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A comprehensive corpus-based analysis of “X Auxiliary Subject” constructions in written and spoken English

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Abstract

This paper describes a corpus-based analysis of subject-auxiliary inversion in both spoken and written English. The focus of the analysis is Chen’s (2013) *X Auxiliary Subject* construction (XASC), where *X* codes the fronting of a constituent which triggers the inversion of the auxiliary and the subject, as in “Never has trade union loyalty faced a more baffling test” or “What did he do?” On the basis of a statistical analysis using corpora of written and spoken English, it is argued that the distribution of XAS inversion, in the interrogative mood, is related to the degree of an addressor’s involvement in a text. It will be shown that, in the interrogative mood, the more involvement in a text, the more XAS inversions are to be expected. It is also argued that XAS inversions in interrogative clauses can be seen to serve as discourse markers through which an addressor’s involvement is coded in written and spoken English discourse. The analysis will also show that XAS inversions in the declarative mood also serve an interpersonal function, this, however, being inherently tied to the clause-linking function performed by the construction. Furthermore, the data will show that the distribution of XAS inversions in declarative clauses is related to the degree of informational content of the texts in which these inversions occur.

Key words

English word order, XAS constructions, subject-auxiliary inversion, textual variation, speech, writing, corpus.

1. Introduction

Most studies on English inverted constructions base their classifications on the primary distinction between two main types of inversion: *full-verb inversion* (cf. Birner, 1996; Chen, 2003; Kreyer, 2006), as in “Out of the blue came a letter from Sinclair”, and *subject-auxiliary inversion* (cf. Huddleston and Pullum, 2002; Chen 2013), as in “Never did he manage to provide evidence for his claim”.

Full-verb inversions are syntactic constructions in which the subject follows its entire verb phrase, i.e. a full lexical verb or copular *be*, as illustrated in (1)-(2).¹ By contrast, subject-auxiliary inversion occurs when the subject follows the first auxiliary in the verb phrase, as in (3)-(4).

- (1) On his right was the mountain.
- (2) Here comes an opportunity for the health services.
- (3) By no means should he approach the suspects.
- (4) Where will this money come from?

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¹ Unless otherwise stated, examples of inversions have been retrieved from written and spoken computerized corpora, namely FLOB, FROWN, BrE06, AmE06, and CSPAE. For details of these corpora, see Section 3.1.

Two main types of subject-auxiliary inverted constructions can be distinguished in English: *verb-first inverted* and *verb-second inverted* constructions. These two types of inversion are labelled *Auxiliary Subject Constructions* (ASC) and *X Subject Auxiliary Constructions* (XASC) in Chen (2013). ASC (verb-first inversions) are subject-auxiliary inversions in which the auxiliary is the first syntactic constituent in the clause, and is followed by the subject and the main verb. This includes, among others, inversions in *conditional clauses* (5), inversions in some *exclamative clauses* (6), inversions in *yes/no interrogative clauses* (7), inversions after a *negated verb* (8), inversions in *appended clauses* (9), and inversions in *formulaic expressions* (10). XASC, henceforth *XAS inversions*, are subject-auxiliary inversions in which the auxiliary is not the first constituent in the clause (verb-second inversions), and are triggered by the fronting of a constituent which is followed by the auxiliary and the subject. This includes inversions in *wh-questions* (11), inversions with *negative conjuncts* (12), inversions with *negative adverbs* (13), inversions with *positive rejoinders* (14), inversions with *positive adverbs* (15), and inversions with *deictics* (16).

- (5) Had I not stumbled into mine in Colorado, I would have been a lesser man.
- (6) May God save the United States of America!
- (7) Have many workers joined the union?
- (8) Didn't nobody teach me this. (From Green, 1982, p. 128)
- (9) He has been a complete idiot, has John been. (From Quirk et al., 1985, p. 1310)
- (10) Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled.
- (11) What do we mean by the rules of a language?
- (12) The U.S. Constitution contains no term limit neither does it explicitly prohibit a state from setting a limit for its representatives.
- (13) Under no circumstances will it be an encore.
- (14) USTR can help you out further and so can Mr Johnson (help you).
- (15) Specifically do they support universal coverage.
- (16) Thus can the first results of having such large deformations be realized.

In recent decades the two types of subject-auxiliary inversion mentioned above have been the subject of extensive research from a functional perspective (cf. Dorgeloh, 1997; Goldberg, 2006; Granath, 2007; Chen, 2013; Duffly, 2016; or Kim, 2018, among others). This article is a further contribution to this line of research and offers a comprehensive corpus-based analysis of XAS inverted constructions (verb-second inversions) in written and spoken English. There have been other corpus-based analyses of XAS inversions in Present-day English, but these suffer from limitations of various kinds. Firstly, scholars have devoted little attention to the examination of these constructions in the spoken mode. For instance, Dorgeloh (1997), hailed as a major contribution to the field, restricts the analysis to the written mode and does not deal with fictional texts either. Secondly, most corpus-based studies focus only on particular types of XAS inversions (cf. Granath, 2007; Kim, 2018; among others). Granath's (2007) study, for example, is restricted to XAS constructions triggered by deictics (cf. 16). Likewise, Dorgeloh (1997) does not deal with the analysis of XAS inversions in interrogative clauses (cf. 11) and restricts her investigation to the declarative mood. A more comprehensive corpus-based account, in speech and writing, and taking into account all XAS inversion types, is thus needed, in that only in such a way can we achieve a conclusive picture of the distribution and functions of these constructions in different genres. The present study is a first step in this direction.

The current corpus-based analysis is based on Chen's (2013) classification of XAS inverted constructions (cf. Section 2). On the basis of a statistical analysis, I will argue that XAS inversion behaves differently in the interrogative and declarative moods. It will be shown that XAS inversions in interrogative clauses are inherently related to the degree of involvement of the texts in which they occur and may, in fact, be considered discourse markers through which an addressor's involvement is conveyed in spoken and written English. It will also be shown that, even though this discourse function is also present in XAS inversions in declarative clauses, these inversions serve a strong clause-linking function and allow the addressor to give prominence to the new information introduced in discourse. Furthermore, it will be shown that XAS inversions in declarative clauses are more frequently attested in those texts which exhibit more informative linguistic features.

The paper is organized as follows. Section 2 offers a discussion of Chen's (2013) constructional analysis of subject-auxiliary inversions, plus a classification of the XAS inverted constructions used in this research. Section 3 sets out the results of a corpus analysis of the types and distribution of XAS inversions, which will be the basis for the pragmatic and textual analysis developed in Section 4. Finally, Section 5 offers some concluding remarks.

2. A classification of subject-auxiliary inversions: Chen (2013)

There have been numerous ways of classifying subject-auxiliary inversions in the literature. Some classifications are based on syntactic criteria alone. Newmeyer (1998) in fact argues that subject-auxiliary inversion includes a disparate group of structures which do not share many functional properties, and the way to capture their commonality can only be formal.

By contrast, other classifications are based on semantic criteria alone. Jacobsson (1951), for instance, follows a basic semantic approach and distinguishes between subject-auxiliary inversions with *restrictive introductory members* – in which the clause-initial constituent triggers the inversion (cf. 17) – and *non-negative introductory members*, where the inversion does not include a clause-initial constituent with negative meaning, as in (18).

(17) They did not cave protectively about her head, nor did the sheets have the cool stroke of line.

(18) In the high-risk world of opera to lose – as have the two London opera houses lost in the course of a single week – a chairman, a principal conductor, a music director and a director of productions, suggests not so much carelessness as crisis.

Some classifications are based on a mixture of syntactic and semantic criteria (cf. Schmidt, 1980 or Dorgeloh, 1997). Schmidt (1980, pp. 11-13), for instance, distinguishes between subject-auxiliary inversions after *adverbs with negative, restrictive or affective meaning*, after *other openers*, after *so, nor, neither* and *no more*, in *complex sentences with special heads*, in *correlative clauses* and in *comparative*, as in (19).

(19) Larger schools are able to provide a broader range of classes than can smaller schools (provide).

Drawing on Lakoff and Brugman (1987), Lambrecht (1994), Michaelis and Lambrecht (1996), and Diessel (1997), Goldberg (2006) proposes a classification of subject-auxiliary inversion based on functional/cognitive grounds. She distinguishes eight types of subject-auxiliary inversions (cf. Goldberg 2006, p. 166) – namely inversions with *counterfactual conditions* (cf. 5), in *wishes/curses* (cf. 6), in *yes/no and wh-questions* (cf. 7), with *negative conjuncts* (cf. 12), with *initial negative adverbs* (cf. 13), with *positive rejoinders* (cf. 14), in *exclamative clauses* (cf. 6) and in *comparative clauses* (cf. 19) – which deviate from a prototypical sentence, that is, an independent declarative sentence with a positive polarity and a predicate-focus information structure (cf. Goldberg, 2006, p. 166).

The classification of subject-auxiliary inversions in what follows is based on Chen (2013), who groups Goldberg's eight types of subject-auxiliary inversion into two main sets of constructions: *Auxiliary Subject Constructions* (ASC), and *X Auxiliary Subject Constructions* (XASC). The main difference between the two groups is that XAS constructions, which are the central concern of the present study, are constructions of focus, with X being the focal point in the entire sentence. As Chen (2013, p. 9) argues "they are results of fronting a particular element from a position in which it is not assured focus to the sentence initial position, whereby it *is* assured focus".² By contrast, ASC constructions are considered constructions of mood indicator, mapped with the notion of irreality, but they are not used to achieve focus. They include Goldberg's inversions in *counterfactual conditions* (cf. 5), in *wishes/curses* and/or *exclamatives* (cf. 6), and in *yes/no questions* (cf. 7). The XAS group of constructions includes subject-auxiliary inversions in *wh-questions* (cf. 11), triggered by *negative*

² *Focus* is here understood as a cognitive notion and is defined as the special attention that the addressor draws to a particular part of a sentence (cf. Chen, 2003; Talmy, 2000).

conjuncts (cf. 12), by *initial negative adverbs* (cf. 13), by *positive rejoinders* (cf. 14), by *positive adverbs* (cf. 15), and by *deictics* (cf. 16).³

The six XAS inversion types mentioned above will be the focus of this investigation. In what follows an account is given of their distribution in the textual categories of the written and spoken corpus, which will serve as the basis for an in-depth textual and pragmatic analysis presented in Section 4.

3. A comprehensive corpus-based analysis of XAS inverted constructions in Present-Day English

3.1 The corpora

To analyse the behaviour and distribution of XAS inversions in written and spoken English, four computerized corpora have been selected. For written English, these are: 1) the *Freiburg-Lancaster-Oslo-Bergen Corpus of British English* (FLOB; texts from 1991); 2) the *Freiburg-Brown Corpus of American English* (FROWN; texts from 1992); 3) the *British English 2006 Corpus* (BrE06; texts from 2004-2008); and 4) the *American English 2006 Corpus* (AmE06; texts from 2004-2008); for details see Hofland et al. (1999) and Baker (2009). For spoken English, I have used the *Corpus of Spoken Professional American English* (CSPAE; texts from 1994 -1998); for details see Barlow (2000).

The written corpora comprise seven well-defined categories, which have been grouped here into *fictional* and *non-fictional* texts, as shown in Table 1, below. A total sample of 2,121,000 words will be analysed.⁴

Table 1. Sources and distributions of the corpus texts selected from FLOB, FROWN, BrE06, AmE06 and CSPAE

FICTIONAL CATEGORIES		NON-FICTIONAL CATEGORIES		SPOKEN CATEGORIES	
TEXTS	WORDS	TEXTS	WORDS	TEXTS	WORDS
Adventure and western Mystery and detective Romance and love story General Fiction	232,000 192,000 232,000 232,000	Academic prose Press reportage Official documents	640,000 352,000 240,000	Conferences and meetings	2,000,000
TOTAL	889,000		1,232,000		2,000,000
			4,121,000		

The spoken material drawn from CSPAE, in turn, consists of samples taken from *Conference meetings* held around the United States, *Transcripts of White House conferences*, and *Faculty meetings* of the University of North Carolina, which include spontaneous discussions of political and academic issues. A total sample of 2,000,000 words will be analysed, distributed as indicated in Table 1.

Since the textual categories of written and spoken English differ in size, the data have been normalised, following Biber’s (1988, p. 14) proposal for a “normalised frequency of a feature”, to a frequency per 100,000 words.

The corpus-based search has mainly been performed manually. Since these corpora are not parsed, automated analysis of the electronic database has only been possible for the retrieval of subject-auxiliary inversion in *wh-questions*, as these XAS constructions have very specific *wh*-triggers. For this purpose the software tool *Antconc 3.5.8* was used (cf. Anthony, 2019).

³ It should be borne in mind that Goldberg’s comparative subject-auxiliary inversion, as seen in (19), is not included in Chen’s analysis, in that he considers this construction to be the result of subject postponement rather than of the inversion of subject and auxiliary (cf. Chen, 2013, pp. 10-12). Following Chen’s classification, comparative subject-auxiliary inversions are not included in the corpus-based analysis here.

⁴ The *Official documents* textual category comprises government documents, institutional reports, industry reports, college catalogues and in-house industry texts.

3.2 XAS inverted constructions in written and spoken Present-day English

The analysis of the written and spoken corpora yielded 4,310 instances of XAS inverted structures, as shown in Table 2, below. As can be seen, XAS inversions are more frequently attested in the interrogative mood (3,784 tokens) than in the declarative mood (526 tokens). The motivation for this result is that inversion in *wh*-questions is the most frequent type of XAS construction attested in the corpora. For reasons that will be discussed presently (cf. Section 4.1), this inversion type has been more frequently attested in speech (2,496 instances/normalised frequency 124.8) than in writing (1,288 instances/normalised frequency 60.7), where the construction is more frequently used in fictional texts (1,077 instances/normalised frequency 121.1). As Biber et al.'s (1999, p. 212) corpus-based analysis shows, there is a high frequency of questions in conversation, because in this mode of communication the situation often tends to be interactive, with a constant give-and-take among participants. It has been argued that the main function of *wh*-questions is to achieve such an interaction and that the construction is used to seek information from the addressee (cf. Kim, 2018, p. 481). The high frequency of this type of XAS inversion in fiction also comes as no surprise, in that fictional dialogue is typically modelled on conversation. In other words, contexts of direct speech with a conversational status may also be present in fictional texts. By contrast, the remaining written categories – Academic Prose, Press Reportage and Official Documents – are less interactive and make less use of XAS inversions in *wh*-questions. This is most clearly seen in Official Documents, which shows the lowest frequency of this XAS inversion (22 instances/normalised frequency 9.1) in the corpora. In Academic Prose, the frequency of the construction is higher (127 instances/normalised frequency 19.8) than in Official Documents and Press Reportage, which is perhaps surprising, in that texts of these types seldom include interaction or direct speech clauses. As will be discussed in Section 4, the motivation for this distribution is that inversion in *wh*-questions is used in scientific texts to explain or describe something by posing a question and then providing an answer. It will also be shown that, in the textual categories analysed here, the construction serves an interpersonal function, which allows the addressor's presence in the discourse, and its distribution is related to the degree of involvement in the text (cf. Section 4.1).

Table 2. Distribution of XAS inversions in the textual categories of the written and spoken corpora

Note: normalised frequencies are presented with brackets and raw frequencies without brackets

		WRITING				SPEECH			
		FLOB, FROWN, BrE06, AmE06					CSPA E		
		Fic. texts	Acad. Prose	Press Rep.	Offic. Doc.	Tot. Writing	Conf./ Meet.	Tot. Speech	Tot. Cor-pora
Mood Interrogative	Trigger Wh-word	1,077 (121.1)	127 (19.8)	62 (17.6)	22 (9.1)	1,288 (60.7)	2,496 (124.8)	2,496 (124.8)	3,784 (91.8)
	Positive rejoinder	29 (3.4)	101 (15.7)	29 (8.16)	28 (11.6)	187 (8.8)	66 (3.3)	66 (3.3)	253 (6.1)
	Negative conjunct	49 (5.5)	42 (6.5)	9 (2.5)	14 (5.8)	114 (5.3)	43 (2.1)	43 (2.1)	157 (3.8)
	Negative adverb	18 (2.02)	24 (3.7)	10 (2.8)	4 (1.6)	56 (2.64)	26 (1.3)	26 (1.3)	82 (1.9)
Mood Declarative	Positive adverb	--	2 (0.3)	--	--	2 (0.09)	2 (0.1)	2 (0.1)	4 (0.09)
	Deictic element	8 (0.8)	2 (0.3)	2 (0.2)	--	12 (0.5)	18 (0.9)	18 (0.9)	30 (0.7)
	Total	104	171	50	46	371		155	526
	declarative	(11.6)	(26.7)	(14.2)	(17.5)	(17.4)		(7.7)	(12.7)

On the basis of the corpora, XAS inversions in declarative clauses are more frequently attested in writing (371 instances/normalised frequency 17.4) than in speech (155 instances/normalised frequency 7.7). With the notable exception of XAS inversions triggered by a fronted deictic, frequency of occurrence is also consistently higher in writing in each individual type of XAS inversion (cf. Table 2). As the data suggest, inversions triggered by a positive rejoinder is the most frequent type of XAS construction in declarative clauses (253 instances/normalised frequency 6.1). This XAS inversion involves syntactic structures which are triggered by a pro-form that stands for an entire predicate or a substantial part of it. This goes for XAS constructions triggered by *so*, *such*, *as*, etc. functioning as anaphoric adverbs, as shown in (20)-(22), below. In these types of XAS inverted structures, the pro-element is a grammaticalized device that stands for the preceding predicate. The construction itself is also fairly idiomatic, because, as noted by Biber et al. (1999, p. 916), there is often no completely equivalent SVO word order. In (20a), for instance, the initial *so* stands for given information, and has a cohesive effect. Furthermore, its location in preverbal position emphasizes the parallelism between the two clauses. The subject, which is the main communicative focus, is placed towards the end of the clause, in accordance with the principles of *Communicative Dynamism* and *End-focus* (cf. Hartvigson and Jakobsen, 1974, p. 62). This inverted pattern, however, can only be paraphrased with subject-verb order plus additive *too* (cf. 20b), i.e. *the percentage of household has been rising too*.

- (20) a. While poverty has been rising, so has the percentage of household (been rising).
 b. While poverty has been rising, the percentage of household has been rising so too.
 (21) Actually we hardly dare look at her now, the tiny typist, such power does she wield.
 (22) Hogg sees leadership as a relational concept, as does Messick see it in Chapter 4.

XAS inverted constructions triggered by positive rejoinders are attested far more frequently in writing (187 instances/normalised frequency 8.8) than in speech (66 instances/normalised frequency 3.3). Frequency of occurrence is also consistently higher in the textual categories of the written corpus, with Academic Prose (101 instances/normalised frequency 15.7) and Official Documents (28 instances/normalised frequency 11.6) showing the highest scores. The same goes for XAS inversions triggered by negative conjuncts which, as Table 2 illustrates, occur more frequently in writing (114 instances/normalised frequency 5.3) than in speech (43 instances/normalised frequency 2.1), with Academic Prose (42 instances instances/normalised frequency 6.5) and Official Documents (14 instances/normalised frequency 5.8) also showing the highest scores. As Dorgeloh (1997, p. 91) notes, in XAS constructions triggered by negative conjuncts, such as *neither* or *nor*, there is both a connective (anaphoric) and a negative component in the meaning. In other words, the XAS construction performs a clause-linking function while at the same time it focuses on the negative semantics of the fronted conjunct. This is illustrated in (23)-(24), below, in which the fronted negative conjuncts, though equally anaphoric, are not just back-referring constituents, but also, due to their fronting positions, provide a stronger negative meaning for the sentence than their canonical SVO counterparts (cf. 23b)

On the basis of the corpus, *nor* is the most frequent negative conjunct used in this construction, especially in Academic Prose, though examples of XAS inversion with *neither* are also attested. XAS inversions with *nor* are, as noted by Kjellmer (1979, p. 292) devices of textual cohesion “by means of which different parts of an argument can be held together, and which allow a writer insertions or deviations without jeopardising the stringency of his argument”.

- (23) a. It was not an important achievement, nor did it undermine his success.
 b. It was not an important achievement, and it did not undermine his success either.
 (24) They did not watch the game, neither did Peter know the final score.

According to Green (1982, p. 130), inversion after negative conjuncts and pro-forms “seems to be much more frequent in speech”. However, the present corpus-based study has shown that XAS constructions triggered by positive rejoinders and negative conjuncts are more frequently attested in writing than in speech. The more frequent use of XAS inverted constructions triggered by pro-forms or by negative conjuncts in speech in writing than in speech can be explained by the fact that the written mode generally requires more cohesive constructions than the spoken mode because, as noted by Chafe (1992), it most commonly takes place under conditions of *displacement*, that is, it deals with events

which are not part of the immediate environment of addressor or addressee. Formal cohesion must be tighter because the situational context is not available to help fill in any possible gaps. By contrast, spoken language tends to have a more fragmented character and, due also to the speed needed to code messages, it exhibits a far less structured syntax than the written language. As Chafe (1992, p. 38) notes, and as we know, speech often strings together connected clauses without connectives because the connections are “in the air” and, if misunderstood, can be rapidly repaired. Of course, people often do plan the structure of what they want to say in conversations, but even in such cases syntax is not likely to be as elaborate as in writing (cf. Chafe, 1992). Thus speakers typically repeat themselves, use similar syntactic structures, similar lexical items, and say the first adequate word that comes to mind rather than searching for the most accurate or appropriate one, etc. This is not the case in writing, where we typically write down an idea and also have plenty of time to move thoughtfully onto others. The result is that we have time to integrate a succession of ideas into a more complex, coherent and integrated whole, making use of cohesive devices, including XAS inversions triggered by a pro-form or a negative conjunct. In speech, the relationship between ideas is encoded by means other than these XAS inversions (pitch, prominence, pauses, and changes in tempo and voice quality, as well as gestures). Orientation or anchoring tasks, topic changes, prominence of individual constituents, and expressions of emotions can thus be performed using these sources of information in parallel with the linear flow of words. In writing there is only the linear flow of words, so this must be exploited to the full, and the choice of the right syntactic construction becomes essential.

On the basis of the present data (cf. Table 2), XAS inversions triggered by a fronted restrictive or negative phrase, as illustrated in (25)-(30), represent the third most frequent type of XAS inversion in declarative clauses.

- (25) Only then did he realise how much it meant to him.
- (26) Rarely did anyone commit suicide.
- (27) Nowhere do I understand that we are saying to the test developers you have to do this chart every time you do a passage.
- (28) Never have I been so angered and disgusted by the process used to gain a seat in the Dunedin City Commission as I have this year.
- (29) By no means will we exclude the Republican chairs for the briefing on the budget.
- (30) Little did they know what a reformer they were about to foist on the nation.

XAS inversions triggered by a negative or restrictive phrase were also more commonly attested in writing (56 instances/normalised frequency 2.64) than in speech (26 instances/normalised frequency 1.3). In the written mode, they were more commonly attested in Academic Prose (24 instances/normalised frequency 3.7), and Press Reportage (10 instances/normalised frequency 2.8). Inversions of this type are, as Biber et al. (1999, p. 915) note, more frequently found in texts where a strong rhetorical effect is required. As Huddleston and Pullum (2002, p. 820) note, “negators mark clausal negation more readily when positioned early in the clause”. This is certainly the case in XAS inversion triggered by a negative or restrictive phrase, in which, due to their prominent placement in preverbal position, there is a further intensification of the force of the fronted constituent. In other words, these constructions aim to connect clauses but also to produce a strong negative or restrictive emphatic effect (cf. Section 4.2). For instance, in (31a) the placement of the negative adverb serves to emphasize the importance of the negative meaning of the proposition. Overall, speech makes less consistent use of such inversions in that it relies not only on linear word order. Rather, the speaker may also employ phonological features to structure and emphasize negative information. This is shown in (31b), where pitch prominence is given to the negative element and no inversion is required to achieve a negative emphasis on the clause.

- (31) a. Never before have we been so potent.
- b. We have NEVER BEFORE been so potent.

It has been argued (cf. Rudanko, 1982, p. 356; Dorgeloh, 1997, p. 95; Newmeyer, 1998, p. 46) that for this type of XAS inversion to be obligatory, the negative scope of the fronted constituent must affect the whole clause. If this is not the case, it has been argued (cf. Erdman, 1988. pp. 71-72; Lakoff, 1991,

p. 58; Goldberg, 2006, p. 172) that an SVX word order is used instead, and the preverbal negative or restrictive element does not trigger the inversion. Biber et al. (1999, p. 916), for instance, point out that the fronted negative phrase behaves differently in examples such as (32) and (33), below. In (32) they note that the negation is local and part of the adverbial only (“in no time”). The main statement is thus expressed in positive terms: the addressee still concludes that “the hotels would be jammed to the door”. By contrast, they note that in (33) the scope of the negation affects the whole clause and the implication is that “he did not ever indicate that he couldn’t cope”.

- (32) In no time at all the hotels would be jammed to the doors. (From Biber et al., 1999, p. 916)
- (33) At no time did he indicate he couldn’t cope. (From Biber et al., 1999, p. 916)
- (34) a. Not for nothing did Ricky have the fastest reflexes in polo.
- b. Ricky did not have the fastest reflexes in polo for nothing.

Despite the above-mentioned claim, Chen (2013, p. 19) convincingly demonstrates that local negation can also trigger XAS inversion, as shown in (34a). He proves that the fronting of the negative adverbs triggers the inversion because the negation particle, *not*, is placed adjacent to the auxiliary in the SVO word-order counterpart (34b). The inversion thus follows what he calls the *Invertability hypothesis* (cf. Chen, 2013, p. 15) whereby the stronger the link – in terms of closeness – between the fronted unit and the auxiliary/verb in the canonical SVO clause, the more likely the order of the subject and the auxiliary/verb to invert once a constituent is fronted.

The other types of XAS inversions in the declarative mood – namely, inversions triggered by a fronted positive adverb (cf. 35) or a deictic adverb (cf. 36) – are found more rarely (cf. Table 2). This is especially the case with XAS inversions triggered by positive adverbs, with marginal significance in the data (4 instances/normalised frequency 0.09) and which would thus seem to be very infrequent in Present-day English. Likewise, XAS inversions triggered by a deictic constituent are also rare. As I have shown elsewhere, (cf. Prado-Alonso, 2016) fronted deictics most frequently trigger the inversion of subject and main verb (cf. 37) – XVS inversion – rather than the inversion of subject and auxiliary (cf. 36) – XAS inversion.

- (35) Particularly do they support universal coverage.
- (36) And then do they reach some reasonable conclusion using mathematics.
- (37) Here comes a first payoff from the increased sample size that is made possible by the use of parent report.

The few examples of XAS inversion triggered by deictics found in the corpora are more frequently attested in speech than in writing. Green (1982, p. 130), in fact, argues that inversion with temporal or spatial deictics, such as *here*, *there*, *now*, and *then*, is “basically an oral language construction”, as its use involves participants who share the same location and who are interacting. As Chafe (1994) notes, one of the basic properties which sets speaking and writing apart is the notion of *situatedness*. This notion has to do with “the closeness language has to the immediate physical and social situation in which it is produced and received” (Chafe, 1994, p. 44). From this it follows that two important situational properties distinguish writing from speaking: (1) whether the producer and receivers of a message are co-present, and (2) whether they interact. Conversational language typically involves participants who share the same location in space and time, and who alternate their roles. Writing is different in both respects. Typically writer and reader occupy different locations, and they rarely interact, and almost certainly not in real-time. However, the use of XAS inversions triggered by deictics may also be attested in written discourse, although being more restricted than in speech, because the deictic reference conveyed through these constructions can also be made to the text itself. In other words, a text may create its own deictic dimensions and offer an alternative perceptual field which is available to the writer and the reader, and where contexts of direct speech with a conversational status may also be present. This is especially noticeable when an addressor writes as if he or she were speaking, or wants to reflect direct speech situations, as seen in fictional texts (cf. Prado-Alonso, 2011, p. 146).

The analysis presented thus far has provided a corpus-based account of instances of XAS inversion retrieved from written and spoken corpora, together with a discussion of the reasons behind the differences in distribution. In what follows a more fine-grained textual analysis is provided, one which

will allow for a better understanding of the distribution and pragmatic function of this construction in Present-day written and spoken English. As will be seen, this textual analysis is based on established criteria of linguistic variation (cf. Biber, 1988).

4. A textual analysis of XAS inverted constructions in Present-day English

In *Variation across Speech and Writing* (1988), Biber analyses linguistic variation in the Lancaster-Oslo-Bergen Corpus of British English (LOB) and the Brown corpora. These two corpora, compiled in the 1960s, match the structure of FLOB, FROWN, BrE 2006 and AmE 2006 (for details see Hofland et al., 1999 and Baker, 2009). The textual categories represented in LOB and BROWN are analysed by Biber in terms of six parameters or dimensions. Dimension 1, which he calls Involved versus Informational Production, distinguishes discourse with interactional, affective or involved purposes and which is associated with strict real-time production and comprehension constraints, from discourse with highly informational purposes. Dimension 2, Narrative versus Non-narrative Concerns, distinguishes discourse with primary narrative purposes from discourse with non-narrative purposes, hence dealing with the difference between active, event-oriented discourse, and more static descriptive or expository types of discourse. Dimension 3, Endophoric versus Situation-Dependent Reference, distinguishes between discourse that identifies referents fully and explicitly through relativization, and discourse that relies on non-specific deictics and reference to an external situation for the purposes of identification. This dimension thus corresponds closely to the distinction between endophoric and exophoric reference (cf. Halliday and Hasan, 1976). Dimension 4, Overt Expression of Persuasion, refers to those features associated with the addressor's expression of point of view or with argumentative styles intended to persuade the addressee. Dimension 5, labelled Abstract versus Non-abstract Information, distinguishes between texts with a highly abstract and technical informational focus, and those with non-abstract focus. Finally, Dimension 6, On-line Informational Elaboration, distinguishes between informational discourse produced under highly constrained conditions in which the information is presented in a relatively loose, fragmented manner, and other types of discourse, be it informational discourse that is highly integrated or discourse that is not informational in nature. In addition to multidimensionality, variation is treated as continuously scalar in Biber's analysis. The six parameters, then, define continua of variation rather than discrete categories. For example, although it is possible to describe a text as simply abstract or non-abstract, it seems more accurate to describe it as more or less abstract.

Over the last 30 years, Biber's (1988) multidimensional analytical framework has come to be regarded as a powerful tool for the analysis of register variation and genre. The application of this framework has been considered to yield well-tested findings in the study of linguistic variation, and has allowed linguists to investigate language in use and to formulate detailed descriptions, which in turn can encapsulate how language users make concrete language choices in particular linguistic contexts. What follows provides a comparison of the distribution of XAS constructions in the textual categories of the corpora analysed here with Biber's analysis of the same and similar categories in terms of different dimensions of linguistic variation. If the distribution of XAS inversion – in both speech and writing, and in the indicative and interrogative moods – is sensitive to any of these linguistic dimensions, we can assume that it will be seen clearly in the present data. As will be shown, this will certainly be the case regarding the distribution of XAS inversion in relation to Dimension 1, in that it will be shown that XAS inversions behave differently in the interrogative and declarative moods.

4.1 XAS inverted constructions in the interrogative mood and the degree of addressor's involvement

Looking first at Dimension 1, Involved versus Informational Production, Biber's analysis shows that the categories of Academic Prose, Press Reportage and Official Documents exhibit a very low score on the involved pole of Dimension 1, as illustrated in Figure 1, below. By contrast, Spontaneous Speech and Fiction have moderately higher scores on the involved pole of this Dimension. Biber also shows that those categories with higher scores on Dimension 1 – Spontaneous Speech and Fiction – exhibit a high degree of concern for interpersonal and affective meaning and are characterized by markedly infrequent occurrences of nouns, prepositions, and long words. They also exhibit a frequent occurrence of private verbs used for the overt expression of private attitudes, thought, and opinions (e.g. *think, feel*), that-deletions, present tenses, contractions, first- and second-person pronouns (referring directly to the addressor and addressee), and emphatics and amplifiers used by the addressor to mark attitudinal

comments. The textual categories with low scores on this Dimension 1 – Academic Prose, Press Reportage and Official Documents – have the opposite characteristics.

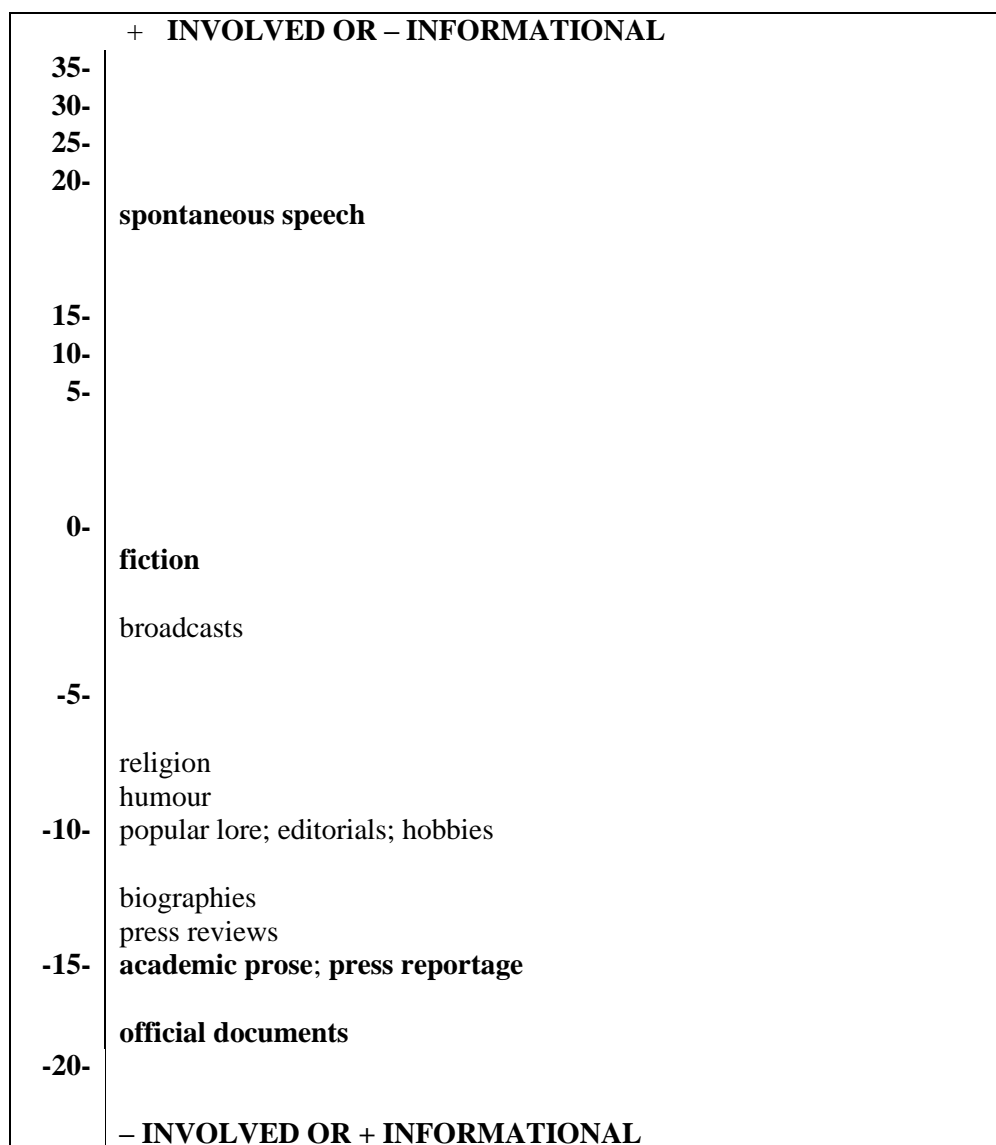


Figure 1. Mean scores of dimension 1 – Involved vs. Informational Production – in Biber (1988,p. 128; emphasis added)

The comparison of Biber’s mean scores on Dimension 1, illustrated in Figure 1, with the distribution of XAS inverted constructions in the categories analysed here (cf. Table 2), shows that, in the interrogative mood, there is a tendency for those categories with a higher degree of addressor’s involvement – namely spontaneous speech in Conferences and Meetings, and Fiction – to favour the use of the construction. This is also seen if we measure the correlation between Biber’s mean scores on Dimension 1 and the normalised frequencies of XAS inversion in the interrogative mood by calculating a (Pearson) Correlation Coefficient, as illustrated in Table 3, below.⁵ The result here is 0.9064, with a P-value of 0.0338, which is significant at the $p \leq .05$ level.⁶ Similarly, by calculating a Simple Linear

⁵ The Pearson correlation is a measure of the way in which two variables correlate. Its value indicates both the direction (positive or negative) and the strength of the correlation between two variables. The value +1 indicates a perfect positive correlation and the value -1 a perfect negative correlation, whereas a value of 0 indicates no correlation at all (cf. Butler, 1985; Baayen, 2008; and Johnson, 2008, among others).

⁶ The p -value or “statistical significance” of a result is the probability that the observed relationship between variables in a sample occurred by chance. In other words, it measures the strength of the relationship between the

Regression, the Coefficient of Determination (R^2) is 0.8216, hence the distribution of the textual categories in terms of involvement explains 82% of the examples of the distribution of XAS Wh-inversions.⁷

Table 3. Pearson correlation coefficient for the distribution of XAS inversion in the interrogative mood and Biber's (1988, pp. 182-183) mean scores on Dimension 1

	Mean scores of the textual categories on Dimension 1	Normalised frequencies for XAS inversion in the interrogative mood
Spontaneous Speech	18.2	124.8
Fiction	-0.8	121.1
Academic Prose	-14.9	19.8
Press Reportage	-15.3	17.6
Official Documents	-18.1	9.1
CORRELATION COEFFICIENT		0.9064
SIMPLE LINEAR REGRESSION (R^2)		0.8216
P-VALUE (SIGNIFICANT AT $P < 0.05$)		0.0338

The statistical analysis therefore shows that, in the interrogative mood, the preponderance of XAS inversion in speech and fiction is best explained by the degree of the addressor's involvement in these text types.⁸ The XAS inversions attested in the interrogative mood are well suited to the interpersonal features of these textual categories, and the data further show that the more involved a text, the more XAS inversions in the interrogative mood are to be expected.

In the interrogative mood, XAS inverted structures are used to seek information about non-subject parts of the sentence, as illustrated in (38)-(42), below. As Chen (2013, p. 4) notes, they differ from inversions in Yes/No questions – i.e. verb first Auxiliary-Subject Constructions (cf. 43 and 44) – in that the latter seek information about the proposition expressed by the entire sentence. To seek information about a particular part of the sentence, the addressor fronts the *wh*-lexeme whose referent is automatically placed at the centre of attention and obligatorily triggers the inversion. It is in this sense that this type of inversion has been lexicalized in Present-day English, and such a process of lexicalization fixes the construction as a distinct unit (cf. Brinton and Traugott, 2005; Traugott and Trousdale, 2013). Since the questioned unit in XAS *wh*-inversions is picked out and placed clause-initially for focus, this results in a stressed-unstressed-stressed phonological sequence (cf. Chen, 2013, p. 10), as shown in (45), whereby the fronted *wh*-element is phonologically emphasized and the subject, which typically does not receive stress in an SVO word order, is also phonologically emphasized. In interrogative clauses, the need to focus is therefore the motivation for this XAS inversion. It is in this sense that, in the interrogative mood, the XAS construction is a discourse marker which has a focus management function. In other words, it is a construction that changes the addressee's current focus of interest or attention and thus belongs to "the speaker's organisation of discourse" (cf. Halliday and Hassan, 1976, p. 239). The corpus-based data show that this interpersonal function of XAS inversion is most frequently attested in texts with a higher degree of interpersonal features, although it may also be found, though far less often, in textual categories with a lower degree of involvement, such as Academic Prose. In examples (46)-(47), below, for instance, the writer poses questions to focus the attention on particular aspects of content in the text. In (46), the three XAS inversions triggered by *how* and *what* signal a strong emotional involvement on behalf of the writer, who makes use of a frequent strategy in

variables. Results that are significant at the $p \leq .0.1$ level are commonly considered statistically significant, and $p \leq .0.05$ or $p \leq .0.01$ levels are often called "highly" significant.

⁷ The Coefficient of Determination (R^2) is a statistical measure that indicates the percentage of the variation in the dependent variable that the independent variables explain collectively.

⁸ All statistical analyses were conducted using R (version 3.6.0). See R Development Core Team (2019).

Academic Prose: posing a question to announce a research theme or to focus the attention on a particular aspect or aspects of the phenomenon under discussion. In (47), the two XAS inversions are used to express a forceful statement. Here the addressor follows a natural didactic strategy used in Academic Prose: that of explaining by posing a wh-question and then providing an answer. In both instances, the XAS inversions allow the addressor to be present in the text and to shift the reader's attention.

- (38) How would we approach something like that?
- (39) What do leaders attempt to promote among team members?
- (40) Where can I find Gun Rod?
- (41) When will I see you again?
- (42) Why should he deny himself the possibility of being able to generate his evidence?
- (43) Did you wonder what the angels are?
- (44) Will you come here to see her?
- (45) WHERE did SHE want to jog?
- (46) How then can teacher educators respond – and in essence positively counter – prospective teachers' resistance to teach for diversity and for understanding? What are some examples of promising pedagogical strategies that teacher educators could use in their courses to help prospective teachers meet the expectations of their teacher education programs, supervising teachers, and state and national standards? How can teacher educators better prepare prospective teachers to meet the challenges of helping increase the achievement and participation of all students in mathematics and science? We tackle these questions head-on by providing rich narratives of our experiences in helping prospective teachers learn to teach for diversity and understanding in a variety of science and mathematics contexts.
- (47) This, we shall see, makes it easier to question their moral credentials. Why does Feagin find meta-response to tragedy praiseworthy? First, she claims that the sympathy we enjoy when we respond to tragedy also underlies our capacity for moral action. But what does this establish in terms of moral status? Here, we must inquire further into the grounds of pleasure.

4.2 XAS inverted constructions in the declarative mood and the degree of textual information

As has been previously shown, Biber's analysis shows that the categories of Academic Prose, Press Reportage and Official Documents exhibit a very low score on the involved pole of Dimension 1 (cf. Section 4.1). Overall, these categories do not show much concern for interpersonal or affective content and are more informational in nature.

The comparison of Biber's mean scores on Dimension 1, illustrated in Figure 1, with the distribution of XAS inverted construction in the categories analysed here (cf. Table 2), shows that, in the declarative mood, there is a tendency for those categories with a higher degree of informational content – Academic Prose, Press Reportage and Official Documents – to favour the use of the construction. This is also seen if we assess the correlation between the mean scores on Dimension 1 and the normalised frequencies of XAS inversion in the declarative mood by calculating a (Pearson) correlation coefficient, as illustrated in Table 4, below. The result is -0.7471, with a P-value, which is significant at the $p \leq .05$ level. There is a moderate-strong correlation, which shows that there is a tendency for negative high scores in Dimension 1 to go with high normalised frequencies of XAS inversions in declarative clauses. In other words, the statistical analysis shows that, in declaratives, the less involved a text is, i.e. more informational, the more XAS inversions are to be expected. Further evidence for this can be seen if we calculate a Spearman's rank-order correlation: the R_s -0.6564, with p (2-tailed test) 0.0392, which demonstrates that the association between the two variables can be considered statistically significant and that texts with a lower degree of involvement – hence more informational – tend to favour the use of XAS inversions in the declarative mood.⁹

⁹ The Spearman's rank-order correlation is the non-parametric version of the Pearson correlation. Spearman's correlation coefficient (ρ , also denoted by R_s) measures the strength and direction of the association between two ranked variables. The statistic R_s falls between -1 and +1 and is based on exact critical probability (p) values. An R_s of +1 expresses a perfect positive correlation, and an R_s of -1 a perfect negative one. Values of R_s ranging from 0.40 to 0.65 show a moderate-strong correlation.

Table 4. Pearson correlation coefficient for the distribution of XAS inversion in the declarative mood and Biber's (1988, pp. 182-183) mean scores on Dimension 1

	Mean scores of the textual categories on Dimension 1	Normalised frequencies for XAS inversion in the declarative mood
Spontaneous Speech	18.2	7.7
Fiction	-0.8	11.6
Academic Prose	-14.9	26.7
Press Reportage	-15.3	14.2
Official Documents	-18.1	17.5
PEARSON COEFFICIENT		-0.7471
SPEARMAN'S RANK COEFFICIENT		-0.6564

In the declarative mood, the preponderance of XAS inversions in Academic Prose, Press Reportage and Official Documents is therefore best explained by the degree of informational content of the texts in question. This can also be seen if we measure the correlation between the mean scores on Dimension 1 and the normalised frequencies of the most representative XAS inversion type in declarative clauses: XAS inversion triggered by a positive rejoinder (cf. Section 3.2). The result of calculating a (Pearson) correlation coefficient is -0.7311, which shows that the lower the degree of involvement in the text, the higher the number of this type of construction. The primary aim of the addressor in these categories is that of providing informational content and, for this purpose, he or she makes use of a very high frequency of nouns, and tends to use quite long words – to convey longer specific meaning – while carefully selecting the vocabulary. There is also a frequent use of prepositional phrases, which serve to integrate high amounts of information into the text, and of attributive adjectives – which are used to further develop nominal information. All these features, as Biber (1988, p. 105) has shown, are associated with communicative situations that require a high degree of informational focus and provide the opportunity for the careful integration of information and precise lexical choices. In terms of grammatical constructions, Academic Prose, Press Reportage and Official Documents make frequent use of present and past participial Whiz deletions, agentless passives, nominalizations, and phrasal coordination which are informational and serve to further develop the nominal content. Whiz deletions, for instance, are frequently used to modify nouns, passives are associated with a static, nominal style and often mark highly abstract types of information, and nominalizations and phrasal coordination allow discourse to be integrated and informational.

The corpus-based results show that the use of XAS inversions in declarative clauses contributes to this informational purpose. Chen (2013) argues that the function of these constructions in declaratives is the fronting of the X constituent. In other words, he argues that they serve a focalizing function and allow the addressor to move the addressee's attention to the constituent placed in front position in the clause, which is given prominence. Adding to this focalizing function, the XAS inversions analysed in the declarative mood must also be considered grammatical devices, which perform the linkage of clauses and information. This is not only shown in the correlation in distribution of these constructions with the degree of informational content of the texts in which they occur, but also in the discourse features of the constructions themselves. This is so because front shifting of an individual constituent, which would be canonically placed elsewhere, is also related to issues of information status. The fronting of the constituent triggers the inversion of the auxiliary and the subject, which attracts informational focus. This is most clearly seen in XAS inversions triggered by a positive rejoinder which, being the most frequent XAS inversion type in declarative clauses, perform a clause-linking function, as shown in (48). In this example (cf. 48a), both the trigger and the inverted subject receive prominence (which would be represented phonologically in speech). The result is a bi-focal construction in which focus is given to two constituents (the fronted element and the subject), which would not be given prominence in the canonical SVX counterpart (cf. 48b), while at the same time the new information is introduced in the

discourse and emphasized in the post-verbal subject. Such a focalizing and clause-linking function can also be noted in the other types of XAS construction attested in declaratives, as shown in (49)-(52). In (49), for instance, there is a combination of both an anaphoric and a constituent-focussing function. In other words, clause-initial *nor* refers back to an element in the previous text, yet because of its clause-initial fronting it emphasizes the negative meaning of the new information which is presented in post-verbal position. Similarly, (50) the fronted positive adverb represents a connective device, but the use of the inversion at the same time marks it as the focus of the predication after which the new information is introduced.

The focalizing function of XAS inversions in declarative clauses therefore has an effect on the introduction of the new information, which is integrated into the discourse. The focalizing and clause-linking function of these constructions is less attested in speech and fiction (which tends to mirror conversation) because the spoken mode can resort to paralinguistic features (tempo, voice quality, pauses, pitch, etc.) to convey ideas and exhibits a less organized syntax with fewer linking constructions, such as XAS inversions in declarative clauses.

- (48) a. I know quite a lot about what goes on in this house. I keep quiet though. SO does MOMMA CHIRAK.
b. I know quite a lot about what goes on in this house. I keep quiet though. Momma Chirack does so too.
- (49) Erikson cannot investigate in any detail the processes through which the official statistics were constituted, nor can he collect data of his own which could provide alternative estimates.
- (50) Particularly had this been the case at the University of California in Berkeley.
- (51) Here did we grow and become the People.

5. Summary and conclusions

XAS inversions are constructions that rearrange the order of constituents in sentences. The common denominator in these types of structures is that the subject follows the first auxiliary of the verb phrase, while some other element (X) is preposed. Drawing on Chen's (2013) classification of XAS inversions, the present paper has offered a comprehensive corpus-based analysis of these types of construction in written and spoken English interrogative and declarative clauses.

The study has shown that, since XAS inversions are constructions that manipulate the X and the S, they are used because encoders want to pay special attention to these constituents. In the interrogative mood, it has been shown that these inverted constructions serve an interpersonal function and may be considered discourse markers through which the addressor's involvement is reflected in the text. It is in this sense that the construction is used by the addressor to change the addressee's focus of interest towards a particular constituent, namely the fronted X. Such an interpersonal function is also revealed in the distribution of XAS interrogative inversions in the textual categories analysed here. The corpus-based analysis has shown that, in the interrogative mood, there is a tendency for XAS inversions to be more frequent in texts with a higher degree of interpersonal features, namely spontaneous speeches in Conferences and Meetings and in Fictional texts (in which conversation is mirrored). The statistical analysis has in fact demonstrated that the more interpersonal in nature a text is, the more XAS Wh-inversions are to be expected.

In the declarative mood, it has also been shown that XAS inversion serves a focus management function, and that the fronting of the X constituent and the inversion of subject and auxiliary represents a marked climax-building from established SVO word-order. In declarative clauses, the analysis has also demonstrated that this focalizing function of XAS inversion is inherently tied to the clause-linking function performed by the construction. The front shifting of the X constituent triggers the inversion of the auxiliary and the subject, which is also given prominence and attracts the informational focus. This focalizing and clause-linking function is therefore a discourse feature of the construction in declarative clauses, and can be seen in all types of XAS inversion in this mood. The statistical analysis further shows that XAS inversion in declaratives is commonly found in textual categories with a higher degree of informational content, namely Academic Prose, Official Documents, and Press Reportage. They occur in linguistic contexts in which the X is fronted in an attempt to accommodate the post-verbal new information into the addressee's knowledge base.

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