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Exploring Syntactic Complexity in Opinion Writing by L1 Spanish Learners of English at CEFR B1 and B2 Levels: Automatic Analysis Using L2SCA

Análisis del desarrollo de la complejidad sintáctica en textos de opinión de aprendientes de inglés como lengua extranjera con L1 español en los niveles B1 y B2 del MCER: análisis automático mediante L2SCA

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Abstract: This corpus-based study explores syntactic complexity in an understudied text type, opinion writing, by L1 Spanish EFL students at CEFR B1 and B2 levels. A subsection of the *FineDesc Learner Corpus* (106 opinion texts per level, 212 texts in total) was analysed by means of Lu's *L2 Syntactic Complexity Analyser* (L2SCA). The findings indicate that learners tend to reduce the length of sentences and T-units and increase clause length. A decrease in the amount of subordination is found together with an increase in coordination in phrases and clauses. In general terms, phrasal sophistication remains similar at both levels.

Keywords: Syntactic complexity; opinion writing; CEFR B1 and B2 levels; *L2 Syntactic Complexity Analyzer* (L2SCA); L1 Spanish learners of English.

Summary: Introduction. Measuring Syntactic Complexity: An Overview. Using L2SCA to Analyse Syntactic Complexity in Learner Writing. Methodology. Results and Discussion. Conclusion.

Resumen: Este estudio de corpus examina la complejidad sintáctica en un tipo textual poco estudiado, los artículos de opinión, producidos por estudiantes de inglés como lengua extranjera con L1 español en los niveles B1 y B2 del MCER. Se analizó una subsección del *FineDesc Learner Corpus* (106 textos de opinión por nivel, 212 en total) mediante el *L2 Syntactic Complexity Analyser* (L2SCA) creado por Lu. Los resultados apuntan a una tendencia de los estudiantes a reducir la longitud de las oraciones y de las unidades T, a incrementar la longitud de las subordinadas, a disminuir el grado de subordinación, y a aumentar la coordinación tanto a nivel sintagmático como oracional. En términos generales, la sofisticación sintagmática es similar en ambos niveles.
Palabras clave: Complejidad sintáctica; textos de opinión; niveles B1 y B2 del MCER; *L2 Syntactic Complexity Analyzer* (L2SCA); estudiantes de inglés cuya lengua materna es el español.
Sumario: Introducción. Medición de la complejidad sintáctica: una visión general. Uso de L2SCA para analizar la complejidad sintáctica en la escritura de aprendices. Metodología. Resultados y discusión. Conclusión.

INTRODUCTION

Learner language development has traditionally been analysed in second language acquisition (SLA) by means of Skehan's three-dimensional L2 proficiency model which includes complexity, accuracy and fluency (CAF). Nowadays, CAF measures, especially those related to the analysis of complexity (Alexopoulou et al.; Barrot and Agdeppa; Barrot and Gabinete; Díez-Bedmar, "NP complexity;" Díez-Bedmar and Pérez-Paredes; Khushik and Huhta; Lu), are also employed in learner corpus research (LCR). Complexity, considered a core indicator of L2 language development (Bulté and Housen; Skehan; Wolfe-Quintero et al.), has been defined as "the quantity and variety of linguistic components and of the relationships between them" (Bulté et al. 540).

Within complexity, linguistic complexity is defined as "a dynamic property of the learner's interlanguage system at large and as a more stable property of the individual linguistic elements that make up the interlanguage system" (Housen and Kuiken 463). Three subdimensions are considered in linguistic complexity (Bulté and Housen; Lu), namely lexical complexity, discoursal complexity, and syntactic complexity, also known as grammatical complexity. Syntactic complexity, in turn, can be subclassified into three main subconstructs (Norris and Ortega 561): (a) global or overall complexity, which typically concerns sentence-level length and overall structural elaboration; (b) complexity via subordination, also referred to as clausal complexity; and (c) subclausal complexity by phrasal elaboration, also known as phrasal complexity. These three main

subconstructs try to capture the multidimensional nature of complexity (Biber et al. "Characteristics of Conversation;" Norris and Ortega).

Research on syntactic complexity dates back to the 1930s with the first studies conducted with first language (L1) written and spoken production (Larsen-Freeman). By the 1970s, second language (L2) scholars (Hakuta; Hunt) began adapting L1 complexity measures to L2 learner production to identify developmental indices. In the 1980s, Skehan proposed his CAF model which considered three constructs, complexity, accuracy and fluency, as the three dimensions of L2 proficiency. Although they were initially treated as dependent variables (Housen et al.), CAF constructs "have also increasingly figured as the primary foci or even as the independent variables of investigation in SLA" (Housen and Kuiken 3), applied to a wide array of contexts from classroom-based research to experimental work (Lan et al.; Lu; Ortega). Since each CAF dimension offers a different perspective on L2 performance, the CAF model is best understood as consisting of "multifaceted and multidimensional concepts" (Housen and Kuiken 5). Normally, CAF publications focus on one of the dimensions, complexity, and more specifically syntactic complexity, being the most analysed one.

Despite the fruitful results in the L2 syntactic complexity literature, four main issues point to the need for further research in the field to fully understand syntactic complexity development in learner writing. First, academic writing, more specifically argumentative writing, has been extensively analysed due to the higher syntactic complexity of academic texts (Barrot and Gabinete; Casal and Lee; Khushik and Huhta; Lu; Lu and Ai; Ran; Zhang and Yang). However, non-academic text types have received little attention in the literature. Second, different variables are employed to classify learner texts into proficiency levels (institutional status, students' results in standardised tests, CEFR levels, etc.). As a result, findings may not be fully comparable and tendencies in syntactic complexity may be hindered by the (more or less appropriate) classifications of students' proficiency levels. Third, different syntactic complexity measures are employed in the literature, which makes it difficult to compare the results obtained. Finally, little is known about syntactic complexity development in learner writing by students from specific L1s.

This paper, therefore, aims to contribute to the syntactic complexity literature by providing an analysis of syntactic complexity development in opinion writing by L1 Spanish learners of English at CEFR B1 and B2

levels. In doing so, information on a text type which is not considered academic writing is provided at two well-established CEFR levels by a learner population which is normally underrepresented in syntactic complexity studies (but see Díez-Bedmar, *NP complexity*; Díez-Bedmar and Pérez-Paredes; Lahuerta Martínez, "Analysis," "The Role").

The main objective of this paper is to describe syntactic complexity development in opinion writing by L1 Spanish learners of English at CEFR B1 and B2 levels. To account for the multidimensional nature of syntactic complexity, three main research questions are posed:

- RQ_1: Are there differences in syntactic complexity regarding global complexity measures?
- RQ_2: Are there differences in syntactic complexity regarding clausal complexity measures?
- RQ_3: Are there differences in syntactic complexity regarding phrasal complexity measures?

1. Measuring Syntactic Complexity: An Overview

One of the earliest complexity measures was the T-unit, also known as minimal terminal unit, defined as "one main clause plus whatever subordinate clauses happen to be attached or embedded within it" (Hunt 735). The T-unit was later defined as "an independent clause, accompanied by any associated dependent clause" (Larsen-Freeman, "Adjusting Expectations" 580), and it was the most frequently employed measure in L1 and L2 syntactic developmental studies (Barrot and Agdeppa; Casal and Lee; Larsen-Freeman; Lu; Ortega; Skehan). In fact, the T-unit was involved in most of the measures which were considered to be the best CAF measures in the meta-analysis by Wolfe-Quintero et al. These measures, which consider T-units, subordination ratios, and sentence length, were therefore frequently employed in the syntactic complexity literature and shaped decades of research.

Building on the synthesis by Wolfe-Quintero et al., Ortega carried out a meta-analysis by further refining the understanding of syntactic complexity through the evaluation of the relationship between commonly used measures and L2 proficiency. Her findings highlighted that some indices do not demonstrate consistent or strong associations with proficiency. In particular, length-based measures (e.g., mean length of T-unit or sentence) proved to be the most consistent and reliable indicators

of development, while other measures, especially those related to subordination, displayed greater variability across studies. Although T-unit-based measures have traditionally occupied a central role in syntactic complexity research (Hunt; Wolfe-Quintero et al.), their continued use has been questioned in recent years, with some scholars arguing that clause-based measures may provide a more informative unit of analysis and others highlighting the limitations of traditional T-unit-based approaches for capturing advanced writing development (Biber et al., "Characteristics of Conversation"; Lu; Norris and Ortega). Nevertheless, both T-unit-based and sentence-based measures remain widely employed in L2 writing research, as seen in the use of the mean length of sentence measure and the mean length of T-unit measure, respectively, and are employed to explore their similar or different capturing of syntactic complexity as well as for comparative purposes with previous studies'.

A turning point in syntactic complexity research emerged in the first decade of the 21st century, when the T-unit was found to be a less informative unit of analysis than the clause (Lu) and subordination-based metrics were challenged as suitable ones to capture syntactic complexity in texts at advanced levels (Biber et al., "Characteristics of Conversation"; Norris and Ortega;). Biber et al. ("Should We") provided in 2011 a number of phrasal elaboration measures which characterised L1 academic writing. These measures focused on phrasal elaboration rather than clausal embedding to analyse L1 academic writing because academic writing is characterised by noun phrase (NP) complexity more than by subordination. In a subsequent study, Biber et al. ("Predicting Patterns") further validated the role of phrasal elaboration in a study of learner writing with texts written in the TOEFL exam. The results showed that high-scored essays were characterised by nominalisations and complement-clause structures. As a result of these studies, the importance of fine-grained syntactic complexity measures, as opposed to the traditional large-grained or coarse-grained measures, led researchers to include such measures in their studies and explore further syntactic complexity measures at phrase level as derived from learner corpus research (Díez-Bedmar, "NP complexity;" Díez-Bedmar and Pérez-Paredes; Kyle and Crossley; Kyle; Kyle et al.; Seo and Oh).

The progressive inclusion of fine-grained syntactic complexity measures, together with the traditional course-grained ones, is also seen in the development of software to automatically analyse syntactic complexity, which made the process less difficult and tedious (Châu and

Bulté). *Coh-Metrix* (McNamara et al.) was one of the first pieces of software designed to analyse syntactic complexity. In 2010, Lu introduced the *L2 Syntactic Complexity Analyzer* (L2SCA) to facilitate large-scale analyses of syntactic complexity with a set of 14 indices in five dimensions (length of production unit, overall sentence complexity, amount of subordination, amount of coordination, degree of phrasal sophistication), which were selected thanks to the previous meta-analyses by Wolfe-Quintero et al. and Ortega.

All the L2SCA measures are coarse-grained indices, as can be seen in the fact that they "take length into account by using the number of clauses, T-units, or sentences as the denominator" (Polio and Yoon 167). There are two stages in the L2SCA analysis, as determined by Lu. First, the preprocessing stage, which employs the Stanford Parser (Klein and Manning, as cited in Lu "Automatic Analysis of Syntactic Complexity"), and identifies sentence boundaries and assigns part-of-speech tags (POS tags). Second, the analysis stage, which uses Tregex (Levy and Andrew qtd. in Lu, "Automatic Analysis of Syntactic Complexity") to search for specific syntactic patterns and count the number of occurrences. The L2SCA was validated using the Written English Corpus of Chinese Learners, a learner corpus consisting of 3554 essays written by university students majoring in English in China (Lu, "Corpus-Based Evaluation of Syntactic Complexity"). L2SCA has been widely employed to track syntactic complexity development in different contexts, as seen in Barrot and Agdeppa; Barrot and Gabinete; Casal and Lee; Khushik and Huhta; Lu; Lu and Ai; Ran; Polio and Yoon; and Zhang and Yang.

In 2016, Kyle released the *Tool for the Automatic Analysis of Syntactic Sophistication and Complexity* (*TAASSC*). TAASSC includes the coarse-grained ones in L2SCA and fine-grained indices for a comprehensive analysis of L2 syntactic complexity. The software is based on 31 features as it takes both clauses and phrases into account. Those 31 features are further specified with 132 metrics of phrasal complexity, and 190 usage-based metrics of syntactic sophistication (Kyle).

The software has been used in a number of publications to analyse, for instance, the extent to which fine-grained measures reflect writing quality scores in EFL by comparing these measures to the traditional syntactic complexity indices provided by L2SCA (Kyle and Crossley), determine if fine-grained grammatical complexity measures could predict differences in the difficulty of two major English proficiency tests in China

(Lin) or the connection between syntactic complexity and the quality of argumentative essays written by second-year students (Dong and Pu).

2. Using L2SCA To Analyse Complexity in Learner Writing

Syntactic complexity is analysed in SLA studies and, more recently, in LCR studies, where learner corpora compiled according to strict design criteria are investigated. Although writing may occur in a variety of real-world contexts, most L2 writing research has been conducted in educational settings (Ortega), where the majority of learner corpora have been collected. These learner corpora have been analysed using: a) coarse-grained and fine-grained indices from automatic software (Barrot and Agdeppa; Barrot and Gabinete; Casal and Lee; Dong and Pu; Kyle et al.; Lu; Lu and Ai; Polio and Yoon; Ran; Zhang and Yang); b) selected indices proposed by Biber et al. "Characteristics of Conversation"; c) corpus-driven measures (Díez-Bedmar, *NP complexity*); or d) combinations of automated and corpus-driven measures (Díez-Bedmar and Pérez-Paredes). Since the present study employs L2SCA, a widely used tool to analyse syntactic complexity, a review of studies using this software is provided in the following section.

Lu, Barrot and Agdeppa, and Khushik and Huhta analysed L2 syntactic complexity at different students' proficiency levels. Lu "Corpus-Based Evaluation of Syntactic Complexity" examined 3,554 essays from the Written English Corpus of Chinese Learners (WECCL) to explore syntactic variation across four levels of proficiency (Level 1, Level 2, Level 3, and Level 4) in the writing of L2 students from nine Chinese universities. The results showed that the complex nominals per clause, mean length of clause, complex nominals per T-unit, mean length of sentence, and mean length of T-unit measures are particularly reliable indicators of proficiency Level 4, as they showed a steady, linear increase across levels.

Barrot and Agdeppa also studied whether CAF measures can effectively distinguish learner writing at four CEFR levels (A2, B1.1, B1.2 and B2). To do so, they analysed over 5,000 essays in the ICNALE corpus, which is composed of college-level student writing from 10 Asian countries/regions. Using L2SCA, their findings aligned with Wolfe-Quintero et al. and Lu, confirming that the length of production units (MLS, MLT, and MLC) differ across proficiency levels. As learners move from A2 to B2, there is an increase in the length of production units, as

seen in a higher frequency of clauses and sentences. Most coordination and subordination measures also showed significant differences as they increased with proficiency level. Likewise, the two indices of phrasal sophistication (CN/C and CN/T) increased with proficiency level, from the lower level to the more proficient ones.

In Khushik and Huhta's research, essays by L1 Sindhi or L1 Finnish students at A1, A2, and B1 CEFR levels were analysed. They employed measures from L2SCA (i.e., VP/T, DC/T, CP/T, CP/C, C/T, DC/C) as well as from *Coh-Metrix*. Their findings revealed that production length (MLC and MLS measures) increases from A1 to B1, subordination use (DC/T, C/T, DC/C) progressively increases in the three levels, the two coordination ratios (CP/T and CP/C) remained largely the same in the three levels, and the phrasal sophistication VP/T index was found to discriminate between the three levels (A1, A2, and B1).

Other studies have highlighted the importance of the L1 variable in L2 syntactic complexity. In Lu and Ai, the argumentative essays by college-level EFL learners from various L1 backgrounds at CEFR B2, C1, and C2 levels were compared with those written by native English-speaking university students. Their results revealed that Tswana learners showed higher subordination (C/T, CT/T, DC/C, and DC/T), Russian students used comparatively limited subordination but a greater reliance on coordination, as seen in the CP/C, CP/T, and T/S ratios, French learners displayed higher phrasal sophistication (CN/C and CN/T), and German students showed a greater ratio in the length production measures (MLS, MLC and MLT).

The role played by the text type has also been analysed in the L2 syntactic complexity literature employing L2SCA. Polio and Yoon compared the syntactic complexity of two text types (narrative writing and argumentative writing) with mainly L1 Mandarin Chinese students. Using 12 measures from LS2CA, the results showed that length production measures (MLS, MLT, and MLC) and phrasal sophistication complexity indices (CN/T, CN/C, and VP/T) were significantly higher in argumentative writing, especially the MLT and VP/T ratios. Those results suggest that when writing argumentative essays, ESL writers tend to use more verb phrases—as well as more complex nouns and coordinated phrases—within each T-unit, which in turn contributes to longer T-units. However, no differences were found between both text types regarding subordination and coordination ratios.

Ran compared the syntactic complexity in essays written by English majors (EMJs) and non-English majors (NEMJs). To do so, a corpus of 200 argumentative texts was analysed with the 14 measures of syntactic complexity in L2SCA. The results revealed different patterns depending on the group: NEMJs produced significantly higher values in length production measures (MLC, MLT, and MLS), coordination indices (CP/C and CP/T), and phrasal sophistication (CN/C), whereas EMJs showed significantly higher levels of subordination, as reflected in the DC/C, DC/T, CT/T, and C/T measures. The results point to the different complexification patterns in each group: NEMJs had a tendency towards phrasal elaboration and EMJs exhibited a greater use of clausal subordination.

Barrot and Gabinete examined the possible differences in complexity, accuracy, and fluency in ESL vs. EFL writing at CEFR B1.2 level in 1870 essays from the ICNALE-Written corpus by means of three L2SCA measures, C/T, DC/C and MLC. The results revealed differences in writing performance by ESL and EFL students. The ESL group showed higher levels of syntactic complexity in DC/C and MLC measures, whereas the EFL group had a higher performance in phrasal sophistication (C/T measure). The learners' L1 backgrounds may have also played an important role in the different types of complexification which characterise their essays.

The importance of individual differences in L2 syntactic complexity development was highlighted by Bulté and Housen. Using the MLT and MLC measures, they showed that while the L1 Dutch EFL group as a whole displayed relatively steady progress in syntactic complexity, individual learners followed much more variable, and often different, developmental paths if compared to the whole group. Likewise, Zhang and Yang's four-semester longitudinal study using MLT, C/S, DC/C and CP/C measures also highlighted the individual and dynamic trajectories in L2 syntactic complexity development.

Finally, Casal and Lee examined the relationship between syntactic complexity and writing quality. Their study analysed 280 research papers written by first-year ESL undergraduate students whose L1s were mainly Mandarin or Arabic and whose proficiency levels were upper-intermediate to advanced (approximately CEFR B2–C1). Syntactic complexity in these texts was then measured using five L2SCA indices, namely MLC, MLT, T/S, C/T, and CN/C. The results showed minimal variation from lower to higher proficiency levels in the clausal measures (T/S and C/T) and more

important differences in global measures (MLT and MLC) and in the phrasal measure (CN/C). In particular, the CN/C ratio showed that lower-rated papers contain fewer complex noun phrases, whereas higher-rated papers show a more frequent use of nominal structures. All in all, the findings reveal that, while clausal complexity does not strongly correlate with writing quality, global and phrasal syntactic complexity (as seen in the T/S, C/T, and CN/C measures) are key indicators of higher-rated writing.

3. METHODOLOGY

3.1 The Learner Corpus

This study employs a subsection of the *FineDesc Learner Corpus* (Díez-Bedmar, *FineDesc Learner Corpus*). This 1.3-million-word learner corpus is composed of 6375 pass-only written productions by 3412 L1 Spanish candidates who took the CertAcles English Exam Suite at CEFR B1, B2 or C1 levels in different ACLES-accredited University Language Centres in Spain.[1]

Only texts which had been evaluated as being at the level by, at least, two independent CEFR-expert raters in the ACLES-accredited University Language Centres,[2] were compiled in the learner corpus, which ensures the CEFR level of each text in the *FineDesc Learner Corpus*.

As shown in Table 1, 212 opinion texts were analysed for this study, 106 at CEFR B1 level and 106 at CEFR B2 level.

[1] Further information on the *FineDesc Learner Corpus* is available at www.finedesc.com.
[2] ACLES stands for *Asociación de Centros de Lenguas en la Enseñanza Superior* (Association of Language Centres in Higher Education). Further information about the Association and the CertAcles Exam Suite is available at https://www.acles.es/en Adhering to ACLES guidelines, accredited University Language Centers utilise a structured quality assurance framework to evaluate written production. This framework ensures high assessment standards by integrating continuous rater training, standardization sessions, and inter-rater reliability analyses, subject to cyclical external auditing by ACLES.

Table 1. Learner corpus breakdown for this study

	CEFR B1 level	CEFR B2 level
No. of texts	106	106
No. of words	16,298	23,049
Total	212	39,347

Opinion texts were selected for the study because opinion writing is underanalysed in syntactic complexity research. The reason is that syntactic complexity research has traditionally focused on academic writing, particularly argumentative writing, which is considered more syntactically demanding than narrative or expository texts (Lu; Polio and Yoon).

An opinion text is a persuasive genre in which writers express a personal stance on a debatable issue and support it by providing reasons and justification for their viewpoint, rather than by developing extensive evidence with previous research (Rose; Wang et al.). Unlike argumentative writing, opinion writing requires the writer to present claims and supporting arguments directly, without extensive engagement with previous research or lengthy evidential development (Rose). Linguistically, this genre is characterised by the explicit expression of causal and justificatory relations, as writers are expected to provide clear reasons in support of their viewpoints (Wang et al.). It also tends to favour accessible vocabulary, limited use of specialised terminology, and a style that prioritises clarity and reader engagement (Rose), which results in texts which are not as syntactically complex as argumentative texts or other text types which are considered to be academic texts (Wang et al.).

However, the analysis of syntactic complexity in opinion writing is highly relevant for three main reasons. The first one is that this text type is frequently employed in everyday life and, as a result, learners need to use it effectively in different communicative situations. Second, learners are frequently required to write opinion texts in high-stakes foreign language certification or accreditation exams at different proficiency or CEFR levels. As a result, a description of syntactic complexity in this text type across CEFR levels may help learners make progress in syntactic complexity to express their opinions and perform better in such important exams (for academic and/or professional reasons). Finally, the study of syntactic complexity in opinion writing at different CEFR levels

contributes to a more comprehensive understanding of syntactic complexity development in learner writing.

3.2 Syntactic Complexity Measures

This study employs L2SCA for a number of reasons. First, the software L2SCA (Lu) has proven to be a reliable and valid tool for L2 syntactic development for the automatic analysis of the texts in the learner corpus (e.g., Barrot and Agdeppa; Casal and Lee; Lu and Ai; Polio and Yoon; Ran; Zhang and Yang). Second, it contains a set of global, clausal, and phrasal measures that enables a comprehensive and systematic analysis of syntactic complexity. Finally, this software has been extensively used in the literature with various text types and texts at different proficiency levels (e.g., Barrot and Adgeppa; Barrot and Gabinete; Bulté and Housen; Casal and Lee; Khushik and Huhta; Ran; Lu and Ai), which facilitates the comparison of the results in this study and those in previous publications.

As seen in Table 2, this software provides fourteen measures divided into five dimensions that capture the multidimensional nature of syntactic complexity, with measures at the global, clausal, and phrasal level.[3]

[3] Lu's ("Automatic Analysis," based on Cooper) definition of complex nominal, which is considered in the degree of phrasal sophistication dimension, includes: a) nouns modified by adjectives, possessives, prepositional phrases, relative clauses, participles, and appositives; b) nominal clauses; and c) gerunds and infinitives in subject position. Therefore, Lu's definition of complex nominals includes syntactic structures which are beyond the scope of a phrase, as seen in b) and c).

Table 2. Lu's 14 complexity indices/ratios in the five dimensions considered

Dimension		Measure/index
Overall sentence complexity	C/S	Clauses per sentence
Length of production unit	MLS	Mean Length of sentence
	MLT	Mean Length of T-unit
	MLC	Mean Length of Clause
Amount of subordination	C/T	Clauses per T-unit
	CT/T	Complex T-unit ratio
	DC/C	Dependent clauses per clause
	DC/T	Dependent clauses per T-unit
Amount of coordination	T/S	T-units per sentence
	CP/T	Coordinated phrase per T-unit
	CP/C	Coordinate clauses per clause
Degree of phrasal sophistication	CN/C	Complex nominals per clause
	CN/T	Complex nominals per T-unit
	VP/T	Verb-phrase per T-unit

Source: Adapted by the author from Lu ("Automatic Analysis")

Although some L2SCA indices have been argued to closely capture related dimensions of syntactic complexity (Norris and Ortega), the 14 measures in L2SCA were employed in the present study to provide a comprehensive description of syntactic complexity in learner opinion writing and to ensure the comparability of results with previous studies, regardless of their use of all the L2SCA measures or a selection of them.

3.3 Statistical Analysis

Due to the non-normal distribution of the data ($p > .05$), Mann-Whitney tests were run to find statistically significant differences in the indices/ratios in L2SCA in the two CEFR levels. Effect sizes were also calculated.

4. Results and Discussion

To facilitate comparison of our results with those reported in other studies, our findings are presented in relation to the 14 measures across the five dimensions of L2SCA (Section 4.1), as well as through the consideration

of global, clausal, and phrasal syntactic complexity indices (Section 4.2). It should be noted that some variability exists in the terminology used across studies in syntactic complexity research. Equivalent measures may be labelled differently (e.g., "Mean Sentence Length" and "Average Sentence Length"), although they refer to the same underlying construct. This consideration is taken into account when interpreting and comparing results across studies.

4.1 Exploring the Five Dimensions in L2SCA in L1 Spanish EFL Opinion Writing at CEFR B1 and B2 Levels

4.1.1 Overall sentence complexity

Following Lu, the clauses per sentence ratio (C/S) was employed to analyse overall sentence complexity. As seen in Fig. 1, reported in Table 3 and illustrated in examples 1 and 2,[4] opinion writing at CEFR B2 level shows a statistically significant decrease in the C/S ratio if compared to CEFR B1 level.[5] This result is in line with Barrot and Agdeppa, who first observed an increase of this ratio at earlier stages (A1, A2, and B1.1), followed by a decrease at CEFR B2 level.

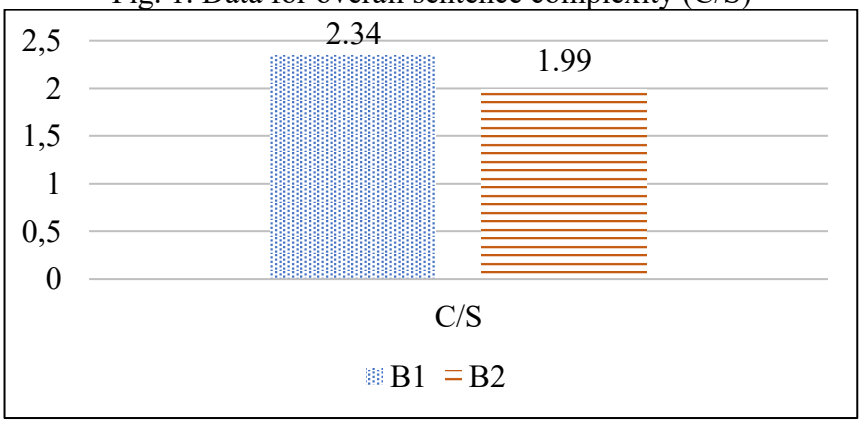
[4] All examples are taken verbatim from the candidates' texts.

[5] The stretches of language measured in the ratios have been underlined in the examples to make them more reader-friendly.

Table 3. Statistical analyses: results

	CEFR B1 level	CEFR B2 level	Mann-Whitney statistics		
C/S	*Mdn* = 2.13; *IQR* = .86; *M* = 2.34; *SD* = .93	*Mdn* = 1.92; *IQR* = .57; *M* = 1.99; *SD* = .50	*U* = 4077.50	*z* = -3.45	*p* = .001 *r* = .24
MLS	*Mdn* = 19.58; *IQR* = 7.14; *M* = 20.92; *SD* = 7.24	*Mdn* = 17.89; *IQR* = 6.1; *M* = 18.72; *SD* = 5.24	*U* = 4518.00	*z* = -2.46	*p* = .014 *r* = .17
C/T	*Mdn* = 1.81; *IQR* = .62; *M* = 1.91; *SD* = .50	*Mdn* = 1.69; *IQR* = .42; *M* = 1.72; *SD* = .35;	*U* = 4399.50	*z* = -2.73	*p* = .006 *r* = .19
DC/C	*Mdn* = .41; *IQR* = .15; *M* = .40; *SD* = .13	*Mdn* = .36; *IQR* = .13; *M* = .35; *SD* = .095	*U* = 4379.50	*z* = -2.77	*p* = .006 *r* = .19
DC/T	*Mdn* = .75; *IQR* = .50; *M* = .80; *SD* = .43	*Mdn* = .62; *IQR* = .34; *M* = .63; *SD* = .27	*U* = 4410.50	*z* = -2.71	*p* = .007 *r* = .19
CP/T	*Mdn* = .30; *IQR* = .30; *M* = .33; *SD* = .21	*Mdn* = .38; *IQR* = .30; *M* = .43; *SD* = .27	*U* = 4477.00	*z* = -2.56	*p* = .011 *r* = .18
CP/C	*Mdn* = .16; *IQR* = .16; *M* = .18; *SD* = .12	*Mdn* = .24; *IQR* = .16; *M* = .25; *SD* = .15	*U* = 3972.00	*z* = -3.69	*p* = .000 *r* = .25

Fig. 1. Data for overall sentence complexity (C/S)



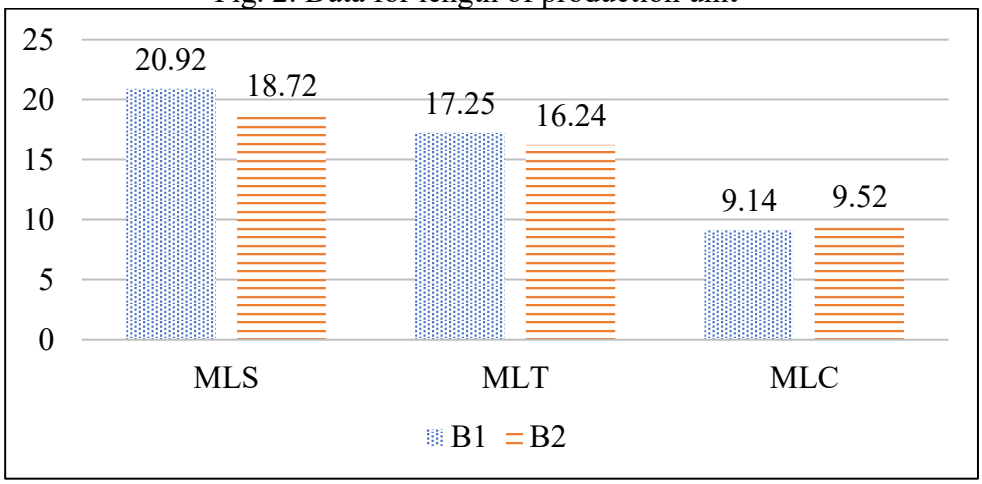
(1) It is said that *owning a dog or a cat costs a lot of money*. (B2_60157)
(2) But in the other side, *the most disadvantage is that you waste a lot of time working so you have less time to study, so you will be more stressfull*. (B1_9301)

4.1.2 Length of production unit

Two out of the three length of production unit measures, namely mean length of sentence (MLS) and mean length of T-unit (MLT), revealed that CEFR B2 learners write shorter sentences (contrast examples 3 and 4) and shorter T-units (examples 5 and 6) (Fig. 2), even though only the MLS ratio showed a statistically significant difference (see Table 3). Interestingly, the sentence-based measure (MLS) seems to capture the differences in syntactic complexity across the two levels better than the T-unit-based one (MLT), as only the former shows statistically significant results.

The third length of production unit measure, the mean length of clause ratio (MLC), reflects a slight non-significant increase from CEFR B1 to CEFR B2 level, which might point to a tendency by CEFR B2 level students to write longer clauses than their CEFR B1 level counterparts, as seen in examples 7 and 8. Therefore, whereas the length of production unit measures which consider global complexity measures decrease from one level to the next in our data, the measure which analyses the length of the clause (i.e., a clausal complexity measure, MLC) seems to point to the opposite tendency.

Fig. 2. Data for length of production unit



(3) *One informe of the university of Philadelphia show that most of the students think that doing a master's degree is a waste of time*. (B1_9493)
(4) Due to modern lifestyle, *to achieve health has developed such a concern within teens*. (B2_10132)
(5) Now a days, *lot of students that must work for paying their bills many times they quit from the course because they have not time enough to study properly*. (B1_9290)
(6) *Young people should practise a sport because the exercise produce benefits in our lifes*. (B2_70068)
(7) Democratic societys should not allow these situations. (B1_9290)
(8) Lot of people support the idea of *having a good time in gym with friends*. (B2_70025)

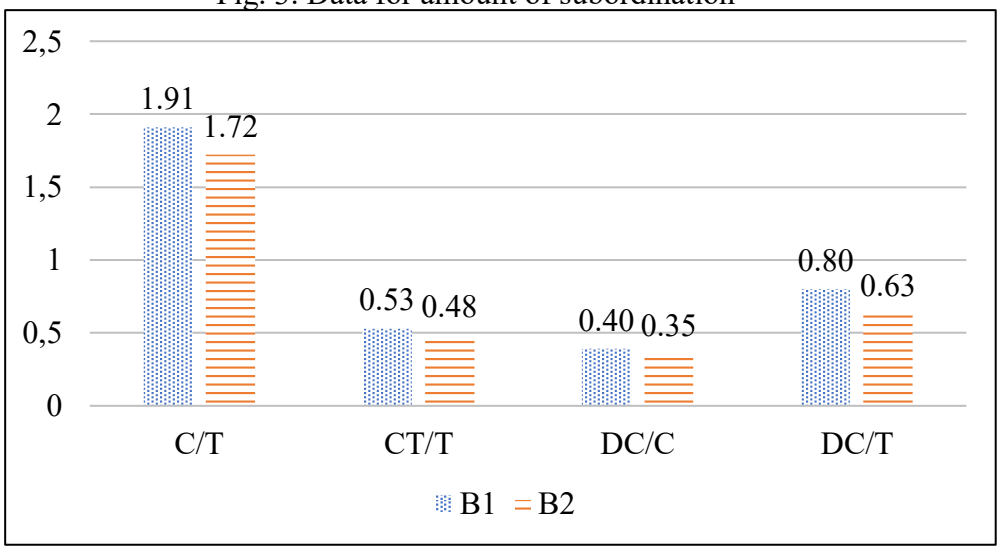
The findings in this paper regarding the MLS ratio support those by Lu and Ran, who reported a decrease in the average sentence length as learners become more proficient. However, our results concerning the non-significant decrease in the MLT ratio may contradict those by Barrot and Agdeppa, Bulté and Housen, Casal and Lee, and Zhang and Yang because these studies show a linear increase in this syntactic complexity measure as students progress in their English instruction.

The perceived increase in MLC at B2 level found in our study, although non-significant, may be found to be in line with the data by Bulté and Housen, and Zhang and Yang, who reported that learners tend to produce more clauses as they progress in their language learning process.

4.1.3 Amount of subordination

The results of all the measures employed to analyse the amount of subordination in the opinion texts at CEFR B1 and B2 levels showed a decrease from one level to the next. However, only three out of the four measures, namely clauses per T-unit measure (C/T)—examples (9) and (10), dependent clauses per clause (DC/C)—examples (11) and (12), and dependent clause per T-unit (DC/T), reveal a statistically significant decrease in the use of subordination at CEFR B2 level (Fig. 3 and Table 3). The other ratio, the complex T-unit ratio (CT/T)—examples (13) and (14), also suggests a decrease in the use of subordination across levels, but was found not to be statistically significant.

Fig. 3. Data for amount of subordination



(9) So, *if you have the time and the money and you are interested in improving your proffesional CV, why don't doing a master's degree*? (B1_9458)

(10) At last but not least, *it takes a lot of time to take care of them*. (B2_60126)

(11) In conclusion, I would recommend a master's degree to people that *either want to further their knowledge* or *to people who need it for more long-term objectives*. (B1_9506)

(12) But it is important for young people to stay active *because their actual lifestyle will determine their future one*. (B2_70038)

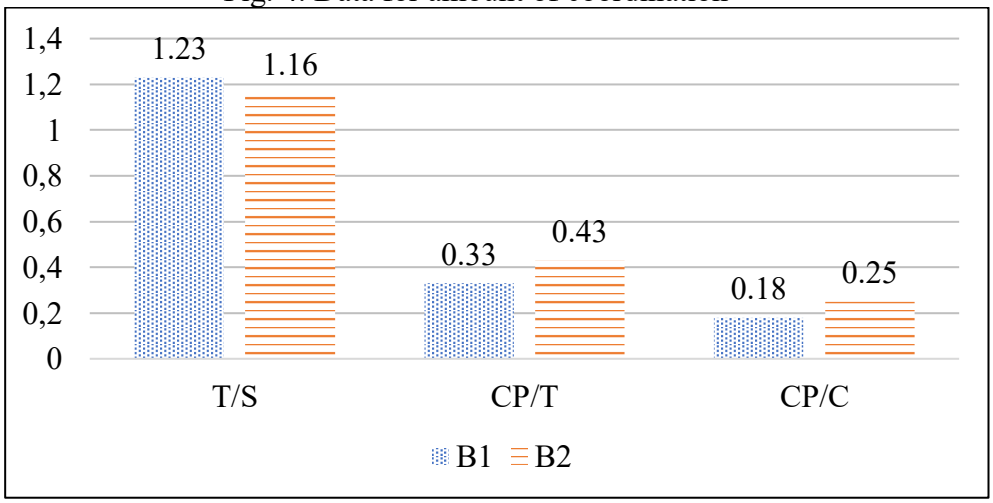
(13) On the other hand, you will acquire a high level of knowledge in a more specific area, *which is an advantage if you want to become an expert in your field*. (B1_9453)
(14) The downside of this creatures is that *fullfilling their needs can be really expensive*. (B2_60120)

When this decrease in subordination from CEFR B1 to B2 level in our data is considered together with Khushik and Huhta's results, who reported a linear increase in DC/C from A2 to B1, and Barrot and Agdeppa's findings, who observed a continued increase in DC/T from B1.1 through B2, a non-linear pattern emerges. While previous research shows a steady increase in subordination up to CEFR B2 level, our results suggest a decrease at this level. Subordination development, therefore, may not follow a uniform trajectory in different text types.

4.1.4 Amount of coordination

Contrary to the generalised decrease in subordination in opinion texts from CEFR B1 to B2 levels, our findings (Fig. 4 and Table 3) show statistically significant increases in coordination in coordinated phrases per T-unit ratio (CP/T) and coordinated clauses per clause ratio (CP/C), as illustrated in examples 15 to 18, and 19 to 22, respectively. Only the T-units per sentence ratio (T/S) pointed to a non-significant decrease from CEFR B1 to CEFR B2 levels.

Fig. 4. Data for amount of coordination



(15) If you feel confortable working *and* learning money, you could left the university. (B1_9301)
(16) In the other hand, if you don't do a master's degree you lose the oportunity to increase yours knowledge *and* meet new people. (B1_9479)
(17) Apart from excersising *and* eating healthy it it really important to take care of our mental health. (B2_70038)
(18) Usually, doing exercise for children and young people promotes a regular style of life with longer sleep times for them helping to keep them also mentally active and less prone to mental diseases and also more happy. (B2_70064)
(19) That's what our students ask in their last year of carreer, *and* in this article we're going to take you out of doubt. (B1_9508)
(20) It gives you economic independence *and* also prepares you for your future job. (B1_9299)
(21) Most young people take for granted their health *and* often forget about the good habits. (B2_70038)
(22) That could be a nice idea, but before give this step, is nenessary be realistic and evaluate pros and cons. (B2_60127)

A decrease in the T/S ratio with proficiency level has also been reported in Barrot and Agdeppa, Casal and Lee, and Lu. In our data, the decrease in the T/S ratio, although not significant from the statistical point of view, seems to indicate that B2 learners produce shorter sentences with fewer multiple independent clauses per sentence, which is common at lower proficiency levels. This result supports the claim by Barrot and Agdeppa, Lu, and Zhang and Yang that more advanced writers often demonstrate greater control over clause integration and sentence organisation, which results in shorter but structurally denser sentences.

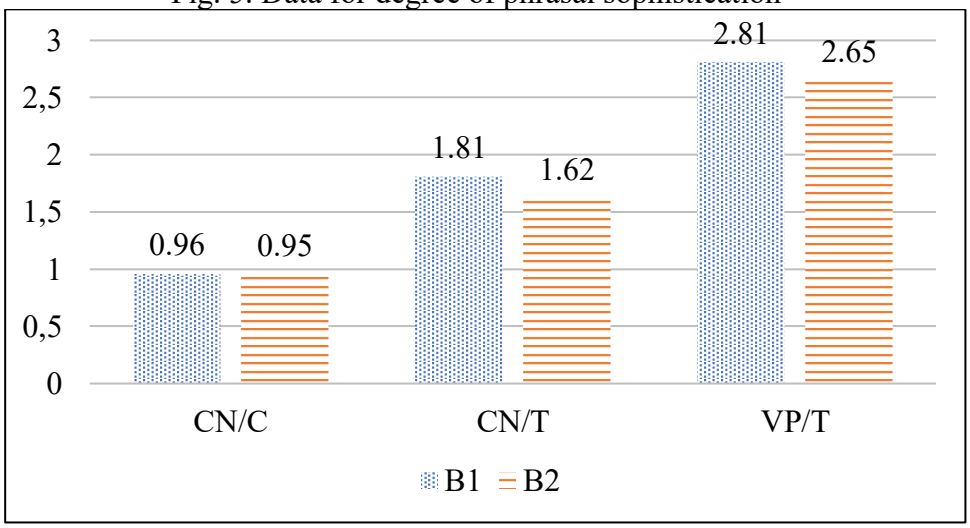
The statistically significant increase in the CP/T and CP/C ratios is also in line with previous research which found an increase of coordination in the production of students at more advanced levels. Barrot and Agdeppa, for instance, showed that the CP/C ratio remained the same from A2 to B1.1 but increased from B1.1 to B1.2 and B2. Lu also revealed that advanced learners exhibit a more frequent use of coordinated phrases as both the CP/T and the CP/C increased in levels 2, 3 and 4, suggesting that as learners reach higher proficiency levels, they still resort to coordination to express syntactic complexity. Khushik and Huhta highlighted, however, that the increase in coordination may be determined by the learners L1, since L1 Finnish students employed more coordination at A2 and B1

levels, but L1 Sindhi learners were found to use coordination more at the A levels (A1 and A2).

4.1.5 Degree of phrasal sophistication

The phrasal sophistication measures did not reveal statistically significant differences across the levels analysed. The complex nominals per clause ratio (CNC)—see examples 23 and 24, showed quite similar results at both levels and the complex nominals per T-unit ratio (CN/T)—see examples 25 and 26), and the (verb phrase per T-unit ratio (VP/T), pointed to a decrease from CEFR B1 to B2 level, as seen in Fig. 5.

Fig. 5. Data for degree of phrasal sophistication



(23) *students with familiar economical problems* (B1_9290)
(24) the importance *of regular movement on the preventing of several diseases* (B2_70055)
(25) Having a part-time work during the academic period have *some positive and negative aspects that must be considered*. (B1_9493)
(26) As far as I am concerned, *any type of physical activity* will be useful to yourself. (B2_70044)

The similar CN/C ratio at both CEFR levels in this study contrasts with previous results in the literature (Barrot and Agdeppa; Casal and Lee; Lu). Barrot and Agdeppa reported an increase in nominalisations, included in

Lu's concept of complex nominals, from B1.1 to B2. Casal and Lee showed that advanced learners exhibit a higher frequency of CN/C if compared to lower learners. Lu ("A Corpus-Based Evaluation") highlighted that Level 4 students outperformed their Level 1 counterparts regarding CN/C.

Our findings concerning the slight non-significant decrease in the CN/T ratio do not coincide with the previous literature either. Barrot and Agdeppa demonstrated that there was an increase from B1 to B2, the progression being higher from B1.2 to B2. Likewise, Lu confirmed that students' production of complex nominals per T-unit at Level 4 duplicates the one at Level 1. Seo and Oh, with learner production at higher levels, reported that CEFR B1 and B2 students use fewer complex nominals if compared to students at C1 and C2 levels.

The comparison of the results obtained in the CN/C ratio as well as the CN/T ratio with those in the previous literature, therefore, shows that there is a text type effect on phrasal sophistication development. In fact, the academic text types in Barrot and Agdeppa, Casal and Lee, Lu, and Khushik and Huhta show an increase in phrasal sophistication whereas it remains similar in opinion texts.

Finally, the verb phrase per T-unit ratio (VP/T) seems to point to a slight non-significant decrease at CEFR B2 level in our data. Therefore, CEFR B2 learners may tend to employ fewer finite and non-finite verb phrases per T-unit than their CEFR B1 counterparts. This finding contradicts those by Barrot and Agdeppa, and Khushik and Huhta. Barrot and Agdeppa found a slight increase in this measure between A2 and B1.1 levels, but an important increase from CEFR B1.2 to B2 level. Khushik and Huhta also revealed an increase in the VP/T ratio as learners' proficiency level increased from CEFR A1 to A2 and B1 levels.

4.2 Global, Clausal and Phrasal Syntactic Complexity Measures in L1 Spanish EFL Opinion Writing at CEFR B1 and B2 Levels

The 14 measures/ratios in the five dimensions established by Lu can be classified into global, clausal and phrasal complexity measures.

Findings in the syntactic global measures (RQ1), that is, those which consider sentences and T-units, reveal that at CEFR B2 level students write shorter sentences and T-units with fewer clauses which are found, in turn, longer than that at CEFR B1 level. This finding indicates that learners produce more information-dense clauses as their proficiency level

increases, a pattern which has also been reported by Barrot and Agdeppa, Bulté and Housen, Casal and Lee, Lu, and Zhang and Yang.

In the case of clausal complexity measures (RQ2), that is, those which involve clauses, there is a statistically significant decrease in three out of the four ratios which involve subordination (i.e., C/T, CD/C and DC/T), but statistically significant increases in two out of the three ratios which measure the amount of coordination (CP/T and CP/C). CEFR B2 learners, therefore, are found to express their opinions reducing the degree of subordination (both at T-unit and clause levels) and increasing coordination. The only coordination measure which shows a non-significant decreasing tendency is T/S (T-units per sentence), which can be considered a global complexity measure. The decrease in this ratio, therefore, may be considered to be in line with the general decrease in the syntactic global complexity measures.

In terms of phrasal sophistication (RQ3), our findings reveal non-statistically significant differences in the ratios which involve complex nominals. Both VP/T and CN/T may suggest a slight decrease at CEFR B2 level. First, the VP/T result may point to the students' less frequent use of independent clauses within the same T-unit, in line with the decrease in the C/S ratio (clauses per sentence) also found in this study. Second, the lower CN/T ratio at B2 level may suggest a reduced density of complex nominals per T-unit. However, these findings should be interpreted with caution. Lu's framework does not measure phrasal complexity by means of fine-grained measures but rather through broader indices of phrasal sophistication. In fact, the consideration of ratios with complex nominals in the degree of phrasal sophistication measures in Lu entails syntactic units which go beyond the phrase boundary and extend to the clause.

Despite the differences in the text types analysed in the literature, namely the diverse variables employed to classify students' texts into different levels, the students' L1s and the varying number of measures in L2SCA employed in the different studies (Section 2), some similarities are found in the previous publications and this study. The decrease in two global measures related to sentence length (MLS and MLT, the former showing a statistically significant difference) resembles the tendency identified by Lu and Ran, who report that increases in proficiency do not necessarily lead to longer sentences but rather to more compact structures. The non-significant increase in mean length of clause (MLC) as proficiency advances may also align with observations by Bulté and Housen and Zhang and Yang. Likewise, the statistically significant

decrease in four clausal complexity measures (C/S, C/T, DC/C and DC/T) and the statistically significant increase in the use of coordination (CP/T and CP/C) from B1 to B2 to convey the information in their texts is in line with findings by Khushik and Huhta and Lu, who report that more proficient learners often rely on coordination more, as an alternative to subordination to express syntactic complexity.

The main differences encountered in this paper and the previous publications are found in subordination and complex nominals. First, the findings in this study show that learners at B2 level rely more on coordination rather than subordination. This tendency contradicts the results in the literature which report more frequent subordination as proficiency increases (Barrot and Agdeppa, Khushik and Huhta, Lu). Second, complex nominals remain largely the same in both levels in this study, even showing a slight decrease at B2 level. This result in our data contradicts previous research which shows an increase in the CN/C and CN/T ratios (Barrot and Agdeppa, Casal and Lee, Lu). It may be the case that complex nominals are more commonly used in argumentative essays than in opinion writing and, hence, their increase in argumentative writing in opposition to their stabilisation or even decrease in opinion writing.

5. Conclusions

All in all, our findings indicate that L1 Spanish EFL students' syntactic complexity at CEFR B2 level is characterised, when compared to their CEFR B1 level counterparts, by a slight decrease of global syntactic measures related to the length of the sentence, T-unit or number of independent clauses and finite and non-finite verb phrases in a sentence or T-unit (MLS, MLT, T/S and VP/T), but an increase in mean length clause. There is also a tendency for most clausal complexity measures to decrease, as B2-level opinion writing shows fewer clauses per sentence and per T-unit, including dependent clauses. These students' production shows, however, a tendency to complexify their language by means of clausal coordination more than their CEFR B1 counterparts. Phrasal sophistication, however, does not reveal important differences between both CEFR levels, contrary to the general tendency to increase noun phrase complexity in academic writing, especially argumentative writing, reported in the syntactic complexity literature.

This paper has described syntactic complexity development at two CEFR levels in L1 Spanish EFL opinion writing, an under-researched text

type. Although most research on syntactic complexity focuses on academic writing, especially argumentative writing (Barrot and Agdeppa; Khushik and Huhta; Lu; and Ran), because of its higher syntactic complexity (Biber et al. "Predicting Patterns of Grammatical Complexity"; Polio and Yoon), we believe that it is necessary to analyse syntactic complexity development in other text types. This is so because of three main reasons. First, the results obtained may help provide a comprehensive description of syntactic complexity in learner writing, including academic and non-academic text types. Second, opinion writing is frequently employed by language users all around the world. Third, there are a number of text types, such as opinion writing, which prove important for students in high-stakes language accreditation exams and, therefore, in their academic achievements. Learner corpus-based analyses of syntactic complexity in those text types are necessary to inform teaching and assessment practices which may help learners progress in the writing of such important text types.

Our study has employed the text CEFR level as the criterion for the students' proficiency level. Although most syntactic complexity studies have employed different criteria to classify texts into different levels, more studies nowadays make use of the CEFR levels (e.g., Barrot and Agdeppa; Díez-Bedmar, "NP complexity;" Khushik and Huhta; and Lu). The consideration of the well-established CEFR levels in CEFR-aligned learner corpora will, undoubtedly, facilitate the comparison of the results obtained in different studies so that a better description of syntactic complexity in learner writing may be provided.

The research presents a number of limitations which may be addressed in future research. First, the number of texts per CEFR level may be increased so that the results are more representative of learner writing at those levels. Efforts should be made to employ fully CEFR-aligned learner corpora which ensure that the texts analysed are at the established CEFR level. Second, the measures/ratios in L2SCA may be complemented with those in other automatic software, such as TAASC (Kyle), so that more fine-grained complexity measures are also considered and phrasal complexity in opinion writing can be more comprehensively analysed. Third, future research could also investigate both lexical complexity and syntactic complexity to explore the interaction between lexical and syntactic development and obtain a more comprehensive account of overall linguistic complexity in L1 Spanish EFL learners' writing. Fourth, another promising future line of research could use

longitudinal and contrastive interlanguage designs, including motivational and self-regulatory candidates' profiles, to examine whether stagnation in syntactic complexity reflects a developmental plateau in learner writing or whether similar patterns are also found in native-speaker writing. Fifth, future studies may also extend the present analysis to other non-academic genres, such as narrative writing, to investigate whether differences in syntactic complexity found in argumentative writing and opinion writing also emerge across other genres. Finally, more variables regarding the candidates who wrote the exams in the *FineDesc Learner Corpus* (i.e., their gender, whether or not they attend a preparation course before taking the exam or not, the status of English in their plurilingual repertoire, their L1s, etc.) may be considered to analyse the effect they may have on the syntactic complexity in their texts. Studying the effects that other variables, such as the students' L1 (Khushik and Huhta) and the communicative purpose of the task (see Polio and Yoon), may also prove important to achieve a comprehensive understanding of syntactic complexity development in learner writing.

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