, structural elaboration, through clausal elements, is associated with conversation and structural compression, through phrasal elements, is associated with AW. Thus, nouns are embedded with PC causing AW to be clearly compact.

Staples *et al.* (2016) supported Biber and Gray's (2010; 2016) position demonstrating that although numerous clausal grammatical devices that are typically thought of as rich and sophisticated are used regularly in face-to-face

conversations, AW does not notably exhibit these characteristics. (2016).

Among the criticisms surfaced in the literature against T -units and clausal measures is the one offered by Kyle and Crossley (2018) where they rendered previous studies responsible on concentrating disproportionately on CC (e.g., clausal subordination). Based on these criticisms, scholars (Rimmer, 2006; Biber *et al.* 2011; Lu, 2011) challenged this traditional way of gauging SC and suggested to expand complexity to embrace phrasal features such as noun modification. Biber *et al.* (2011) claimed that T-unit-based measures are not a typical of AW. Besides, PC (e.g., attributive adjective + noun, prepositional phrase modifying noun) is highly frequent in AW compared to dialogs. Thus, between the traditional and recent views of gauging SC, an objective targeted in the present study is to constitute another effort to add to the settlement of this debate.

Studies of syntactic complexity analysis

SC is evident in L1 and L2 writings given the various syntactic structures and SC employed, or, exactly speaking, the set of syntactic constructions used and the degree of sophistication of structures (Lu, 2010, 2011; Lu & Haiyang, 2015). Recent studies have suggested a plethora of metrics for describing SC in L1 and/or L2 writing proficiency, acquisition and development (Lu, 2011; Biber *et al.* 2011; Ai and Lu, 2013; Kim, 2014; Parkinson and Musgrave 2014; Lu & Haiyang, 2015; Biber and Gray, 2016; Ruan, 2018; Delić and Jašić, 2017; Lan, 2019; Wu *et al.* 2020; Thongyoi and Poonpon, 2020). Most of these measures are typically oriented to measure SC through enumerating one or more factor including the following factors: length of production units, extent of subordination or embedding, and extent of coordination., and degree of phrasal sophistication that are briefly

coded into PC and CC measures (Lu, 2010, 2011; Ai and Lu, 2013; Ruan, 2018; Nasseri, 2021; Khalaf *et al.* 2024). PC and clausal complexity (CC) were recently established in the literature as representing the two established extremes on the SC continuum (Biber and Gray, 2016; Ruan 2018). Consequently, SC of L1 and L2 writings was accounted for through advocating T-unit and clausal subordination metrics employment, or the employment of phrasal-based measures or both.

Research into the SC measures has been conducted to examine the written texts of EFL and/or ESL Learners (Lu & Haiyang, 2015; Shadloo and Ghonsooly, 2019; Delić and Jašić, 2017; Wang and Beckett, 2017; Ansarifar *et al.* 2018; Kim, 2014; Kyle and Crossley, 2018; Biber *et al.* 2011; Lu, 2011; Parkinson and Musgrave (2014). In the work conducted by Taguchi *et al.* (2013), the authors examined SC styles of low and high proficient essay writings of non-natives. Earlier to Taguchi *et al.* (2013), Biber *et al.* (2011) presented an empirically supported critique of the inefficacy of T-unit and clausal-based measures as patterns or descriptors of language proficiency. For this purpose, they compared the use of 28 syntactic features in a wide-ranging dataset distributed between spoken and written English. The results of the investigation indicated that

clause-based measures, that were stereotypically common in academic written discourse, are actually characteristic of conversation. On the contrary, AW was fundamentally inherited with other types of SC known as phrasal (non-clausal) complexity patterns. Complexity at the noun phrase level was considered a hallmark of advanced academic written discourse. Although unanimously accepted as two measures of AW proficiency and development, MLTU and C/TU were still little corroborated in assessing AW proficiency and development.

Supporting Biber *et al.*'s. (2011) argument, Lu's (2011) study examined a large-scale number of essays submitted by ESL university students with the goal of discriminating between their writing proficiency levels. Thus, using the SC Analyzer, the aim was to automate SC with 14 metrics proposed in a L2 writing development study (Ortega, 2003) or endorsed by Wolf-Quintero *et al.* (1998). Of these 14 measures, 7 measures (MLTU, MLC, mean sentence length, coordinate phrases per clause and per T-unit, complex nominals per clause and per T-unit) were credited as measuring writing proficiency given the school level. Building on the results of his study, Lu (2011) grouped the 14 SC measures under five stages developmental index of AW as shown in the following table (Table 1)

Table (1): Syntactic Complexity Measures adapted from Lu (2011).

Dimension	Measure	Code	Definitions
Length of production unit	Mean length of sentence	MLS	Word count divided by sentence count
	Mean length of T-unit	MLT	Word count divided by T – units count
	Mean length of clause	MLC	Word count divided by clause count
Overall sentence complexity	Clauses per sentence	C/S	Clause count divided by sentence count
Amount of subordination	Clauses per T-unit	C/T	Clause count divided by T-unit count
	Complex T-unit per T -unit	CT/T	Complex T-unit count divided by T-unit count
	Dependent clauses per clause	DC/C	Dependent clause count divided by clause count
	Dependent clauses per T-unit	DC/T	Dependent clause count divided by T-unit count
Amount of Coordination	Coordinate phrases per clause	CP/C	Coordinate phrase divided by clause count
	Coordinate phrases per T-unit	CP/T	Coordinate phrase count divided T-unit count
	T-unit per sentence	T/S	T-unit count divided by Sentence count
Phrasal complexity	Complex nominals per clause	CN/C	Complex phrase count divided by Clause count
	Complex nominals per T-unit	CN/T	Complex phrase count divided by T-unit count
	Verb phrases per T-unit	VP/T	Verb phrase count divided by T-unit count

Some other works were directed to gauge SC style in NS and NNS data of writings (Wu *et al.* 2020; Nasseri, 2021; Jitpraneechai, 2019; Ai and Lu, 2013; Ruan, 2018). Ai and Lu (2013), for example, scrutinised and compared forms of SC in NNS and NS university students' essay writing. The study found that both groups of writers are experiencing noteworthy variances in the four aspects of SC. In her seminal analysis of a body of master's theses written by EFL, ESL, and English L1 candidates in terms of subgenres of AW, Nasseri (2021) inspected the quantity and circulation of syntactic subordination, coordination and phrasal structures. Her study assumed that EFL writings are pervasively subordinate in nature, and English L1 writings are significantly phrasal. As for the ESL writings, the study showed similar rates of subordination and phrasal structures. Discrete SC patterns are also characteristic of rhetorical units where abstracts are deemed frequently phrasal, reviews of the literature are clearly subordinate, and the conclusion sections are more commonly containing a lot of verb phrases (Nasseri, 2020). As for studies examining the progression of SC in L1 English writings, Staples *et al.* (2016) analysed writing development by the means of PC and CC as shown by first-year to graduate students by L1 English writers mediated by discipline and genre. The results showed that the utilization of PC characteristics in writing rises along with the increase of the academic level of writers, and the utilization of CC characteristics, predominantly finite dependent clauses, declines along with the decrease of writers academic level⁴¹¹. As surveyed above, a wide range of SC standards has surfaced in L1 and L2 AW. Nevertheless, works evaluating SC patterns used in applied linguistics and literary research article abstracts are still scarce and requires investigation.

The purpose of the study

The researcher chooses to undertake this study for specific considerations: First, although RA abstracts were frequently examined and analysed with regard to rhetorical moves and their related linguistic features (Lorés, 2004; Pho, 2008; Tseng, 2011; Cavalieri, 2014; Tankó, 2017; El-Dakhs, 2018; Fauzan *et al.* 2020), there is still an apparent paucity of research into the analysis of SC patterns of this specific part-genre (Tankó, 2017; Ruan, 2018). Second, since the disciplinary variation effects the construction and patterns of SC in modern academia (Biber & Gray, 2016), this study explores RA abstracts in applied linguistics and literature to appreciate the effects of this variation on the patterns of SC and on the disciplinary identification of these two fields. As such, given the paucity of research into a systematic cross-disciplinary study of SC in applied linguistic and literature RA abstracts, this study represents an effort contributing to bridge this gap. Although applied linguistics and literature can be regarded as two related fields under humanities or social sciences (Ruan, 2018), yet being disciplinarily different may affect the construction of their own syntactic complexities. Third, this study was motivated to contribute to the complex debate of whether AW in general and RA abstracts in particular are inherited with CC, PC or both. Considering the considerations surveyed above, the current study is designed to respond to following research question:

1. Are there any significant differences in terms of PC and CC patterns between applied linguistics and literature RA abstracts?

Methodology

The construction of the corpus

An overall of 160 RA abstracts, distributed into 80 abstracts extracted from eight journals related to applied linguistics and 80 abstracts

extracted from eight journals in the arena of literature, were analysed. RA abstracts were selected from high-indexed, reputable online journals designated by proficient writers in the two fields and they all within the wide fields of applied linguistics and literature. The process of selecting abstracts relied on a stratified random sampling (Brown, 1988) by which ten abstracts were later extracted from different issues of a journal published between 2018 and 2020 employing a random selection technique. The selection process does not consider whether RAs produced by native or non-native English users, qualitative/ quantitative, single-authored/ co-authored, or empirical/ theoretical. The focus was confined to examine the language of RA abstracts in applied linguistics and literature and if disciplinary variation had any effect on the form of language in these two fields.

For the sake of comparison, great attention was paid to make both corpora equal in terms of words number. Crawford and Csomay (2016) argued that to conduct conventional occurrence assessments comparing between the characteristics of two corpora, they should demonstrate balance in the word size. They (2016, p. 80) attribute that “frequency comparisons are done on the basis of the number of words, not by the number of texts”. Therefore, our corpora included almost the same number of words. Moreover, the researchers were keen on extracting approximately the same number of texts from various journals in each sub-discipline as this will evade journal impacts on abstract writing style (Omidian *et al.* 2018). RA abstracts were deliberately extracted from recent published issues of journals as that will echo the characteristics of ‘present-day’ AW (Biber and Gray, 2016).

Patterns (measures) of SC investigated

Even though earlier literature advocated a plethora of SC measures to gauge language proficiency and quality, these measures were not away from being criticized of failing to provide a multidimensional account of SC in English writing (Wu *et al.* 2020). This criticism, as revealed by Bulté and Housen (2018) and reiterated by (Wu *et al.* 2020), is ascribed to the tendency of previous studies to use only the “popular” standards” (mean length of T-unit and clausal subordination, etc..), yet, avoid other aspects of SC. To provide an inclusive picture of SC analysis in applied linguistics and literature RA abstracts, the present study adopts 14 patterns of CC and PC based on the online L2 SC Analyzer developed by Lu (2011). The 14 indices dig deeply into “four dimensions of SC: length of production, amount of subordination, amount of coordination, and phrasal complexity”. An overview of the 14 indices and their conforming codes and formula is offered in Table 2 above.

Results and Discussion

The current study research question was projected to identify any important differences with regard to PC and CC patterns between applied linguistics and literature RA abstracts. The outcomes of this part of the research are briefly provided in Table 3. Table 3 displays that the average numbers of values of all the SC measures in applied linguistics RA abstracts are relatively higher than those in literature RA abstracts (MLS, MLT, MLC, C/T, CT/T, DC/C, DC/T, CP/C, CP/T, T/S, CN/C, CN/T, VP/T and C/S). In other words, the above-mentioned SC indices show relatively insignificant differences between their employment in applied linguistics and literature RAs.

Table (2): The numbers of the SC measures in applied linguistics and literature RA abstracts.

Dimension	Measure	Code	n. of words	n. of words
			12630	12594
			No./Rank	Literature
			Applied L.	
Length of production unit	Mean length of sentence	MLS	373.015	337.0956
	Mean length of T-unit	MLT	498.4347	456.4863
	Mean length of clause	MLC	374.1987	349.8769
Amount of subordination	Clauses per T-unit	C/T	10.6653	9.1771
	Complex T-unit ratio	CT/T	1.1606	1.0004
	Dependent clauses per clause	DC/C	10.6653	9.1771
	Dependent clauses per T-unit	DC/T	1.8655	1.6373
Amount of Coordination	Coordinate phrases per clause	CP/C	1.1092	1.0307
	Coordinate phrases per T-unit	CP/T	1.471	1.3494
	T-unit per sentence	T/S	5.9844	5.1762
Phrasal complexity	Complex nominals per clause	CN/C	12.1139	11.0615
	Complex nominals per T-unit	CN/T	16.1566	14.4879
	Verb phrases per T-unit	VP/T	11.4852	9.7662
Overall sentence complexity	Clauses per sentence	C/S	7.9755	6.7868

To show if the mean for SC values for applied linguistics and literature RAs differ significantly, an independent samples t-test was run where the alpha value for each comparison is set to .05 as the significance level for the full

group of tests. The t-tests results of the SC indices for the two groups of RAs are indicated in Table 5. The independent samples t-test showed lack of significant differences ($p < .05$) were found in all of the mean values of the 14 complexity measures.

Table (3): The mean SC values for applied linguistics and literature RAs.

		Levene's Test for Equality of Variances					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	F	Sig.			
MLS	Equal variances assumed	46.63	4.894	1.730	.294	.597	-.658	13	.522
MLT	Equal variances assumed	62.30	5.850	2.068	.034	.858	-.933	13	.368
MLC	Equal variances assumed	46.77	4.260	1.506	.393	.541	-1.132	13	.278
C/S	Equal variances assumed	.99694	.059044	.020875	.147	.707	.896	13	.387
C/T	Equal variances assumed	1.33316	.070497	.024924	.251	.625	.636	13	.536
CT/T	Equal variances assumed	.14508	.020393	.007210	8.001	.014	.136	13	.894
DC/C	Equal variances assumed	.23319	.013143	.004647	2.748	.121	-.064	13	.950
DC/T	Equal variances assumed	.31136	.030050	.010624	1.254	.283	.167	13	.870
CP/C	Equal variances assumed	.13865	.026097	.009227	.038	.848	-.616	13	.548
CP/T	Equal variances assumed	.18388	.029776	.010527	.687	.422	-.526	13	.607
TS	Equal variances assumed	.74805	.029651	.010483	.118	.737	.593	13	.563
CN/C	Equal variances assumed	1.51424	.099845	.035301	.173	.684	-1.060	13	.309
CN/T	Equal variances assumed	2.01958	.184967	.065396	.134	.720	-.532	13	.604
VP/T	Equal variances assumed	1.43565	.129050	.045626	1.152	.303	.696	13	.499

For length of production unit, as Table 3 shows, the mean length of sentences, T -unit and clauses in linguistics RAs are relatively higher in number than those in literature RAs. Statistically, as provided in Table 4, the t-tests showed no significant differences located in the measures of the length of production unit (MLS, MLT, MLC) between applied linguistics RAs and literature RAs (.522, .368 and .278

respectively). The conclusion that sentences, T-units and clauses are longer in applied linguistics RAs suggests that longer sentences, longer T -units and longer clauses are characteristic of the AW of applied linguistics and literature RAs (Wu *et al.* 2020). The use of longer sentences, longer T-units and longer clauses in RAs of these two disciplines might be ascribed to the privilege of the possibility of

presenting meaning and communication of information (Wu *et al.* 2020). Both have the commonality of language as a tool to present the required content in an unlimited way to overload the various aspects of communication of content and information. Proficient writers are inclined to use long sentences, T-units and clauses in their AWs as they ease the readers' understanding of the content, a finding that is consistent with Wu *et al.* (2020, 12) who stated that elaborated structures "may have repercussion in the meaning relations of the whole sentence". The use of relatively similar proportions of syntactic measures of the length of the production unit fits the research findings and the extensive investigation of Wolfe-Quintero *et al.* (1998) who accentuated the significance of the frequent existence of clauses and T-unit as predictors for language proficiency in AW. Furthermore, the equal use of these measures matches the research conducted by Crossley and McNamara's (2014) in which strong links between MLTU and language proficiency were verified.

In view of subordination amount, all the syntactic measures (C/T, CT/T, DC/T, DC/C) (Table 3) are higher in the number of values in applied linguistics RAs than those found in literature RAs. According to independent samples t-tests results (Table 4), the mean values of all of the complexity measures of amount of subordination indicate insignificant differences between the two sets of RA abstracts. More specifically, writers of applied linguistics and literature RAs in highly efficient academic journals use identical proportions of the syntactic measures of structural subordination (.536, .894, .870, and .950 respectively). This finding is consistent with Hyland's (2000) and Wu *et al.*'s (2020) argument that more subordination is a widespread key characteristic in AWs including applied linguistics and literature RAs published in highly indexed academic journals.

As for coordination amount, Table 3 displays that the average numbers of values of all the SC measures for this category (CP/C, CP/T, and T/S) are higher in applied linguistics RAs than in literature RAs. However, the statistical analysis presented in Table 4 shows that variances in the mean values of the measures in both groups of RAs are statistically insignificant with a < 0.05 *P* value. Thus, the heavy use of coordination in RAs of applied linguistics and literature is deemed a trait of AW in general as this was stated in Ai and Lu (2013) and reiterated by Wu *et al.*'s (2020) who reported that coordination is aimed to achieve clarity of meaning in AW.

The same is also true for PC category where the average numbers of values of its SC indices (CN/T, CN/C, and VP/T) in applied linguistics RAs are higher than those inherited in literature RAs as clearly shown in Table 3. However, independent samples t-tests results (Table 4) showed that the average numbers of values of PC measures form insignificant mean values when compared in the two groups of RAs with $p < .05$. To put it in a similar way, applied linguistics and literature RAs in high rank academic journals are inherited with similar proportions of the structural subordination measures.

The frequent existence of heavy nominals is also considered a trait of proficient writing as reported in Biber and Gray (2016) and Wu *et al.*'s (2020) who pointed out that AW is distinguished by the frequent occurrence of nominal and phrasal structures. Wu *et al.*'s (2020) justified the heavy use of nominal and PC by the need for presenting explicitness in the meaning of sentences while keeping the structure syntactically compressed. Likewise, the frequent occurrence of the PC measures in the data of the current study simulates Biber and Gray's (2010) and Lu's (2011) findings that AW is structurally dense with phrasal and nominal structures.

As such, the results of statistical tests conducted in the current study data suggests that despite the underlying differences in disciplinary variation, abstracts in applied linguistics and literature share similar SC patterns that embody their common goals in academic purposes. Similarly, despite the disciplinary differences, RA abstracts in both applied linguistics and literature are projected to fulfil a similar communicative goal. Abstracts are typically organized to offer a summary of the research objectives, methods, results, and conclusions. As a result, although disciplinarily different, applied linguistics and literature abstracts tend to use SC structures achieving the functions of clarity, coherence, and information dissemination. The tendency to use the same complex syntactic indices can be attributed to the fact that scholars from both disciplines might depend on insights from each other's theoretical assumptions and analytical approaches. This interdisciplinary mutuality might cause a concordance in SC measures as scholars and writers use relatively the same analysis tools in various genres and different disciplines.

Conclusion

It was hypothesized that, because of being disciplinarily two different branches in social sciences and humanities, there would be notable distinctions in some of the SC patterns of applied linguistics and literature RA abstracts as literature, in contrast to applied linguistics, might be seen as a group of information expressed in a language. However, statistically, the study revealed no disciplinary significant effects on the utilization of the 14 SC measures in applied linguistics and literature RAs abstracts. In other words, the study showed similar propositions in the use of both clausal and PC measures in these two sets of abstracts. This implies that authors in both disciplines typically use comparable degrees and kinds of syntactic complexity patterns

while writing their abstracts, notwithstanding possible differences in disciplinary focus and discourse norms. This supports the idea that, despite relative disparities in trajectory and emphasis in both applied linguistics and literature disciplines, writing the abstract by authors in these two fields transcends those disparities in such a way that their utilization of the SC patterns are highly comparable. The analysis conducted thus proposes a hypothesis that SC patterns in writing abstracts is not significantly influenced and crafted by disciplinary variations between applied linguistics and literature, but rather by common academic norms of abstract writing—such as clarity, preciseness, coherence and argumentation. Thus, between these two groups of SC measures, research findings generally characterized AW and, while they characterize RAs in particular as a genre located in between where the CC and PC measures were equally used. This equal manipulation of the clausal and phrasal patterns of structures rejects the assumption and tendency that just clausal, or phrasal SC patterns denote high linguistic proficiency and writing quality. In other words, proficient writing or AW is generally inherited with relatively similar percentages of both clausal and phrasal SC indices. Researchers in both fields may adapt SC measures to suit the specific objectives and analytical frameworks of their own studies. This methodological adaptation and analytical application might cause the considerable similarity in the complex syntactic patterns used in applied linguistics and literature RA abstracts.

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- **Ethical approval and consent to participate:** Done based on required instructions.
- **Availability of data and materials:** Available upon request.

- **Author contribution:** Based on percentages, 1st researcher has accomplished 40% of the study, 2nd researcher has accomplished 35%, and 3rd researcher has accomplished 25%.
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