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Noun-phrase complexity in the texts of intermediate-level Norwegian EFL writers: stasis or development?

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Abstract

This paper examines the longitudinal development in noun-phrase complexity in English texts written by Norwegian learners in school years 8-10. The study is based on material from the TRAWL (Tracking Written Learner Language) corpus (Dirdal et al., 2017; Dirdal et al., 2022), comprising longitudinal data from nine pupils. The study tests the hypothesis proposed by Biber et al. (2011) that noun-phrase complexity increases gradually as writers develop, and answers the following research question: To what extent can longitudinal development in noun-phrase complexity in accordance with Biber et al.'s (2011) stages be traced in the written production of intermediate-level Norwegian EFL writers in Years 8-10? The results indicate that there is very little evidence to suggest an increase in sophistication as regards phrasal modification over the three years. Instead, the pupils primarily rely on the types of modifiers that are acquired in early developmental stages, such as attributive adjectives and prepositional phrases. Thus, there should be a greater pedagogical focus on developing pupils' skills in using more sophisticated noun-phrase modifiers, to prepare them for the future demands placed on their academic-writing skills.

Keywords

Learner language, Noun-phrase complexity, Pre-tertiary learners, L2 English.

1. Introduction

Research on the role of complexity in writing development goes back to at least the 1930s (Biber et al., 2011, p. 6), and most of these studies have employed measures based on the length of T-units or the degree of clausal subordination present in student texts (Biber et al., 2011, p. 7) to

investigate 'linguistic complexity' (Bulté & Housen, 2012). This focus on T-units and clauses is evident not least from the surveys of previous research provided by Wolfe-Quintero et al. (1998) and Ortega (2003). However, a paper by Biber and Gray (2010) *implicitly* challenged the foundation for such studies, by showing that although both speech and writing are structurally complex, these complexities are of completely different types: conversation is characterized by clausal subordination, while in academic writing the primary source of complexity is the use of non-clausal modifiers embedded in noun phrases (NPs). Building on these findings, Biber et al. (2011) *explicitly* questioned the focus in earlier studies of writing development, by pointing out that the long-standing tradition of relying on measurements of unit length and degree/frequency of clausal subordination actually must lead to the "mysterious conclusion that student writing fails to increase (and often decreases) in complexity as students advance in proficiency" (Biber et al., 2011, p. 13), since the nature of advanced writing is such that it relies on phrasal complexity to a greater degree than on clausal subordination. To remedy this anomaly, the authors proposed a developmental trajectory for L1 learners which starts with conversation and its inherent clausal complexity before moving on to acquisition of writing and its inherent phrasal complexity, with the caveat that the grammar of writing is not always acquired successfully. As regards noun phrases in particular, this trajectory involved a development from relying on simple forms of NP modification such as premodifying adjectives and nouns and postmodifying finite relative clauses and prepositional phrases, through a gradual acquisition of more complex forms such as non-finite relative clauses as postmodifiers, and with features such as postmodifying 'that' clauses and appositive noun phrases included in the most sophisticated stages (cf. section 3.2 for a complete overview). Furthermore, it was hypothesized that the development of L2 learners mirrors that of L1 learners, with a progression from "conversational competence to competence in academic writing" (Biber et al., 2011, p. 29). While comparisons of L1 speech and writing provided fairly reliable evidence that this trajectory holds true for L1 acquisition of English, Biber et al. noted that confirmation was required from empirical studies of non-native learner data to determine whether the proposed developmental stages could be useful descriptors of L2 development as well (Biber et al., 2011, p. 31). Numerous subsequent studies of L2 development have tested this hypothesis on learner data, and while results vary somewhat, there is reason to conclude that the proposed stages are useful for tracking development in learner language as well (cf., e.g. Parkinson & Musgrave, 2014; Kreyer & Schaub, 2018; Jitpraneechai, 2019; Lan et al., 2019; Lan & Sun, 2019; Atak & Saricaoglu, 2021; for further discussion of these, see section 2).

Despite the increasing body of studies demonstrating the soundness of the approach proposed by Biber et al. (2011), a number of researchers (cf., e.g. Ansarifar et al., 2018; Kreyer & Schaub,

2018) have also noted that many recent studies still focus on clausal complexity and do not include phrasal complexity measures, or, in the words of Biber and Gray et al. (2020, p. 11), use "omnibus measures" that conflate a number of different features into a single measure which is difficult to interpret, and thus only indirectly measure noun-phrase complexity. While studies of the latter type often have the advantage of employing automated tools for analysis, which allow researchers to examine larger datasets than is possible when relying on manual analysis, these tools frequently rely on categories such as the one termed 'complex nominals' by Lu (2011, p. 44-45), which includes "(1) nouns plus adjective, possessive, prepositional phrase, adjective phrase, participle, or appositive; (2) nominal clauses; and (3) gerunds and infinitives in subject, but not object position". As can be seen from this list, studies that rely on this tool cannot distinguish between increased complexity caused by NP modification and that caused by use of features that are not components in noun phrases, such as infinitives in subject position. Thus, a great number of studies that ostensibly examine relevant features of linguistic complexity are, in fact, less relevant as part of the backdrop of the present study, because the extent to which their results focus on features of NP modification is unclear. This applies, for instance, to studies by Lu and Ai (2015), Liu and Li (2016), Kyle and Crossley (2018), Casal and Lee (2019), Qin and Uccelli (2020), and Barrot and Agdeppa (2021).

To the best of my knowledge, there has not yet been an attempt to test whether the developmental stages proposed by Biber et al. (2011) can be traced in the written production of intermediate-level Norwegian EFL learners, and there is, in fact, a general paucity internationally as regards studies of phrasal complexity in the production of pre-tertiary learners, as pointed out by Kreyer and Schaub (2018), Martínez (2018), and Díez-Bedmar and Pérez-Paredes (2020). This paucity is even more noticeable for longitudinal studies, of which there are very few, although there may be signs that this situation is changing (cf. Biber & Reppen et al., 2020). The present paper, therefore, aims to answer the following research question: To what extent can longitudinal development in noun-phrase complexity in accordance with Biber et al.'s (2011) stages be traced in the written production of intermediate-level Norwegian EFL writers in Years 8-10?[1] The aim of this investigation is two-fold: firstly, to test the framework proposed by Biber et al. (2011) on

[1] The pupils have been classified as intermediate-level based on their age and school level. It would of course have been advantageous to do so based on their CEFR level, but in Norway there is no systematic testing or requirement for teachers to determine the CEFR level of pupils. Hence, the only available indicator is an estimate by the Norwegian Directorate for Education and Training that many reach B1 level in the course of lower-secondary school (Years 8-10; cf. https://www.udir.no/kvalitet-og-kompetanse/laremidler/kvalitetskriterier-for-laremidler/kunnskapsgrunnlag-kvalitetskriterium-engelsk/laremiddel-i-engelskfaget/kjerneelementa-i-engelskfaget/), which corresponds to the years considered in the present study.

a learner population that has not yet been studied from this perspective, and thus add to the existing knowledge about the development in NP complexity among pre-tertiary EFL learners. Secondly, the results from the present study may be applied pedagogically, to inform EFL teaching in Norway by shedding light on these learners' repertoire as regards NP modification, i.e. the "global" or "system complexity" of their English production (cf. Bulté & Housen, 2012, p. 25).

2. Previous research

This overview and discussion of previous research focuses on publications that have employed Biber et al.'s (2011) developmental stages in investigations of NP complexity, either by looking at frequencies of various modifier types or by attempting to trace the range of developmental stages. The overview is intended to present the main trends in NP complexity research in the period since 2011, but the scope of the present paper necessarily prevents it from being exhaustive.

Biber et al.'s (2011) framework is introduced in full in section 3.2, but a brief description is in order here to serve as a backdrop for the presentation of previous research, which includes references to these stages wherever possible. The framework has five stages, but NP modification features only in Stages 2-5. Briefly, simple noun modifiers in the form of attributive adjectives appear in Stage 2, and with each subsequent stage more complex modifiers are added: Stage 3 includes nouns as premodifiers and relative clauses and prepositional phrases as postmodifiers, among other features, and in Stage 4 we find non-finite relative clauses and multiple premodifiers. Finally, Stage 5 includes, for instance, multiple postmodifiers and postmodifiers realized by a preposition followed by a non-finite complement clause. Note that many of the studies have introduced modifications to Biber et al.'s (2011) framework, some of which have been implemented in the present study (cf. section 3.2).

Three studies investigating a subset of NP-complexity features have been included here, and two of these looked at data from university-level L2 writers of English. Firstly, Ansarifar et al. (2018) compared abstracts from theses and dissertations written by Persian MA and PhD students with published texts by expert writers in the form of abstracts from research articles published in international journals. All texts were from the field of applied linguistics. The authors found that while the three corpora shared some features, such as the most common premodifiers

being attributive adjectives (Stage 2; e.g. '*experimental* research')[2] and nouns (Stage 3; e.g. '*language* classrooms'), and the most common postmodifiers being prepositional phrases (Stage 3; e.g. 'the merits *of form-focused instruction*'), there were still indications that with increased experience comes increased phrasal complexity. This conclusion was based on the fact that PhD students used more nouns as premodifiers (Stage 3) and past participles as postmodifiers (Stage 4) than MA students, and the additional finding that expert texts had a higher frequency of multiple prepositional phrases as postmodifiers (Stage 5; e.g. 'a study *of the effects of three types of planning conditions*') than the two other text categories. Biber and Reppen et al. (2020) reached similar conclusions, although their study was longitudinal, including data collected over a period of two years from a set of 22 students at universities in English-speaking countries for whom English was an L2. The learners comprised 12 undergraduate and 12 graduate students studying in the UK, US, or New Zealand, and their language background varied widely: for nine students, the L1 was Chinese, while for the others, it was either Greek, Vietnamese, Bengali, Russian, German, French, or Turkish. This study investigated texts written as part of the students' regular coursework in university courses in four macro disciplines: business, humanities, social sciences, and natural sciences. In this dataset, it was observed that the participants, to some extent, followed individual developmental trajectories, but that there was a general tendency towards an increase in phrasal modification, notably comprising an increase in the use of nouns as premodifiers (Stage 3) coupled with a slight decrease in the use of attributive adjectives (Stage 2). In a rare example of an investigation of pre-tertiary learners, Díez-Bedmar and Pérez-Paredes (2020) investigated a cross-sectional corpus of texts by Spanish EFL learners in Years 7, 8, 11, and 12 by means of both automatic and manual analysis. The learners' proficiency level is stated in the form of aims, such that learners in Years 7 and 8 aim at CEFR level A2, and the learners in Years 11 and 12 aim at CEFR level B1. The texts examined were written in response to the following prompt: "Describe your favourite film. What happens in it?" Interestingly, the authors found that there were few clear developmental trends, with many modifier types occurring across all levels. This might indicate that consistent reliance on the more advanced forms of noun modification and reduction in the proportion of less advanced features only emerge in tertiary education. To the extent that Díez-Bedmar and Pérez-Paredes could trace more consistent development, this involved three features: multiple prepositional phrases as postmodifiers (Stage 5) were found only in Years 11 and 12; nouns as premodifiers (Stage 3) were used more in Year 12 than in Year 8; and multiple premodifiers (Stage 4; e.g. 'an *interesting and very exciting* film') were

[2] The overview includes a number of examples of the features discussed, all of which are quoted from the studies in which they appear, with the relevant features italicized.

used more in Year 12 than in Year 11. Also, NPs with both pre- and postmodification were found to be more frequent in Year 12 than in earlier years.

Among the six studies included here that investigated a more complete set of the features included in the developmental stages proposed by Biber et al. (2011), five used data produced by university-age learners from various countries, and only one investigated the development of pre-tertiary learners. Parkinson and Musgrave (2014) examined the writing of Asian L2-writers of English who were university students in New Zealand. The learners were divided into two groups according to level of experience, with 21 students in an EAP (English for Academic Purposes) course being the less-experienced group and 16 MA students being the more-experienced group. In the EAP group, nine students were Chinese and the rest were primarily from countries in South-East Asia, while in the MA group, nine students were Vietnamese and the remaining seven came from a range of South-East Asian countries. The texts investigated were part of the students' coursework: the EAP texts were argumentative texts on the topic of nuclear energy, and the MA texts were on various topics in the field of TESOL/applied linguistics. The results showed that the MA writers produced modifiers from Stages 4 and 5, while the EAP writers relied on attributive adjectives (Stage 2; e.g. '*big* earthquake'), to the extent that more than 50% of their modifiers were of this type. This lends credence to the hypothesis that premodification by attributive adjectives is acquired early, while it takes more practice and experience to progress to the use of nouns and possessive nouns (Stage 3; e.g. '*people's* views') as premodifiers, and to use prepositional phrases as postmodifiers (Stage 3; e.g. 'the production *of fossil fuels*') (Parkinson & Musgrave, 2014, p. 55). It is not always clear-cut, however, that students who are deemed to be more proficient employ more sophisticated types of phrasal modification than do lower-proficiency students. Lan et al. (2019) investigated argumentative essays written as coursework by 100 L1 Chinese university students in the US. The students were divided into one high-proficiency group and one low-proficiency group based on their TOEFL scores, and it was found that the high-proficiency students produced more modifiers from Stages 2 (e.g. attributive adjectives as in '*different* things') and 3 (e.g. relative clauses as in 'a 9.0 magnitude earthquake *that happened in Japan*') than expected, while low-proficiency students produced fewer of these than expected. This might, of course, be due to L1 influence, but other researchers have also reported that L2 university students seem to rely on modifiers from Stages 2 and 3 (i.e. attributive adjectives (Stage 2) and premodifying nouns and relative clauses (Stage 3)), with little or no representation of modifiers from later stages: this has been found to be the case for Thai, Chinese, and Turkish learners (Jitpraneechai, 2019; Lan & Sun, 2019; and Atak & Saricaoglu, 2021, respectively). Thus, it seems unlikely that this is an L1-related phenomenon, and in fact

two of these latter studies provide a potential explanation, in that they compare EFL student writing with writing by other, presumably more proficient authors: Jitpraneechai (2019) compared texts by 39 Thai students with native-speaker student texts from the LOCNESS corpus[3]. The learner texts were argumentative texts on social-media marketing, and were written in class under timed conditions. The results showed that the Thai students most frequently used attributive adjectives (Stage 2) and nouns as premodifiers (Stage 3; e.g. '*social media* platforms'), while features from Stages 4 and 5 were more frequent in the L1 texts, for instance, the use of multiple prepositional phrases as postmodifier (Stage 5; e.g. 'greatest co-operation and joint action *in the areas of foreign, social and environmental policy*'). Lan and Sun (2019) used published research articles as a yardstick against which to measure Chinese university students. The learner group included 79 L1 Chinese students at a US university, whose proficiency ranged from 'fair' to 'good' based on their TOEFL scores. Their texts were argumentative essays, and their use of NP modification was compared with that of journal-article authors based on findings in previous studies. Lan and Sun found that the total modifier frequency was much higher in journal articles than in student essays. It would seem, then, that proficiency and/or experience are factors that trump the influence of learners' L1, in the sense that these developmental stages seem to be applicable to learners from different language backgrounds. This is also borne out by the findings from the studies of Ansarifar et al. (2018) and Biber and Reppen et al. (2020), as discussed above.

The final study to be included here is perhaps the one that is closest in design to the present study. Kreyer and Schaub (2018) carried out a true longitudinal study of noun-phrase complexity in the production of 15 German EFL learners, in Years 10-12. No proficiency testing of these learners was carried out, but it was assumed that Year-10 students are at CEFR level B1 and Year-12 students are at CEFR level B2. The texts investigated were all written as part of exams and were either expository or argumentative in nature. Kreyer and Schaub found that all the modifier types in Biber et al.'s (2011) framework were attested for all grades. There were no consistent developmental trends, and some of the features, e.g. attributive adjectives (Stage 2) and premodifying nouns (Stage 3), followed non-linear patterns of development (increase-decrease and decrease-increase, respectively). The authors noted the prevalence of individual developmental trajectories, and, especially interesting for the present study, found that the data "do not show a change in the proportional distribution of stage features in favor of higher stages towards the end of the three-year period" (Kreyer & Schaub, 2018, p. 99).

[3] https://uclouvain.be/en/research-institutes/ilc/cecl/locness.html

3. Material and method

3.1 Learner-corpus material

The material for this study comes from the TRAWL (Tracking Written Learner Language) corpus (Dirdal et al., 2017; Dirdal et al., 2022), which is a longitudinal corpus of Norwegian pupils' written L2 and L3 texts. The study is based on an investigation of texts written by pupils in Years 8, 9, and 10 (lower-secondary school), i.e. pupils aged from 13 to 15, and comprises true longitudinal data from nine pupils (i.e. texts from all three years). The maximum possible number of texts per student is four per year, i.e. 12 in total. Table 1 presents an overview of the pupils and the texts they have contributed per year, as well as the total number of words per year. The pupil IDs correspond to the IDs in the larger corpus-compilation project, although they have been somewhat simplified here for the sake of readability.[4,5]

Table 1: Overview of the material

Pupil ID	Year-8 texts	Year-9 texts	Year-10 texts	Total number of texts	Total number of words per pupil	Average text length per pupil
P102	4	4	4	12	10,377	864.8
P103	4	4	4	12	7,394	616.2
P104	4	4	4	12	8,444	703.7
P105	4	4	4	12	4,497	374.8
P106	4	4	4	12	7,038	586.5
P107	4	4	3	11	3,886	353.3
P108	4	4	4	12	7,026	585.5
P109	4	4	4	12	7,529	627.4
P110	4	4	4	12	7,140	595.0
Total number of texts per year	36	36	35	107		
Total number of words per year	20,255	23,654	19,422	63,331		
Average text length per year/total	562.6	657.1	554.8	591.9		

[4] In the TRAWL corpus, all pupils have a 5-digit identifying number. The pupils whose texts have been employed in this study originally had codes starting with '60', i.e. the present study's 'P102-P110' correspond to TRAWL's 'P60102-P60110'.

[5] See Nacey (2022) for a study of metaphors in texts written by P102, P103, P105, P109, and P110.

The average text length per year increases from 562.6 words in Year 8 to 657.1 words in Year 9. There is then a decrease to 554.9 words per text in Year 10. The most noticeable aspect of average text length is, of course, the increased length in Year 9, which probably results from more pupils selecting prompts that elicited longer texts.

There were four data-collection points per year, and all texts were timed and written in-class. The pupils had a choice of topics at all data-collection points, but in the prompts, there was very little explicit focus on text type or genre. In fact, an examination of the 38 prompts chosen by at least one pupil provided the information in Table 2, which shows the most frequently occurring constructions. The remaining 13 only occurred once.

Table 2: Overview of prompts chosen by at least one pupil

Prompt	**Frequency**
"write a text"	10
"discuss"	5
"write a letter"	4
"write a story"	2
"explain" + "give reasons"	2
"expand the moment" (presented in a text extract)	2

As can be seen from Table 2, the most frequently selected prompt was "write a text". The other prompts in the table are slightly more specific, but it seems fair to conclude that the learner corpus resulting from these prompts may contain a multitude of different clearly and less-clearly-defined text types. This must certainly be borne in mind when interpreting the results, as it could compromise comparability with previous studies, but, on the other hand, it provides a genuine insight into the educational context in which these nine pupils wrote their texts. Thus, the learner material examined in the present study comprises texts written on a number of topics, but other task conditions are shared, in the sense that all texts were written in-class under timed conditions. For more on the issue of genres/text types in TRAWL, see Hasund (2022).

3.2 Method

Each text was manually segmented into noun phrases.[6] Only noun-headed phrases were included, and noun phrases embedded in other phrases or clauses inside noun phrases, i.e. as part of prepositional phrases or dependent clauses, were considered a) as components of the structures in which they were embedded, and b) as separate noun phrases in their own right. The phrase in (1), where we find a noun phrase with an embedded noun phrase (italicized) occurring within the postmodifying prepositional phrase, illustrates this approach, which in cases like this results in two noun phrases being included in the analysis ('the room with all the spacesuits', and 'all the spacesuits').

(1) the room with *all the spacesuits*

This approach is in line with that taken by e.g. Atak and Saricaoglu (2021), but differs from, for instance, Kreyer and Schaub's (2018) method of extraction, where such phrases were not included. This should be borne in mind when comparing the overall frequency of noun phrases in the present and previous studies and might also influence the proportion of complex noun phrases and results regarding the various types of complex NPs. However, as practice in the literature has varied, it was decided to prioritize giving a complete picture of the NPs produced by the present pupils, even if that meant sacrificing total comparability with some previous investigations. It should also be noted that not all previous studies are transparent regarding this point.

Once all noun phrases had been identified, they were coded in two phases: in phase 1, the form of each noun phrase was recorded, which included whether the phrase was simple or complex, the number of determiners, and the number and form of premodifiers and postmodifiers. In phase 2, each complex phrase was further coded according to which stage it belonged to in a modified version of Biber et al.'s (2011) framework.

In the present study, a noun phrase has been considered complex if it has one of the following configurations ((i)-(iv)) in addition to the head: (i) two or more determiners; (ii) a premodifier or postmodifier; (iii) any combination of determiner + pre- or postmodifier, or several pre- or postmodifiers; (iv) any combination of determiner + both premodifier(s) and postmodifier(s). In other words, a noun phrase with just one determiner is not considered complex, as "the placement of an overt determiner is subject to grammatical and contextual restrictions and cannot always

[6] All segmentation and annotation was carried out by the author. While it would have been advantageous to have a second coder, this was unfortunately impossible, as no resources to finance such an approach existed.

be chosen freely by the writer" (Kreyer & Schaub, 2018, p. 93). Thus, a phrase like 'the car' would not be considered complex. However, phrases with two or more determiners have been considered complex in the present study, because a second determiner satisfies the requirement of being chosen freely by the writer: while the writer may have to include a definite article, there is no structural requirement to include a numeral, for instance, and therefore a phrase like 'the two cars' may be considered to be complex. The form of premodifiers and postmodifiers is a more complex issue, as this had to be recorded in a format that was compatible with Biber et al.'s (2011) framework to enable each phrase to be assigned to a stage (cf. Table 4). Table 3 provides examples of each of the complex phrase types as defined above.

Table 3: Types of complex noun phrases

Definition		**Example**
(i)	two or more determiners	[1] *all* [2] *her* stuff
(ii)	a premodifier or postmodifier	*curly* hair; son *of a hero*
(iii)	any combination of determiner + pre- or postmodifier, or several pre- or postmodifiers	*the wet* crops [determiner + premodifier]; *the* rest *of the spacesuit* [determiner + postmodifier]; [1] *small* [2] *octopus* babies [two premodifiers]; Stories [1] *with this theme*, [2] *where people can't decide by them self what they want to do with their life, or who they want to marry* [two postmodifiers]
(iv)	any combination of determiner + both premodifier(s) and postmodifier(s)	The *rumbling* sound *of the engines*

The categorization into developmental stages followed Biber et al.'s (2011) framework, but incorporated a number of modifications that have been introduced in previous studies, as well as one feature introduced by the present author. The categories used are outlined and exemplified in Table 4.

Table 4: Types of noun modifiers in complex noun phrases and the developmental stages to which they belong. All examples are from the TRAWL corpus.

Stage	**Feature**	**Example from TRAWL**	**Modification introduced by (where relevant)**
2	(Single) attributive adjective as premodifier	the *digital* world	
	Multiple determiners	*the first* texts	The present author
3	Noun as premodifier	the *bee* general	
	Possessive noun as premodifier	*Anna's* mom	
	Participial premodifier	*melted* chocolate; the *starving* parts of the world	Parkinson and Musgrave (2014)
	All relative clauses	one option *that worked every time*; that girl *who maybe not have the biggest heart*	Parkinson and Musgrave (2014)
	Prepositional phrase with 'of'	the sound *of a screaming little horse*	
	Simple prepositional phrase with preposition other than 'of'	the room *with all the spacesuits*	Parkinson and Musgrave (2014)
4	Non-finite (participial) relative clauses	a gaming console *released by Nintendo in 2002*; a dad *sleeping next to her*	
	Multiple premodifiers	a [1] *quick* [2] *awkward* hug	
5	Preposition + non-finite complement clause	any point *in attacking the Soviet Union*	
	Complement clause controlled by noun ('that' clause)	the fact *that Marcelo landed heavily on his right shoulder and he screamed in pain*	
	Appositive noun phrase	the beautiful ship, *Titanic*	
	'to'-clause (infinitive clause)	my ability *to express myself*	Parkinson and Musgrave (2014); Kreyer & Schaub (2018)
	Multiple postmodifiers	an outdoor restaurant [1] *inspired by Africa* [2] *with lions all around it*	
	Other	an hour *later*	Kreyer & Schaub (2018)

As Table 4 illustrates, a number of modifications to Biber et al.'s (2011) framework have been introduced throughout the years. The feature called 'multiple determiners' was introduced by the present author, for reasons discussed earlier in this section. Parkinson and Musgrave (2014) added participial premodifiers as distinct from attributive adjectives, and assigned this category to Stage 3, and this practice was subsequently adopted by Kreyer and Schaub (2018) as well as the present author. An additional change to the Stage-3 features was introduced and further employed in the same way by the same authors, as well as by Atak and Saricaoglu (2021), namely the inclusion of all relative clauses, and not just relative clauses with 'that' as relative pronoun. The same is true for the final modification in Stage 3: Biber et al. (2011) employed two categories for prepositional phrases with prepositions other than 'of'. If the preposition had a concrete or locative meaning, it would be considered a Stage-3 feature, but if the preposition had an abstract meaning, it would be categorized as a Stage-4 feature. In the present paper, in accordance with Parkinson and Musgrave (2014) and Kreyer and Schaub (2018), no such distinction has been applied, and thus all single prepositional phrases are classified as Stage-3 features. In Stage 5, we find two modifications: Parkinson and Musgrave (2014) added 'to'-clauses (infinitive clauses) to the framework, and Kreyer and Schaub (2018) assigned this feature to Stage 5. The present paper follows Kreyer and Schaub in this, and also in their introduction of another new Stage-5 feature, namely an 'other' category, which has been used for those few phrases with a postmodifier that does not appear as a separate item elsewhere in the framework.

As the dataset is small, the present study is necessarily exploratory, and no testing for statistical significance has been carried out. Instead, the description of the results relies on frequencies and overall tendencies, and any conclusions drawn will have to be tested on larger datasets in future studies.

4. Results and discussion

The procedure outlined in section 3 resulted in a total of 10,788 noun phrases eligible for analysis, of which 6,620 were simple, and 4,069 were complex. Table 5 shows the distribution of total noun-headed phrases and the number of simple and complex phrases per year in raw figures and frequencies per 1,000 words (ptw).

Table 5: Number of noun-headed NPs in the material and the number of simple and complex NPs (raw figures and frequencies per 1,000 words)

Year	**Noun-headed NPs**		**Simple**		**Complex**	
	Raw figures	*Frequency per 1,000 words*	*Raw figures*	*Frequency per 1,000 words*	*Raw figures*	*Frequency per 1,000 words*
8	3,431	169.4	2,190	108.1	1,142	55.7
9	3,880	164	2,497	107.3	1,383	59.1
10	3,477	179	1,933	101.4	1,544	81.8
Total (raw figures) & average (frequencies)	10,788	170.8	6,620	105.6	4,069	65.5

The overall frequency of simple NPs is lower in Year 10 than in Year 8, while there is an increase in the frequency of complex NPs. This is in accordance with Biber et al.'s (2011) hypothesis, in the sense that with increasing maturity learners produce more complex noun phrases. It is important to note, however, that an increased frequency of complex NPs does not necessarily entail more sophisticated NP modification. In other words, the increased frequency of complex noun phrases in the Year-10 texts may be the result of a greater number of noun phrases containing the simpler forms of modification, i.e. modifiers from Stages 2 and 3 (cf. Table 4). A further complication is that the figures in Table 5 are average frequencies for all nine learners whose texts make up the material for this study, and thus do not take individual developmental trajectories into account. To take these aspects into account, the remainder of this section is divided into two subsections which each examines aspects of the development of each learner. Section 4.1 examines the frequency of complex NPs in each learner's production, while section 4.2 focuses on the development in the use of stage features across the three years.

4.1 Development in the frequency of complex NPs

Figure 1 shows the frequency of complex noun phrases across years.

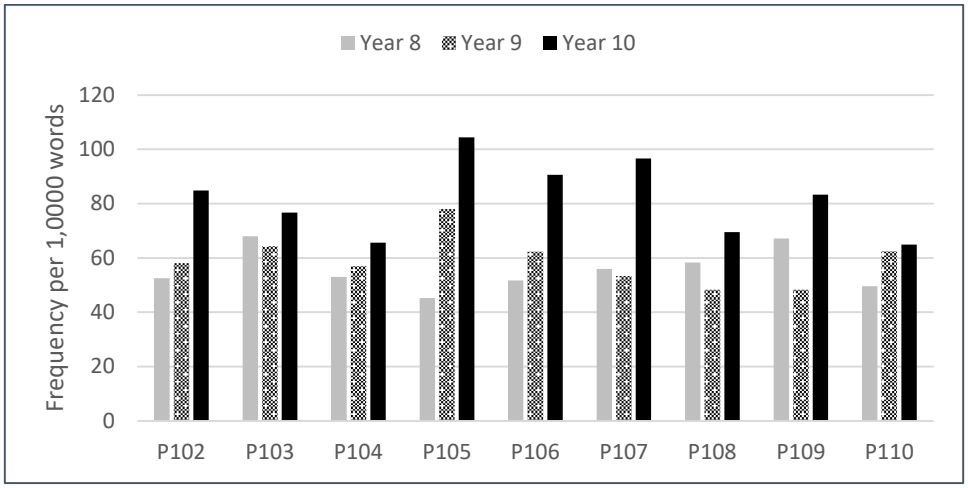

Figure 1: Frequency of complex noun phrases across years

Based on Figure 1, we can conclude that all pupils have a higher frequency of complex NPs in Year 10 than in Year 8, but that there is a lot of individual variation when it comes to how large the increase is, and four of the nine pupils have a decrease from Year 8 to Year 9 (P103, P107, P108, and P109). However, the fact that there is a higher number of complex NPs in Year 10 does not necessarily entail more sophisticated forms of NP modification. To investigate this, we need to examine the distribution of the features from the various stages in the framework, as set out in Table 4.

4.2 Development in the use of stage features across Years 8-10

Figure 2 provides an overview of the development in the use of stage features across the three years, based on average frequencies for all nine pupils.

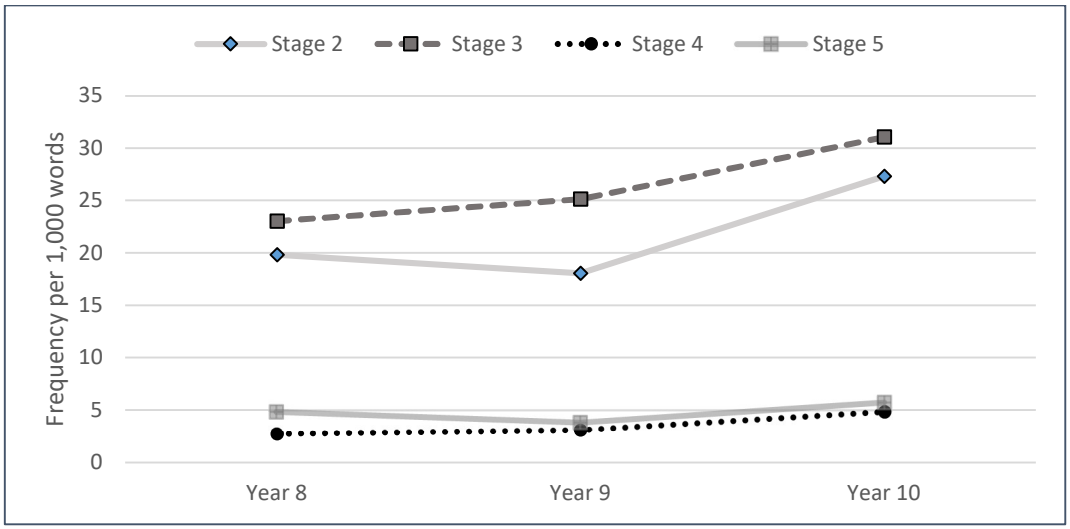

Figure 2: Stage features across years (average frequencies)

It is evident from Figure 2 that the higher frequency of complex NPs in Year 10 is due to a higher frequency of NPs with the least sophisticated forms of NP modification, as there is a noticeable increase in the frequency of features from Stages 2 and 3, and only minimal increase in features from Stages 4 and 5, which matches findings for German pre-tertiary learners (Kreyer & Schaub, 2018).[7] Figure 2 further shows that features from all stages are present in all years, which is also in line with findings for German pre-tertiary learners by Kreyer and Schaub (2018), and that there are very low frequencies for modifiers from Stages 4 and 5 overall, which matches findings from several previous studies: for Thai students (as compared to L1 students) (Jitpraneechai, 2019), and for Turkish students (Atak & Saricaoglu, 2021).

We now turn to a further examination of each of the four stages, both in terms of overall frequency for each stage, and in terms of the use of individual features within each stage.

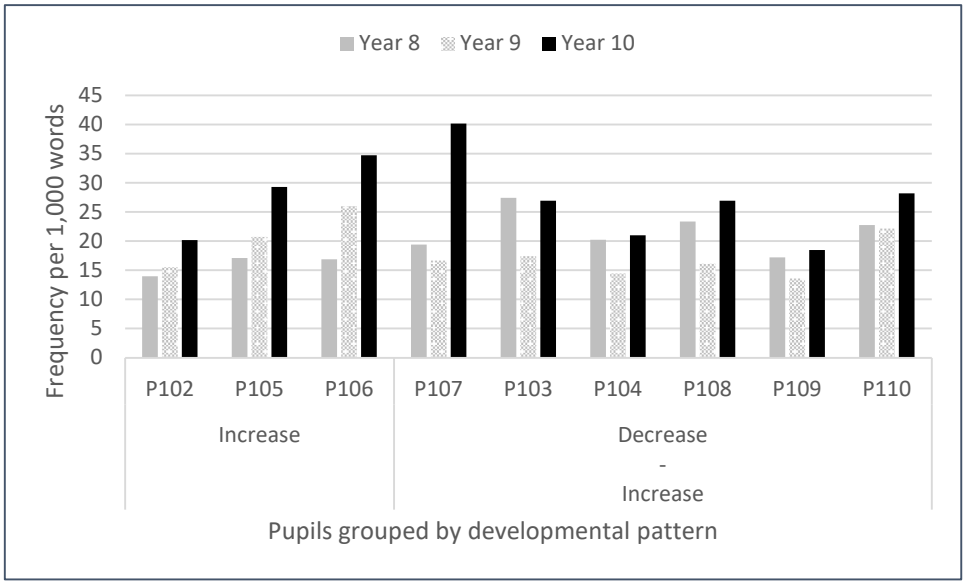

Figure 3: Overall development in the use of Stage-2 features

Figure 3 provides a first indication of the existence of individual developmental trajectories, in the sense that not all pupils exhibit a linear development in their use of the Stage-2 modifiers. Evidence of individual developmental trajectories has also been found for Spanish pre-tertiary EFL learners (Díez-Bedmar & Pérez-Paredes, 2020), for German pre-tertiary EFL learners (Kreyer & Schaub, 2018), and for undergraduate and graduate L2 university students (Biber & Reppen et al., 2020). There are two main groupings in Figure 3: three pupils have a year-by-year increase in the use of Stage-2 features (P102, P105, and P106), while the remaining six have a

[7] Cf. section 3.2 for a description of how the NP-extraction method in the present study differs from that employed by Kreyer and Schaub (2018), potentially resulting in a higher number of NPs in the present study.

wavy pattern with a decrease in Year 9 and then an increase in Year 10. Further, all pupils apart from P103 have a higher frequency of Stage-2 features in Year 10 than in Year 8, and for P103, the frequencies are almost identical for these two years. This explains the overall picture provided by Figure 2, which showed an increase in the use of Stage-2 modifiers in Year 10.

Table 6: Frequencies per 1,000 words for individual Stage-2 features across years

Feature	**Year**	**Pupil ID**								
		P102	*P103*	*P104*	*P105*	*P106*	*P107*	*P108*	*P109*	*P110*
Attributive adjective	*Y8*	11.8	24.9	16.0	14.8	11.6	17.2	21.0	12.6	20.5
	Y9	12.7	13.0	12.5	17.0	22.3	14.0	13.3	10.4	19.6
	Y10	16.9	26.5	18.2	29.3	33.1	37.3	25.9	16.6	27.3
Multiple de-ter-miners	*Y8*	2.1	2.5	4.2	2.2	5.3	2.2	2.3	4.6	2.3
	Y9	2.8	4.3	1.9	3.6	3.7	2.7	2.8	3.2	2.6
	Y10	3.3	0.4	2.8	0.0	1.6	2.9	1.0	1.9	0.9

Table 6 provides an overview of the frequencies for the individual modifier types found in Stage 2, organized by pupil and year. It is clear that attributive adjective is by far the most frequently occurring feature.[8] This applies to all speakers, and is in line with findings by Ansarifar (2018) for Persian MA and PhD students and Jitpraneechai (2019) for Thai university students. In both of these previous studies, attributive adjectives (and premodifying nouns) were the most frequently used modifiers. In comparisons involving two proficiency groups or less- and more-advanced writers (based on their level of study, e.g. MA vs. PhD), it has been found that the frequency of attributive adjectives decreases with increasing proficiency or experience: this is true for L2 undergraduate students as compared to L2 graduate students (Biber & Reppen et al., 2020), and for L2 EAP writers compared to L2 MA writers (Parkinson & Musgrave, 2014), but the Norwegian learners in the present study all have higher frequencies of attributive adjectives, as illustrated in example (2), in Year 10 than in Year 8, so the same trend is not evident in the present learner material.

(2) *warm* lunch [P105]

On the other hand, Parkinson and Musgrave (2014) reported frequencies ptw of attributive adjectives of 95.3 ptw for the EAP writers and 68.9 ptw for the MA writers, and both of these are

[8] See Hasselgård (2022) for an investigation of adverb-adjective combinations (AACs) in narrative texts from the TRAWL corpus, including AACs in attributive position.

much higher than the frequencies found in the Norwegian learner material investigated here, which are also lower than the average frequency reported for German pre-tertiary EFL learners by Kreyer and Schaub (2018) of 40.3 ptw (see footnote 7). Kreyer and Schaub further observed a non-linear pattern (increase-decrease) for the German learners, but this pattern is not found for any of the nine pupils in the present study.

As regards multiple determiners, exemplified in (3), this feature was introduced to the framework by the present author, so no comparison with previous studies is possible.

(3) *all the* rules [P102]

Table 6 shows that there are very low frequencies overall of noun phrases with this feature, and a lot of individual variation in the frequency development from year to year, i.e. whether there is a linear increase, a linear decrease, or increase-decrease/decrease-increase. The frequencies for multiple determiners are so low that this must be considered a marginal feature in terms of NP modification.

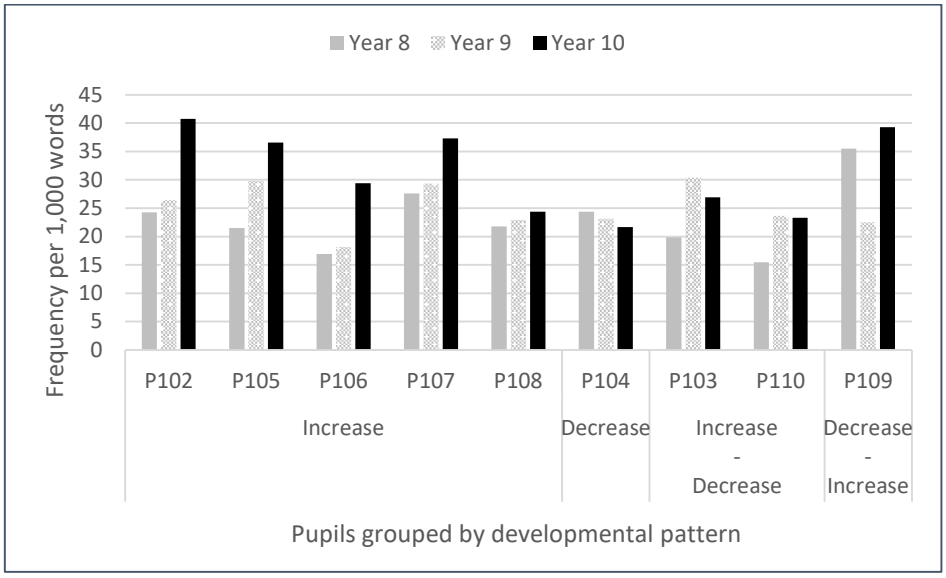

Figure 4: Overall development in the use of Stage-3 features

Figure 4 shows the overall development in the use of Stage-3 features. Notable aspects are that all pupils apart from one (P104) have a higher frequency of Stage-3 features in Year 10 than in Year 8, and that there is even clearer evidence for the existence of individual developmental trajectories for Stage-3 modifiers than for Stage-2 modifiers, with four groupings instead of two.

Table 7: Frequencies per 1,000 words for individual Stage-3 features across years

Feature	Year	Pupil ID								
		P102	*P103*	*P104*	*P105*	*P106*	*P107*	*P108*	*P109*	*P110*
Noun as pre-modifier	*Y8*	5.5	3.0	3.4	8.9	3.7	7.5	5.4	9.5	5.0
	Y9	6.7	3.9	0.8	6.7	2.2	12.0	8.0	5.4	8.1
	Y10	3.3	4.4	3.1	10.0	3.3	8.6	1.5	10.9	6.3
Possessive noun as pre-modifier	*Y8*	1.8	1.7	2.7	0.0	0.5	0.7	0.8	2.3	0.0
	Y9	2.4	2.0	1.9	0.0	0.7	4.7	2.0	1.8	0.7
	Y10	2.1	1.2	1.3	0.0	0.8	0.0	1.0	2.4	2.7
Participial premodifier	*Y8*	2.4	2.1	0.0	4.5	0.5	4.5	0.4	1.9	0.5
	Y9	3.0	1.2	0.4	1.2	0.7	0.0	0.4	1.1	0.7
	Y10	1.2	2.0	0.6	1.3	1.6	1.0	0.0	2.8	1.8
Relative clause	*Y8*	1.2	3.4	6.9	1.5	2.1	2.2	6.6	6.9	2.3
	Y9	1.9	5.5	6.8	6.7	4.1	4.7	4.8	3.9	2.6
	Y10	11.9	7.2	6.3	8.0	7.8	5.7	9.6	9.0	8.5
Prepositional phrase with 'of'	*Y8*	6.4	3.4	5.3	2.2	2.1	4.5	2.3	6.5	2.7
	Y9	7.3	6.7	7.2	4.9	5.6	4.0	0.8	3.6	3.0
	Y10	8.2	6.8	2.8	7.3	6.1	4.8	1.5	4.7	2.7
Prepositional phrase with other prep.	*Y8*	7.0	6.3	6.1	4.5	7.9	8.2	6.2	8.4	5.0
	Y9	5.2	11.0	6.1	10.3	4.8	4.0	6.8	6.8	8.5
	Y10	14.0	5.2	7.5	10.0	9.8	17.2	10.7	9.5	1.3

The frequencies for the individual Stage-3 features are presented in Table 7. Firstly, for noun as premodifier, five of the nine students have a higher frequency in Year 10 than in Year 8, but there are three different developmental trajectories (increase, increase-decrease, and decrease-increase), whereas Kreyer and Schaub (2018) found that German pre-tertiary EFL learners followed a decrease-increase pattern. This modifier type is illustrated in (4).

(4) *computer* games [P109]

The higher frequencies observed for some learners in Year 10 may be compared with previous studies investigating two proficiency groups or less- and more-advanced writers (based on their level of study, e.g. MA vs. PhD), where it has been found that the frequency of premodifying nouns increases with increasing proficiency or experience: this is true for L2 EAP writers compared to L2 MA writers (Parkinson & Musgrave, 2014), for Persian PhD students as compared to Persian MA students (Ansarifar et al., 2018), for L2 undergraduate students as compared to L2 graduate students (Biber & Reppen et al., 2020), and Spanish EFL learners in Year 12 compared to Year 8 (Díez-Bedmar and Pérez-Paredes, 2020). The frequencies produced by the Norwegian learners in the present study are similar to that reported by Kreyer and Schaub (2018) for

German pre-tertiary learners (nouns and possessive nouns combined; 6.8 ptw; see footnote 7), but lower than the ones reported by Parkinson and Musgrave (2014) for L2 EAP and MA students (17.5 ptw and 43.5 ptw, respectively). This is not surprising, since the Norwegian learners are closer in age and education level to the German EFL learners. Finally, Ansarifar et al. (2018) found that for Persian MA and PhD students premodifying nouns (and attributive adjectives) were the most frequently used modifiers, and the same was found by Jitpraneechai (2019) for Thai university students. In the data for these Norwegian learners, premodifying nouns do not stand out in the same way.

For possessive noun as premodifier, as illustrated in (5), there are generally low frequencies.

(5) *Susi's* birthday [P106]

The highest frequency for this type of modifier is found in the Year-9 texts written by P107, and is 4.7 ptw, while one pupil produced no possessive nouns at all (P105). However, the frequencies are so low overall that they do not warrant a discussion of development across years.

There are similarly low frequencies for participial premodifiers: the highest is found in the Year-8 texts written by P105 and P107, and is 4.5 ptw. The noun phrase in (6) provides an example of this type.

(6) the *creaking* stairs [P102]

Again, the low frequencies do not warrant a discussion of development across years, but a comparison with previous studies reveals that the frequencies produced by the Norwegian learners are more similar to those found for German pre-tertiary EFL learners by Kreyer and Schaub (2018) of 2.1 ptw (see footnote 7) than those found for L2 EAP and MA writers by Parkinson and Musgrave (2014) of 3.0 ptw and 8.6 ptw, respectively.

By contrast, relative clauses, as illustrated in (7), are more frequent in the production of all pupils than possessive nouns and participial premodifiers.

(7) Anna *who was reading a book in the sun* [P104]

Parkinson and Musgrave (2014) report that relative clauses occur with a frequency of 6.9 ptw among EAP students and 10.56 ptw among MA students. Most of the Norwegian learners are somewhere between these two groups if we look at the frequencies from Year 10, and hence they are similar to the German pre-tertiary EFL learners investigated by Kreyer and Schaub (2018) (8.0 ptw; see footnote 7). As regards developmental trajectories, six of the Norwegian learners have a linear increase, while one (P104) has a linear decrease, and two (P108 and P109) have a

decrease-increase trajectory. All pupils apart from P104 have a higher frequency in Year 10 than in Year 8.

The frequencies for prepositional phrases with 'of' (cf. example (8)) are generally lower than those for relative clauses, and there is more evidence that pupils follow individual developmental trajectories: four learners have a linear increase (P102, P103, P105, and P106), two have increase-decrease (P104 and P110), and three have decrease-increase (P107, P108, and P109). Furthermore, three learners have a lower frequency in Year 10 than in Year 8 (P104, P108, and P109), one learner has the same frequency in these two years (P110), and the remaining five have higher frequencies in Year 10 than in Year 8.

(8) a beam *of lightning* [P109]

Comparisons with results from previous studies once again reveal that the Norwegian learners are more similar to German EFL learners of the same age than to L2 university students: the frequency for German pre-tertiary learners was 8.9 ptw in Kreyer and Schaub's (2018) study (see footnote 7), while EAP students had 19.2 ptw and MA students had 24.9 ptw (Parkinson & Musgrave, 2014).

The final modifier type in Stage 3 is prepositional phrase with prepositions other than 'of', and this type is illustrated in (9).

(9) The vacation *in Spain* [P106]

This is generally the most frequently used postmodifier. The individual trajectories are similar to those found for 'of' phrases in that there is a range of patterns represented. On the other hand, seven of the nine learners have a higher frequency in Year 10 than in Year 8 (the exceptions are P102 and P110). Parkinson and Musgrave (2014) reported a frequency of 16.2 ptw for their EAP group and 27.7 ptw for their MA group, while Kreyer and Schaub (2018) reported an average frequency of 16.8 ptw for their German pre-tertiary EFL learners (see footnote 7). These frequencies are generally higher than those produced by most of the Norwegian learners in the present study, although P107's Year-10 frequency is slightly higher than the EAP group and P102's Year-10 frequency is slightly lower than the EAP group.

In summary, the overall increase in Stage-3 modifiers from Year 8 to Year 10 that was evident in Figures 2 and 4 is the result of an increase in the use of premodifying nouns on the one hand, and postmodifying relative clauses and prepositional phrases on the other hand.

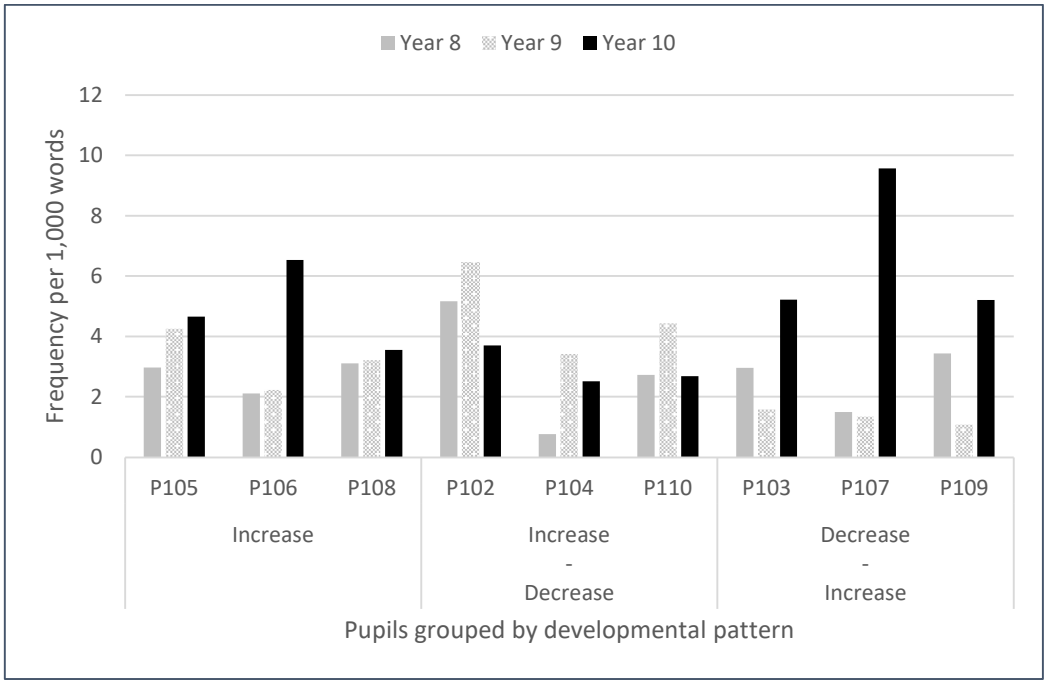

Figure 5: Overall development in the use of Stage-4 features

As discussed in relation to Figure 2, there are overall very low frequencies for the modifier types found in Stage 4. As such, the main finding is that there is generally very little increase for these types across the years, as compared to the increases for modifiers belonging to Stages 2 and 3. Figure 5 shows the extent of the individual variation in the overall frequency of Stage-4 features, with three main groupings. However, within these three groupings, we find a great degree of individual variation. Seven of the nine learners have a higher frequency in Year 10 than in Year 8, but most of the data points in Figure 5 have a frequency below 5.0. These low frequencies are in line with findings reported by Parkinson and Musgrave (2014) for L2 university students from a range of L1 backgrounds and by Atak and Saricaoglu (2021) for Turkish university students, as well as Kreyer and Schaub's (2018) findings for German pre-tertiary EFL learners (see footnote 7).

Table 8: Frequencies per 1,000 words for individual Stage-4 features across years

Feature	Year	Pupil ID								
		P102	*P103*	*P104*	*P105*	*P106*	*P107*	*P108*	*P109*	*P110*
Non-finite participial relative clause	*Y8*	2.1	0.4	0.0	1.5	1.6	0.0	0.4	1.5	0.9
	Y9	1.5	1.6	0.8	0.0	1.1	0.0	1.6	0.7	0.7
	Y10	0.4	1.6	1.3	0.7	0.4	1.0	0.5	0.5	0.4
Multiple pre-modifiers	*Y8*	3.0	2.5	0.8	1.5	0.5	1.5	2.7	1.9	1.8
	Y9	4.9	0.0	2.7	4.3	1.1	1.3	1.6	0.4	3.7
	Y10	3.3	3.6	1.3	4.0	6.1	8.6	3.0	4.7	2.2

The two types of modifier in Stage 4, non-finite participial relative clause and multiple premodifiers, are illustrated in examples (10) and (11), respectively.

(10) a place *called Venice Beach* [P109]

(11) the *ugly little* monkey [P108]

It is clear from Table 8 that only one of the two types occurs with any regularity among the learners, namely multiple premodifiers. These are generally used more frequently in Year 10 than in Year 8, which matches the findings reported by Díez-Bedmar and Pérez-Paredes (2020) for Spanish pre-tertiary EFL learners: multiple premodifiers were more frequently used in Year 12 than in Year 11. The frequencies for non-finite participial relative clauses are lower than those reported by Parkinson and Musgrave (2014) for L2 university students (EAP students: 2.9 ptw; MA students: 6.1 ptw), but similar to the frequency of 0.45 ptw reported by Kreyer and Schaub (2018) for German pre-tertiary EFL learners (see footnote 7).

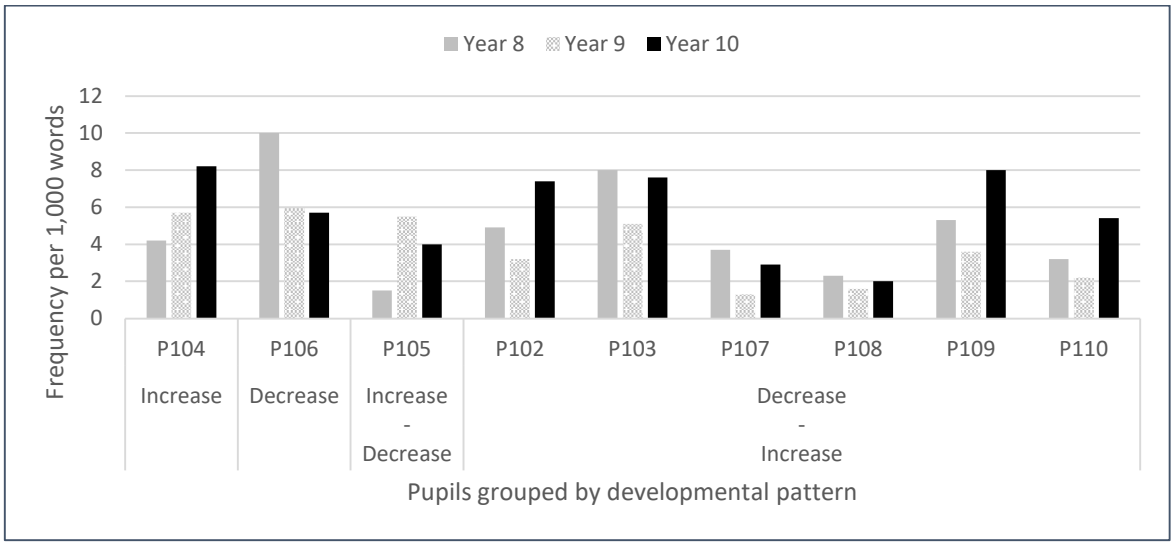

Figure 6: Overall development in the use of Stage-5 features

Figure 6 shows the overall development in the use of Stage-5 modifiers, and it is clear that the frequencies are generally low and that there is a lot of individual variation. The highest frequency is found in the material from Year 8 produced by P106 (10.0 ptw). Five of the nine pupils have a higher frequency in Year 10 than in Year 8, but, as was the case with Stage-4 modifiers, the frequencies are generally low. Similar findings have been reported for L2 university students (Parkinson & Musgrave, 2014; Atak & Saricaoglu, 2021) and German pre-tertiary EFL learners (Kreyer & Schaub, 2018).

Table 9: Frequencies per 1,000 words for individual Stage-5 features across years

Feature	**Year**	**Pupil ID**								
		P102	*P103*	*P104*	*P105*	*P106*	*P107*	*P108*	*P109*	*P110*
Preposition + non-finite complement clause	*Y8*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
	Y9	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.4	0.0
	Y10	1.6	1.2	2.2	0.7	0.0	0.0	0.5	0.9	0.4
Complement clause controlled by noun ('that' clause)	*Y8*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0
	Y9	0.2	0.0	0.8	0.0	0.0	0.0	0.0	0.4	0.0
	Y10	0.4	0.0	0.6	0.0	0.0	0.0	0.0	0.5	1.8
Appositive noun phrase	*Y8*	1.2	2.1	1.5	0.0	2.6	0.7	1.2	0.8	1.4
	Y9	0.4	0.0	0.4	0.6	0.4	0.0	0.8	0.0	0.4
	Y10	1.6	0.8	1.3	0.0	2.4	0.0	0.0	1.4	0.9
'to'-clause (infinitive clause)	*Y8*	1.2	1.3	0.8	1.5	0.5	0.7	0.8	0.8	0.9
	Y9	0.6	2.0	1.9	2.4	0.0	0.0	0.0	2.5	0.4
	Y10	1.6	2.8	0.9	0.0	1.6	1.0	1.0	3.8	0.4
Multiple postmodifiers	*Y8*	0.3	0.4	0.4	0.0	1.1	0.7	0.0	1.1	0.0
	Y9	0.0	0.8	0.8	0.0	0.7	0.0	0.4	0.0	1.1
	Y10	1.2	0.4	1.6	3.3	1.6	0.0	0.5	0.5	0.9
Other	*Y8*	2.1	4.2	1.5	0.0	5.8	1.5	0.4	0.8	0.5
	Y9	1.3	2.0	1.9	2.4	4.8	1.3	0.4	0.4	0.4
	Y10	0.8	2.4	1.6	0.0	0.0	1.9	0.0	0.9	0.9

The frequencies in Table 9 highlight the degree of individual variation found with regard to all of the modifier types in Stage 5, which are exemplified in (12)-(17).

(12) danger of getting eradicated [P109; preposition + non-finite complement clause]

(13) the point that you get so happy by seeing other people that you may not know get happy [P104; 'that' clause]

(14) Laika, the dog who became a hero [P108; appositive NP]

(15) time to make food [P105; 'to' clause]

(16) a friend that you exchange letters with, which most likely lives in another country [P102; multiple postmodifiers]

(17) The day after [P106; other]

It is evident from Table 9 that preposition + non-finite complement clause and 'that' clauses are the most infrequent across all learners and years, while appositive noun phrases are slightly more frequent in the production of some of the learners, and the same is true for 'to' clauses and multiple postmodifiers. The 'other' category comprises those modifiers that are not covered elsewhere in the framework, and such types occur more frequently in the production of some learners than others (P102, P103, and P106). These 'other' modifiers clearly warrant further study with a view to incorporating them into the framework, but this, unfortunately, remains outside the scope of the present study. The overall low frequency of most Stage-5 modifiers matches findings by Atak and Saricaoglu (2021) for Turkish university students, while the use of the individual modifier types is in line with previous studies in some cases, but not in others. For instance, Díez-Bedmar and Pérez-Paredes (2020) found multiple postmodifiers only in Years 11 and 12 among their Spanish EFL learners, and not in Years 7 and 8, but in the texts written by the Norwegian learners in the present study, multiple postmodifiers occur across all years, albeit very infrequently. Kreyer and Schaub (2018) also reported low frequencies in general for the Stage-5 modifiers, and a comparison with the Norwegian learners investigated in the present study shows that one type is more frequent among those Norwegian learners that use it (preposition + non-finite complement clause), one is less frequent in the Norwegian material ('that' clause), and two occur with approximately the same frequency among some of the Norwegian pupils as in the German material (appositive NP and 'to' clause) (see footnote 7). Similar variation in compatibility is found with the L2 university students investigated by Parkinson and Musgrave (2014), with two types being less frequent in the Norwegian learner material (preposition + non-finite complement clause and 'to' clauses), one being used with similar frequency ('that' clause), and one being more frequent among the Norwegian learners (appositive NP). However,

with very low frequencies reported in all the previous studies, as well as in the present investigation, caution should be employed when trying to identify trends, as any similarities or differences identified are necessarily based on very few observations.

Finally, we turn to a special case, namely noun phrases with both pre- and postmodification, which have largely been ignored in the literature. An exception is Díez-Bedmar and Pérez-Paredes (2020), who report that such phrases were more common in Year 12 than in earlier years among Spanish pre-tertiary EFL learners.

Table 10: Frequencies per 1,000 words for NPs with both pre- and postmodification across years

Year	**Pupil ID**								
	P102	*P103*	*P104*	*P105*	*P106*	*P107*	*P108*	*P109*	*P110*
Y8	4.3	9.7	3.4	2.2	5.8	3.7	7.8	5.7	5.5
Y9	6.4	9.9	10.3	17.6	10.0	4.7	4.4	7.5	10.0
Y10	12.8	10.0	12.2	29.9	14.3	6.7	12.7	12.3	5.4

As is evident from Table 10, all the Norwegian learners apart from P110 have a higher frequency of such phrases in Year 10 than in Year 8, and many also exhibit a relatively large increase from Year 8 to Year 9. Example (18) illustrates one such phrase, where the components are as follows: determiner^attributive adjective^head^prepositional phrase:

(18) a *important* animal *for the peoples in China* [P108]

For reasons of space, the exact configurations of these phrases cannot be investigated in detail in the present paper, but must await future studies.

5. Concluding remarks

The present study aimed to identify the extent to which longitudinal development in noun-phrase complexity in accordance with Biber et al.'s (2011) stages could be traced in the written production of intermediate-level Norwegian EFL writers in Years 8-10. As the results presented in section 4 have shown, the Norwegian learners investigated do exhibit an increase in the frequency of complex noun phrases, but without an accompanying increase in the sophistication of the modifier types they employ. The higher frequency of complex NPs in Year 10 than in Year 8 results from more noun phrases containing modifiers from Stages 2 and 3 in Biber et al.'s frame-

work, with premodifying attributive adjectives and postmodifying relative clauses and prepositional phrases displaying the greatest general frequency increases. This reliance on less sophisticated modifiers is in line with findings from previous studies, both as regards pre-tertiary learners (Kreyer & Schaub, 2018; Díez-Bedmar & Pérez-Paredes, 2020) and as regards L2 university students (cf., e.g. Parkinson & Musgrave, 2014; Jitpraneechai, 2019; and Atak & Saricaoglu, 2021). It may be that a greater range of more sophisticated modifiers only emerges with higher proficiency than that reached by the intermediate-level learners in the present study. It may also be the case that the prompts the pupils were given (cf. section 3.1) were not conducive to eliciting more sophisticated forms of NP modification, as instructions such as 'write a text' probably do not prompt pupils to employ the most formal academic register that they are capable of producing, although in some cases the further context provided in the prompt might help pupils to deduce which genre is desired (cf. Hasund, 2022). Further exploration of this aspect must await future studies, however.

The second major finding of the present study is the prevalence of individual variation in the use of NP modification as well as in terms of the pupil's developmental trajectories. Similar findings have been reported by Kreyer and Schaub (2018) and Díez-Bedmar and Pérez-Paredes (2020) for pre-tertiary learners, and by Biber and Reppen et al. (2020) for graduate and undergraduate L2 university students. Seen in combination, these two findings could be taken as an incentive to teachers to provide learners with prompts that stimulate the production of more formal registers, while providing them with individual supervision tailored to each learner's development.

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