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Beyond the noun postmodifier: prepositional phrases preceded by nouns in spoken and written academic English

Para além da modificação nominal posterior: frases preposicionais precedidas de substantivo em inglês acadêmico falado e escrito

Larissa Goulart*

Abstract

This study seeks to investigate variation in the use of prepositional phrases following noun phrases in spoken and written academic English. In order to do so, the British Academic Written English (BAWE) Corpus and the British Academic Spoken English (BASE) Corpus were used. The results of this analysis have revealed that there is a specific set of prepositions that control prepositional phrases (of, in, to, for). Nevertheless, contrary to previous studies the findings of this investigation show that prepositional phrases following nouns are more common in spoken registers than written registers. These results might be an indicator of different levels of expertise, or the use of genitives in spoken registers.

Keywords

Academic registers. Academic writing. Academic speech. Postmodifying prepositional phrase.

Resumo

Esse estudo busca investigar variação no uso de frases preposicionais modificando o a frase nominal em inglês acadêmico escrito e falado. Para atingir esse objetivo, o British Academic Written English (BAWE) corpus e o British Academic Spoken English (BASE) corpus foram usados. Os resultados dessa análise revelaram que há um grupo específico de preposições controlando frases preposicionais (of, in, to, for). No entanto, ao contrário dos resultados de estudos anteriores, essa investigação revelou que frases preposicionais seguindo frases nominais são mais frequentes em registros falados do que registros escritos. Este fenômeno pode ser um resultado do nível de especialização dos participantes, ou do uso de genitivo do corpus falado.

* Northern Arizona University (NAU).

Palavras-chave

Registros acadêmicos. Escrita acadêmica. Fala acadêmica. Frases preposicionais como modificadores posteriores.

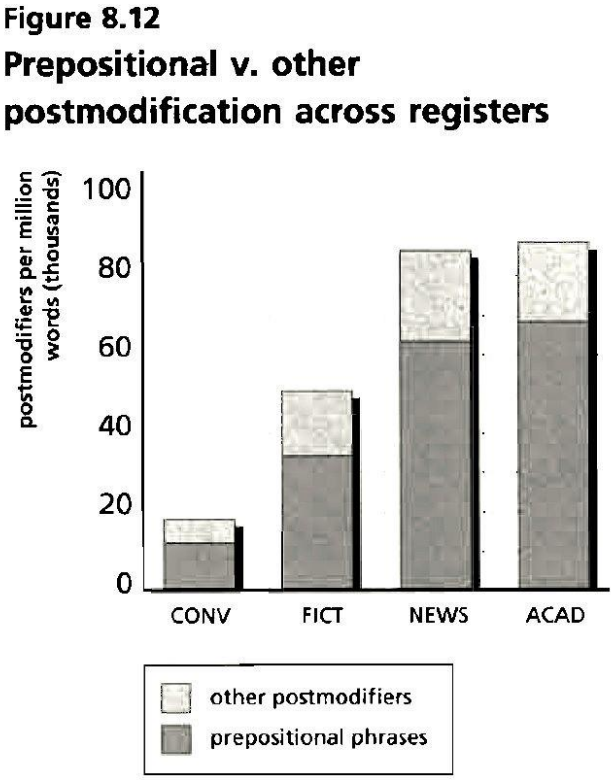
Introduction

Grammatical complexity has been analyzed using measures, such as length of T-units and AS-units; and measures of embedded clauses (subordination and coordination) (NORRIS; ORTEGA, 2009; BOULTÉ; HOUSEN, 2012). Biber, Gray, Poonpon (2011) challenged the use of T-units and embedded clauses as measures of complexity. These authors compared the use of phrasal and clausal grammatical features in conversation and academic writing, showing that embedded clauses and T-units characterize conversations, rather than writing. Their results reveal that writing is more compressed due to the use of phrasal elaboration features, such as, attributive adjectives, premodifying nouns, and postmodifying prepositional phrases, while conversation uses more clausal elaboration.

Since Biber et al. (2011) several studies on grammatical complexity (e.g., BIBER; GRAY, 2016; GRAY, 2015) have shown that academic texts tend to compress information in the noun phrase instead of using more clausal features. Staples, Egbert, Biber, Gray (2016) and Parkinson, Musgrave (2014), for example, have shown that more experienced academic writers use more phrasal complexity features than novice writers.

According to Biber, Johansson, Leech, Conrad, Finegan (1999), prepositional phrases, such as in the sentence *it is difficult to discuss the role of aesthetics **in Rome,*** are the most common form of noun phrase postmodification. Taking register into account the results of the research presented by Biber et al. (1999) suggest that prepositional phrases are more common in non-fictional written registers, as the chart below indicates.

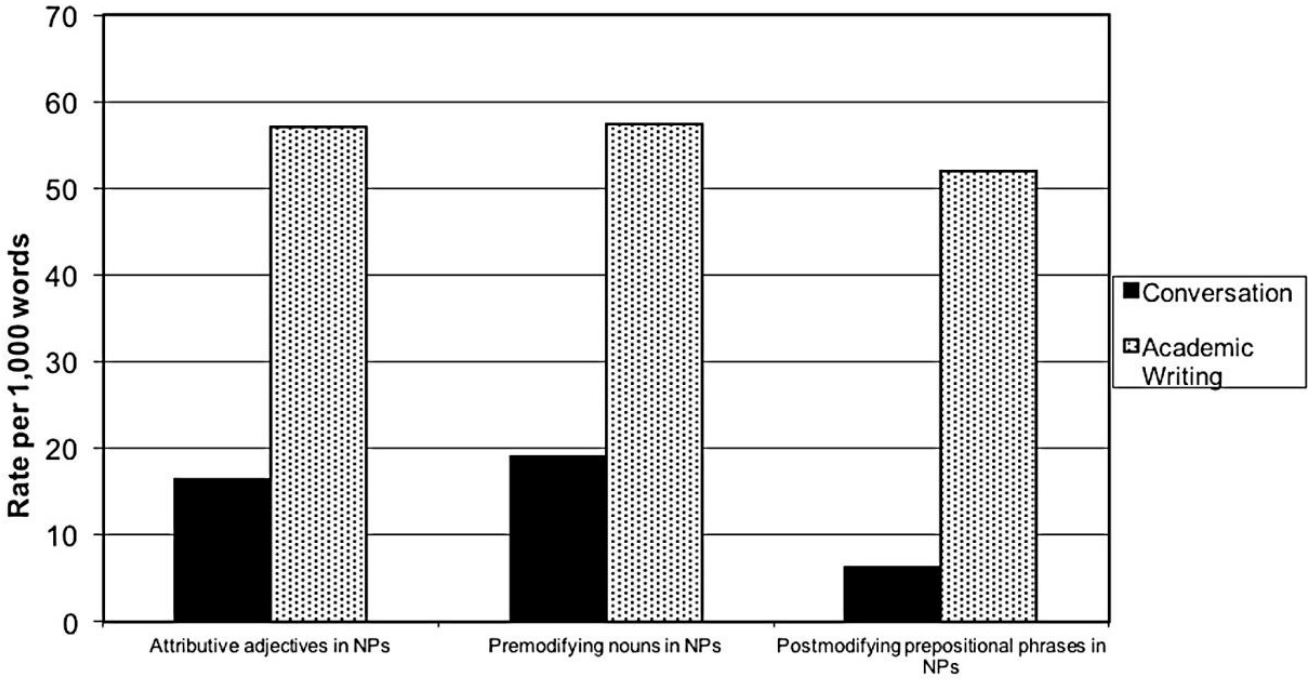
Figure 1 - Prepositional postmodification in Biber et al. (1999)



Source: Biber et al. (1999, p.606)

Other studies, such as Biber, Gray, Staples (2016a) support this finding, as we can see in the figure below, postmodifying prepositional phrases are significantly more common in academic writing than in conversation.

Figure 2 - Noun modifiers in Conversation and Academic Writing in Biber et al. (2016a)



Source: Biber et al. (2016a, p. 10)

Even though postmodification by prepositional phrases is the most common form of noun postmodification, Conrad, Biber (2009) found that only a small set of prepositions - *of, in, for* and *on* - account for most of the prepositional phrases in their corpus. Biber et al. (1999, p. 635) show that the six prepositions in figure 3 below represent 90% of all prepositional phrases in the corpus.

Figure 3 - Prepositions modifying nouns according to Biber et al. (1999)

preposition	percentage of prepositional postmodifiers
of	60–65
in	8–10
for	3–5
on	3–5
to	3–5
with	3–5

Source: Biber et al. (1999, p.635)

Previous studies have shown that postmodifying prepositional phrases are a common feature of academic writing, being more frequent in writing than other registers. In addition, they have proposed that only a small set of prepositions is responsible for 90% of the prepositional phrases found in the corpus. Considering the results of these previous studies, this research has two main goals: a) the first one is to verify if the sequence composed of noun plus prepositional phrase is more common in a corpus of academic lectures or in a corpus of university text; b) the second one is to determine which prepositions are more commonly used in these prepositional phrases across academic speech and writing.

It is worth mentioning that noun plus prepositional phrases can perform different syntactic functions besides postmodifiers, they can also be adverbials and indirect objects in ditransitive verbs (i.e. I gave the book -to her-). Previous studies focusing on grammatical complexity have studied the sequence noun plus preposition phrases at different levels of details. The table below shows how these studies define noun plus preposition.

Table 1 - Previous studies on noun followed by preposition

Study	Definitions
Staples et al. (2016)	- *of*-genitive - postmodifying prepositional phrase
Biber et al. (2016a)	- postmodifying prepositional phrase
Biber et al. (2016b)	- *of*-genitive - postmodifying prepositional phrase
Parkinson and Musgrave (2014)	- *of* + noun phrase with locative and concrete meanings - other prepositions + noun phrase with locative and concrete meanings - modifying prepositional phrase[1]
Biber and Gray (2013)	- *of*-genitive
Taguchi et al. (2013)	- modifying prepositional phrase
Biber and Gray (2011)	- modifying prepositional phrase
Biber et al. (2011)	- modifying prepositional phrase - prepositional phrases as adverbials
Biber and Gray (2010)	- *of*-genitive - postmodifying prepositional phrase - prepositional phrases as adverbials

Considering that the structure noun plus prepositional phrase can have different syntactic functions, for this analysis I will focus on the total occurrences of noun plus prepositional phrases in the spoken and the written corpora and, then, analyze the syntactic function of the prepositional phrase in sample sentences extracted from the corpora.

[1] Some authors use the term modifying prepositional phrase instead of postmodifying, the table is based on how it is defined in the articles.

Methods

Corpora used in this study

Since the main goal of this research is to investigate variation in the use of noun plus prepositional phrases in written and spoken academic registers, the British Academic Written English (BAWE)[2] and the British Academic Spoken English (BASE)[3] corpora were used in this analysis. BAWE consists of undergraduate students' texts from five British universities, containing in total 6,968,089 words. The corpus is divided into four disciplinary groups: Arts and Humanities (AH), Social Sciences (SS), Life Sciences (LS), and Physical Sciences (PS).

The spoken corpora, BASE, contains 160 lectures and 40 seminars recorded in two of the same universities where BAWE was collected; all the texts in the corpus amount to 1,186,290 words. This corpus is also divided into four disciplinary groups similar to BAWE. Both BAWE and BASE are tagged with CLAWS (version 7). Therefore, in this study, BASE will represent spoken academic language, while BAWE will represent written academic language.

Analysis

In order to analyze the use of prepositional phrases in both corpora, the first step was to search for the tags of noun plus preposition, i.e. [NN]/[NNS] + [PREP]. The counts for the 10 most frequent prepositions in both corpora were normed by a million. This normed frequency was used to compare the use of prepositional phrase across discipline and mode (spoken vs written).

Next, a sample of prepositional phrases were extracted from the corpus. This sample contained 20 sentences from each corpus that had prepositional phrases controlled by *of* or *in.* This search was conducted by discipline, so that all four disciplines

[2] Available at: https://app.sketchengine.eu/#dashboard?corpname=preloaded%2Fbawe2
[3] Available at: https://warwick.ac.uk/fac/soc/al/research/collections/base/history/

were represented. These 40 sentences were, then, classified based on their syntactical function, following Biber et al. (1999).

The sequence of noun plus prepositional phrases can have several syntactical functions, of interest to this paper are: a) *of*-genitives – the bottom of the page; b) postmodifying prepositional phrases - this phase in the story of the Acropolis; c) adverbials - we have a silent visitor in the front row. It is worth noting that postmodifying prepositional phrases add information about the head noun, while adverbials present extra information that can be moved to other places in the sentence.

Results and discussion

This section describes the results divided in two parts: a description of the total amount of prepositional phrases encountered in both corpora, followed by a detailed analysis of 20 sentences from each corpus.

Noun plus preposition in the corpora

The first part of the analysis focuses on the most frequent prepositions used after nouns. As we can see from tables 2 and 3, below, the results confirm the findings presented in Biber et al. (1999), that *of*, followed by *in,* are the most common prepositions used after a noun in both corpora. These prepositions together are the most used in the corpora, with *of* having a frequency ranging from 19 to 22 per million words. The results for the spoken corpus, displayed in Table 2, reveal that *for* and *to* are the third and fourth most frequent prepositions, with *to* being the third most common preposition in AH and LS, and *for* being the third most common in SS and PS. We can also notice that there is great disciplinary variation in the use of prepositions in the spoken corpora.

Table 2 - Prepositions used in the spoken corpora

BASE									
All Corpus		*AH*		*SS*		*LS*		*PS*	
Prep	*Norm*	*Prep*	*Norm*	*Prep*	*Norm*	*Prep*	*Norm*	*Prep*	*Norm*

1	of	22.54	of	29.37	of	21.98	of	18.98	of	19.22
2	in	7.03	in	8.20	in	6.95	in	6.98	in	5.80
3	for	2.47	to	2.54	for	2.85	to	2.34	for	2.31
4	to	2.43	for	2.38	to	2.68	for	2.24	to	2.04
5	on	1.78	on	1.84	on	1.90	with	1.73	on	1.85
6	with	1.57	with	1.60	with	1.47	on	1.52	at	1.73
7	from	1.33	from	1.59	from	1.30	about	1.29	with	1.47
8	at	1.27	about	1.31	at	1.13	from	1.24	from	1.15
9	like	1.06	at	1.11	like	1.08	at	1.20	like	1.12
10	about	1.05	like	1.05	about	0.94	like	0.99	by	0.67

Table 3 - Prepositions used in the written corpus

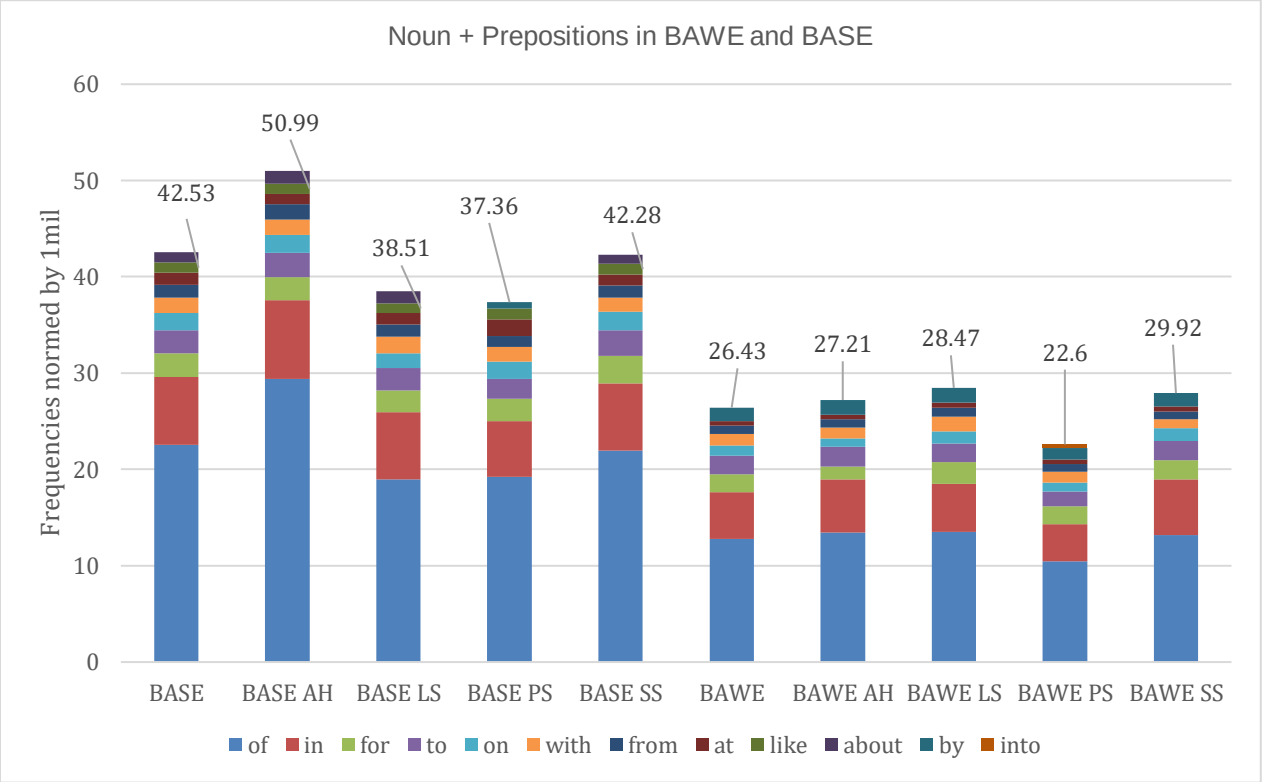
BAWE										
	All Corpus		*AH*		*SS*		*LS*		*PS*	
	Prep	*Norm*	*Prep*	*Norm*	*Prep*	*Norm*	*Prep*	*Norm*	*Prep*	*Norm*
1	of	12.80	of	13.48	of	13.17	of	13.49	of	10.46
2	in	4.87	in	5.51	in	5.81	in	5.03	in	3.84
3	to	1.93	to	2.09	to	2.02	for	2.22	for	1.89
4	for	1.83	by	1.51	for	1.97	to	1.93	to	1.54
5	by	1.41	for	1.29	by	1.38	by	1.53	by	1.20
6	with	1.16	with	1.14	on	1.28	with	1.47	with	1.13
7	on	1.09	from	0.87	with	0.99	on	1.31	on	0.92
8	from	0.84	on	0.82	from	0.79	from	0.94	from	0.78
9	at	0.50	between	0.54	between	0.52	at	0.55	at	0.48
10	between	0.48	at	0.50	at	0.51	between	0.49	into	0.36

In the written corpus, represented in Table 3, after *of* and *in*, *to* is most common preposition in AH and SS and *for* is the most common preposition in LS and PS. This might be an indicative of how these disciplines express purpose differently. Taking into account some differences between spoken and written academic registers, in the written corpus, *by* is the fifth most common preposition, and the fourth most common in AH, while in the spoken corpus it does not appear in the top 10 most used prepositions.

The information in both Tables 2 and 3 confirm the findings of previous studies that a small set of prepositions are responsible for most of the prepositional phrases in academic language. This paper's second goal was to compare the frequency of prepositional phrases preceded by nouns in spoken and written corpora. Previous studies have found that these structures are more common in written informational registers than in spoken registers, therefore it is expected that the same pattern will occur between BAWE and BASE.

The figure (4) below shows, the frequency of noun plus prepositions in BASE and BAWE, indicating that these corpora do not confirm this hypothesis. In figure 4, we can see that the stacks corresponding to the spoken corpora are considerably taller than the ones representing the written corpora. This figure indicates that the overall counts for nouns followed by prepositions are more common in academic lectures than student writing.

Figure 4 - Prepositions preceded by nouns in BAWE and BASE.



Surprisingly, this finding reveals the opposite pattern than the ones found in previous studies. Still, there are some possible explanations for this difference in the use of noun plus preposition in BAWE and BASE. The first one is that the written corpus represents student writing and not expert academic writing, as previous studies. At the same time, the spoken corpus represents lecturers, who are expert researchers in their fields. Therefore, this difference in their level of expertise might influence their use of prepositional postmodification in academic English.

In addition, previous studies reported mainly on prepositional phrases as noun postmodifiers, while the results in the table above represent all occurrences of noun plus preposition. Finally, a third explanation is that the spoken corpora contains a greater number of *of*-genitives than the written corpus, which affects the total count of noun plus preposition. Considering this last point, it is worth mentioning that *of*-genitives are a form of noun postmodification, as they are adding information to the noun, but many researchers have examined them separately. In order to understand better this variation

in the use of prepositional phrases in spoken and written academic English, the following section discusses 40 examples of these structures in the corpora.

Instances of noun plus of/in *in BAWE and BASE*

The table (4) below presents 20 occurrences of noun plus preposition in the spoken corpus, the first 16 rows represent *of* prepositional phrases, with four occurrences coming from each discipline and the last four rows represent *in* prepositional phrases.

Table 4 - Prepositional phrases in BASE

		BASE	
	Disc	*Sentence*	*Classification*
1	AH	it was a student ***of*** mine an ex-student of mine who was in your class	*of*-genitive
2	AH	at the bottom ***of*** that page from the poem	*of*-genitive
3	AH	as far as the history ***of*** the medical drama goes on TV [[voiced pause]] I'm going to be showing a documentary	*of*-genitive
4	AH	three handouts the first says at the top Aspects ***of*** European Cinema spring term	*of*-genitive
5	SS	well welcome to the second term ***of*** this course	*of*-genitive
6	SS	which is also [[voiced pause]] to be the topic ***of*** our seminars next week	*of*-genitive
7	SS	this is the first week ***of*** market analysis for this term	*of*-genitive
8	SS	that is the EU and the changing character ***of*** the European Union	*of*-genitive
9	LS	okay same rooms but different members ***of*** staff	*of*-genitive
10	LS	patients as subjects ***of*** research and [[voiced pause]] I sometimes say slightly derogatory	*of*-genitive
11	LS	just for those who perhaps were in the far side	*of*-genitive

		of the room	
12	LS	I just bring to the front is the secretary ***of*** our department	*of*-genitive
13	PS	this lecture is being recorded for the benefit ***of*** mankind	*of*-genitive
14	PS	it started to build a model ***of*** the Motorola sixty-eight-thousand	*of*-genitive
15	PS	we 're talking about the concept ***of*** elasticity	*of*-genitive
16	PS	you wanted a copy of these, here are some ***of*** the notes	Quantifier
17	AH	The Curse of Minerva are a suitable introduction to this phase ***in*** the story of the Acropolis	Postmodifying Prepositional Phrase
18	SS	our interest ***in*** the agriculture sector is somewhat lagging behind	Postmodifying Prepositional Phrase
19	LS	okay, so how can inequalities ***in*** health be tackled	Postmodifying Prepositional Phrase
20	PS	we have a silent visitor ***in*** the front row	Adverbial

The analysis presented in the table above indicates that while the spoken corpus uses more prepositional phrases preceded by nouns, in the excerpts presented above most of the *of* phrases are genitives, while the *in* prepositional phrases tended to be noun postmodifiers. Table 5, below, shows the use of prepositional phrases in the written corpus.

Table 5 - Prepositional phrases in BAWE

BAWE			
	Disc	*Sentence*	*Category*
1	AH	how important was the role ***of*** the West in the social unrests of the 19th Century	*of*-genitive
2	AH	they can be considered examples ***of*** Naturalism or Expression	*of*-genitive

3	AH	compare and contrast the artistic programs ***of*** two performing arts venues in Britain	*of*-genitive
4	AH	melodrama responded to the tastes and desires ***of*** the mass audience in the nineteenth century.	*of*-genitive
5	SS	the social and political factors that led to the development ***of*** feminism in Japan	*of*-genitive
6	SS	an urban ethnography ***of*** two bookshops in Leamington Spa	Postmodifying Prepositional Phrase
7	SS	Elite interviewing is regarded as a research technique ***of*** particular relevance to politics	Postmodifying Prepositional Phrase
8	SS	What factors increase the level ***of*** unemployment in an economy?	*of*-genitive
9	LS	color vision entails having three types ***of*** wavelength specific cones in the retina	Postmodifying Prepositional Phrase
10	LS	The demerits ***of*** a strictly behavioral approach to the treatment of psychological disorders	Postmodifying Prepositional Phrase
11	LS	The subject of this case study is a male in his early sixties with a diagnosis of Schizophrenia	*of*-genitive
12	LS	I used Jaeger's method to determine the surface tension ***of*** distilled water.	*of*-genitive
13	PS	This assignment is about the discussion and application ***of*** production planning and control system knowledge by two different cases	Postmodifying Prepositional Phrase
14	PS	It is an accounting progress which obeys the accounting standard and ends with preparation ***of*** profit and loss account	*of*-genitive
15	PS	The aim ***of*** this exercise is to calculate the enthalpy of formation of several simple cyclic alkane and alkene hydrocarbons by using PCModel and a MMX force field.	*of*-genitive
16	PS	the rate ***of*** reaction will now have form: where	*of*-genitive
17	AH	The real struggle **in** the period 1918-1921 was	Adverbial

		between the Bolsheviks and the popular movement rather than between the Bolsheviks and the Whites	
18	SS	the reduction ***in*** the number of elected union representatives in the French workplace reflects a decline in union influence	Postmodifying Prepositional Phrase
19	LS	the strategies used to manage it, while on placement ***in*** a local Accident and Emergency (A&E) department	Postmodifying Prepositional Phrase
20	PS	Now moving on to the exciting developments **in** our wonderful field over the last decade.	Postmodifying Prepositional Phrase

Table 5 indicates that, in the written corpus, there are more postmodifying structures with *of* than in the spoken corpora, nevertheless *of*-genitives are still the most common structure with this preposition. Considering the preposition *in*, the small set of four sentences analyzed in the written corpus shows the same patterns as the spoken one.

Although the 40 sentences presented here represent a small subset of both corpora, it hints at a possible explanation for the greater use of prepositional phrases in the spoken corpus: the use of *of*-genitives. Furthermore, another interesting issue noticed during the analysis of the occurrences of prepositional phrases in the written corpus was the difference between quotes and the students own writing. Analyzing the concordance lines, it was clear when students were quoting a research article or using their own words because the quotes used more than one prepositional phrase in sequence, while student writing rarely did this. As previously mentioned, this difference between the use of academic English by students and professionals might also be the reason why prepositional phrases preceded by nouns are more common in the spoken corpus.

Conclusion

The goal of this analysis was to analyze the noun plus prepositional sequence in a corpus of academic and written registers. More specifically, the purpose was to verify if written academic English uses more noun + prepositional phrases than spoken academic registers, and whether we could observe register differences in the prepositions

controlling these prepositional phrases. In order to do so, the first part of this paper focused on the most frequent types of prepositions in both corpora of academic English, and the second part focused on the overall frequency of prepositional phrases.

The results revealed that there *of* and *in* are the most common prepositions in both spoken and written academic English. Nevertheless, the comparison between the overall use of prepositional phrases in spoken and written registers revealed that, in contrast to previous studies, spoken academic lectures had more nouns followed by prepositional phrases than written academic registers. These results can be explained by a number of factors such as the use of *of*-genitives and the speakers' level of expertise. All of these hypotheses would require further investigation of the occurrences of prepositional phrases in the corpus, which were beyond the scope of this project.

Future studies should classify these prepositional phrases based on their syntactic function in order to determine in detail what the differences between spoken and written registers are when it comes to postmodifying prepositional phrases. In addition, disciplinary variation should be explored further as this analysis might indicate differences in text purposes across disciplines.

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