

Research Article

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Modifier-numeral word order in the English NP: An FDG analysis

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Abstract: It is generally accepted that the order of elements within the English noun phrase is relatively fixed, and that, in the prefield, determiners (primary and secondary) precede modifiers. This article is concerned with a group of noun phrases exhibiting non-canonical word order, namely those cases in which a modifier precedes a numeral, such as *a fabulous two years*, *a staggering 30 singles*, *that short fourteen months*, and *the largest two markets*. Using corpus data from the *British National Corpus*, it is shown that such noun phrases are far more heterogeneous (in terms of the kind of noun, the scope and type of the modifier, the form and number of the determiner, and subject-verb agreement) than assumed in previous studies. It is argued that the variation observed in the data can only be accounted for if different subtypes of such NPs are distinguished, each characterized by its own combination of functional and formal properties. Finally, it is demonstrated how Functional Discourse Grammar, with its function-to-form approach and its different levels and layers of representation, is particularly well-suited to capture the main features of the construction as a whole, as well as the more specific semantic and syntactic properties of each of the subtypes.

Keywords: English noun phrases, word order, modification, numerals, Functional Discourse Grammar

1 Introduction

There is a broad consensus among linguists from different theoretical backgrounds about the basic order of elements within the English noun phrase. Thus, it is generally accepted that in the prefield (i.e. in positions preceding the nominal head), determiners, both primary (articles, demonstratives, possessives) and secondary (e.g. numerals and quantifiers), precede modifiers (adjectives or participles). Exceptions do, however, exist, and the present article focuses on one of these, namely those cases where a modifier precedes a cardinal numeral. Some examples are given in (1):

- (1) (a) It's been *a fabulous two years* for me at Leeds and the lack of goals has been my only disappointment. (BYU-BNC, news)
- (b) REGGAE star Shabba Ranks has finally scored his first solo hit after releasing *a staggering 30 singles* on 15 different labels since 1988. (BYU-BNC, news)
- (c) But much has happened in *that short fourteen months* since the general election. (BYU-BNC, scripted speech)
- (d) Germany and the UK remain *the largest two markets*, growing by 16% and 32%, respectively. (BYU-BNC, non-acad)

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- (e) *These seemingly harmless four words* are repeated several times to form the lyric ‘As clouds roll by for you and I.’ (BYU-BNC, news)

Even from these five examples, it will be clear that noun phrases with prenumeral modifiers (henceforth Mod-Num NPs) form quite a heterogeneous group in terms of the kind of noun and modifier they contain, as well as the form and number of the determiner. Although there are a few studies that have addressed some of these issues (e.g. Keenan 2013, Marušič and Žaucer 2013), so far there has been no comprehensive investigation of these constructions, nor has any previous account made use of empirical data to address the question of which functional properties trigger the modifier–numeral word order and how to account for the specific formal features exhibited by these constructions.

This article is meant to fill this gap by presenting an empirical study based on a sample of 516 examples extracted from the *British National Corpus* (BYU-BNC, as made available by Davies 2004) and subsequently coded for a range of potentially relevant factors (including scope of the modifier, type of modifier, type of noun, form of the determiner, and number agreement). It will be argued that the substantial variation observed in the data can only be accounted for if different subtypes of Mod-Num NPs are distinguished. In addition, it will be demonstrated how Functional Discourse Grammar (FDG) (Hengeveld and Mackenzie 2008), with its function-to-form approach and different levels and layers of representation, is particularly well-suited to capture the main features of the construction as a whole, as well as the more specific semantic and syntactic properties of each of the subtypes.

The structure of the article is as follows. Sections 2 and 3 provide some theoretical background. Section 2 discusses some previous literature on Mod-Num NPs, while Section 3 presents the relevant aspects of FDG. Section 4 describes the methodology used, including the various factors coded for. Section 5 presents the findings, looking not only at each of the factors coded for but also at the interaction between them. Section 6 proposes a classification of Mod-Num NPs that can account for the considerable variation observed (Section 6.1) and provides an FDG analysis of the subtypes identified (Section 6.2). Section 7 concludes the article.

2 Previous accounts

As already mentioned, word order in the English noun phrase is relatively fixed. This has resulted in several templates with slots for the head and its dependents, reflecting the default order in which the various elements appear. One well-known template is presented in Table 1. In this template, cardinal numerals occur in the second post-determiner slot and precede adjectives and participles, which function as modifiers.

Table 1: Linear ordering in the English noun phrase (based on Quirk et al. 1972, 146, Quirk et al. 1985, 253–331, 1238–87)

pre-det	det	post-det ₁	post-det ₂	pre-mod _{0..n}	head	compl	post-mod _{0..n}
<i>all</i>	article	ordinal	cardinal	adjective	noun	PP	PP
<i>both</i>	demonstrative		quantifier	participle		clause	clause
<i>half</i>	genitive						adjective
<i>such</i>	possessive						

det = determiner; mod = modifier; compl = complement

A similar structure has been proposed by Halliday (1985) within the framework of Systemic Functional Grammar (see also Halliday and Matthiessen 2014, 364, 379). Note that, in keeping with the functional approach taken, Table 2 includes both the syntactic category and the function of each slot.

Table 2: Halliday's experiential structure of the nominal group (1985, 159)

Deictic ₁	Deictic ₂	Numerative	Epithet ₁	Epithet ₂	Classifier	Thing	Qualifier
determiner <i>those</i>	adjective <i>same</i>	numeral <i>two</i>	adjective <i>splendid</i>	noun or adjective <i>old</i>	noun or adjective <i>Electric</i>	noun <i>trains</i>	phrase or clause <i>with pantographs</i>

One aspect distinguishing Halliday's structure from most others is that it contains an extra slot between the primary determiner (Deictic₁) and the Numerative. This slot, labelled Deictic₂, is filled by adjectives with a deictic rather than a modifying function. Thus, rather than fulfilling a descriptive function (as they would as Epithets), these adjectives help to "identif[y] a subset of the class of 'thing' by referring to its fame or familiarity, its status in the text, or its similarity/dissimilarity to some other designated subset" (Halliday and Matthiessen 2014, 373–4; see also Dixon 1982, 25). Halliday and Matthiessen divide these adjectives into two main groups, each subsuming several subtypes. The first main group consists of adjectives that indicate expansion, i.e. adjectives that help to identify a subset by elaborating on their identity (*same*, *identical*, *different*), exemplification (*particular*, *well-known*), extension (*complete*, *whole*), or situating the subset in space or time (*above*, *preceding*). The second group consists of adjectives indicating projection; these may be modal (*possible*, *customary*, *necessary*) or evidential (*so-called*, *expected*) in nature. The projecting group also includes adjectives that express the speaker's attitude, either towards the referent (e.g. *miserable* in (2a)) or towards the numeral (in which case they combine with the singular determiner *a(n)*; e.g. *disappointing* in (2b)) (Halliday and Matthiessen 2014, 373–4):

- (2) (a) A larger group of unfortunate organizations spend all their time east of the merge point, on *those miserable two miles of asphalt and concrete*.
 (b) It sold *a disappointing 9,000 copies*, but by the second half of 1924, weekly circulation had increased to 70,000, and Time Inc. had its first profit.

In other words, what would be a marked word order in other approaches is now entirely expected. As we will see, however, the range of elements that can appear in the prenumeral position is much larger than the group of deictic adjectives mentioned by Halliday and Matthiessen (see examples (1c)–(1e)) and, in most cases, these adjectives seem to have their usual modifying function. In addition, Halliday and Matthiessen's proposal fails to address a number of specific semantic and syntactic properties associated with the adjective–numeral order (concerning the type and form of the modifier, the form of the determiner, the type of noun, verb–noun agreement, etc.).

Although NPs with prenumeral adjectives are sometimes mentioned in discussions of English noun phrases or adjectives (e.g. Tucker 1998, 83, Payne and Huddleston 2002, 453, Ionin and Matushansky 2006, 324), only a few linguists have discussed Mod-Num NPs in any detail. One of them is Keenan (2013), who describes and analyses indefinite constructions like those in (3), which she refers to as AANN (Article + Adjective + Number + Noun) constructions:

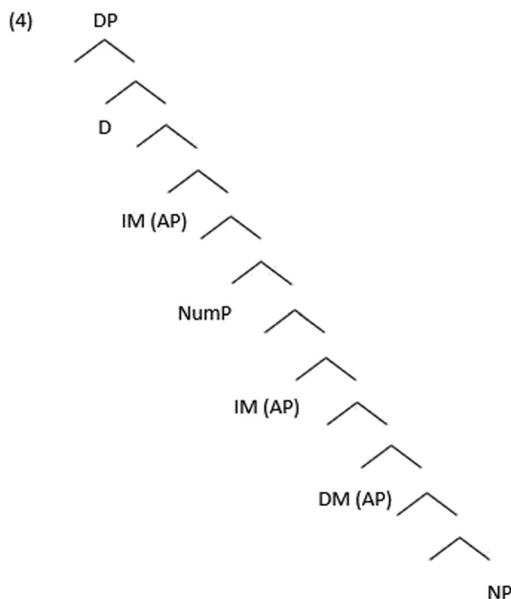
- (3) (a) I spent *a pleasant three weeks in Banff* last summer. (Keenan 2013, 88)
 (b) Terry Fox ran *an astonishing 3000 miles* on one leg. (Keenan 2013, 89)

According to Keenan (2013), these constructions possess a number of distinctive properties. First of all, she points out that the adjective and the numeral can only occur in the specified order, while neither can be omitted (**a three pleasant weeks*; **a three weeks*; **a pleasant weeks*) (Keenan 2013, 88). As for verbal agreement, she observes that some constructions only accept the singular form (*A mere fifty cents for a cup of coffee sounds/*sound reasonable to me!*), some only the plural form (*A delicious four courses *was/were served*), while others allow for both (*A healthy two runs a week was/were prescribed by the doctor*). As for the type of adjective used, Keenan notes that it may be either descriptive (as in (3a)) or emphatic (as in (3b)), and that in the case of descriptive adjectives, the construction occurs most naturally with nouns

indicating a measure (rendering expressions like *#a delicious three muffins* degraded or infelicitous) (Keenan 2013, 88–9). Finally, when it comes to their meaning, Keenan (2013, 89) observes that AANN with descriptive adjectives “encodes a collectivity reading on the subsequent plural noun phrase”; a phrase like (3a), for instance, is only felicitous if the three weeks are interpreted as forming a continuous unit.

As for the analysis of these constructions, Keenan (2013, 94) concludes that in many respects, “AANN resembles a collective pseudopartitive”; she accordingly provides a pseudopartitive-like underlying structure that contains a measure phrase headed by the non-expressed measure element <GROUP> to capture the collective reading (a pleasant three days = a pleasant *period* of three days). Note, however, that the analysis proposed only seems to apply to examples with descriptive adjectives (as in (3a)) and fails to capture the difference in the scope of the adjective between (3a) and (3b); whereas in (3a) the descriptive adjective *pleasant* does indeed modify the set denoted by the head (*weeks*), in (3b) the emphatic adjective *astonishing* only scopes over the following numeral (it is the number, or quantity, that is astonishing, not the miles). Nor can the analysis be extended to examples (1d) and (1e) above.

Marušič and Žaucer’s study (2013) primarily deals with prenumeral adjectives in Slovenian, but also includes English data. Unlike Keenan, they look at all kinds of NPs with prenumeral adjectives (not just indefinite constructions with measure nouns), focussing on the semantic properties of the adjective. Their point of departure is Cinque’s (2010) distinction between two broad classes of modifiers: direct modifiers (DMs), which scope directly over the noun (or rather the NP within the DP) and occur within the numeral phrase, and indirect modifiers (IMs), which are derived from relative clauses and merge at a higher position within the DP, where they may scope over the numeral phrase (Marušič and Žaucer 2013, 42). A simplified representation of this structural difference is given in (4):



According to Cinque (2010), the two classes of modifiers differ with regard to such oppositions as stage-level (temporary) vs individual-level (permanent), restrictive vs non-restrictive, intersective vs non-intersective,¹ or absolute vs relative modification (see e.g. Cinque 2010, 17, see also Alexiadou et al. 2007, part 3, ch 1.; García Velasco 2022). Thus, whereas DMs can have any of these properties, IMs only allow for a stage-level, restrictive, intersective, and relative interpretation.

¹ Non-intersective (subsective) adjectives are adjectives that do not denote a property of the referent, but instead specify the denotation of the noun, e.g. *criminal* in *criminal lawyer* (when used to refer to a kind of lawyer), or *poor* in *a poor student* (when used to refer to a student performing poorly; see example (10) below).

Given the fact that in Mod-Num NPs the adjective precedes (has higher scope than) the numeral, the structure in (4) predicts that they must be IMs. After investigating data from Slovenian and English, Marušič and Žaucer conclude that this prediction is largely borne out: prenumeral adjectives can only have a stage-level interpretation and can only be used restrictively and intersectively, whereas postnumeral adjectives are ambiguous in all these respects (while both prenumeral and postnominal adjectives allow for relative and absolute readings). As shown in Section 5, however, this conclusion is not supported by the English data used in this study (note that the adjectives in examples (1b) and (1e), for instance, seem to be used non-restrictively).

In addition, Marušič and Žaucer (2013, 41) note that “the group of adjectives which can appear in front of numerals is actually quite diverse,” as it includes not only descriptive and emphatic adjectives but also locational ones, such as *left(most)* and *upper* (as in *the left(most) three columns, the upper three rows*; Marušič and Žaucer 2013, 41). They also point out that in these cases, both orders are acceptable but result in different interpretations, with the adjective–numeral order suggesting the existence of a contextually determined unique/exhaustive set (e.g. a set of “three rows”; Marušič and Žaucer 2013, 52).

Finally, like Keenan, the authors offer a single (pseudo)partitive-like analysis with a non-expressed group noun, allowing them to conclude that “these [prenumeral] adjectives violate only apparently, as the noun phrases with such adjectives actually contain additional covert structure” (Marušič and Žaucer 2013, 39).

The analysis to be offered in this article differs from previous accounts in a number of respects. First, it will be based on corpus data and will investigate a wider range of factors. This will hopefully give a clearer idea of which modifiers can occur in the prenumeral position and which additional (semantic and syntactic) properties characterize the construction as a whole. Second, rather than proposing a single analysis, a number of subtypes of Mod-Num NPs will be distinguished. Subsequently, each of these subtypes will be provided with its own analysis, bringing out the similarities and differences between them. For this purpose, use will be made of a functionally oriented theoretical framework, FDG.

3 Noun phrases in FDG

One of the aims of this article is to show that FDG, with its different levels of analysis for the representation of pragmatic, semantic, and syntactic information, is particularly well-equipped for the analysis of Mod-Num NPs. In order to prepare for such an analysis, this section presents a brief sketch of how noun phrases are analysed in FDG.²

In FDG, the term Noun Phrase, as a technical term, is used only at the Morphosyntactic Level (ML), where it is defined as a phrase with a Nominal Word as its head. In the default case, a Noun Phrase corresponds to a Referential Subact at the Interpersonal Level (IL) and to an Individual at the Representational Level (RL). An example is given in (5), which provides (somewhat simplified) representations of the phrase *an old house* at the first three levels of analysis:

(5) an old house

- (a) IL: (-id R_I: [(T_I) (T_J)] (R_I))
- (b) RL: (sing x_i: (f_i¹: house (f_i¹)) (x_i: (f_i¹: old (f_i¹)) (x_i))
- (c) ML: (Np_i: [(Gw_i: an (Gw_i)) (Ap_i: (Aw_i: old (Aw_i)) (Ap_i)) (Nw_i: house (Nw_i))] (Np_i))

The Interpersonal Level is meant to capture all the linguistically coded aspects of an utterance that relate to the interaction between a speaker and an addressee. It is a strategic level, specifying the actions performed by the speaker in building up a linguistic utterance. These actions include the use of Referential and Ascriptive Subacts, which together form the contents of the message the speaker wishes to convey. Referential Subacts (R) involve the evocation of an entity, i.e. the speaker’s action of singling out a

² For more information about the theory as a whole, see Keizer et al. (2022).

particular entity that will play a role in the message. The head of a Referential Subact typically consists of one or more Ascriptive Acts (T), which reflect the speaker's attempt to evoke a property. In (5a), the phrase *an old house* as a whole is represented as a Referential Subact (R_i) containing two Ascriptive Acts (T_i and T_j), one evoking the property "house," and the other evoking the property "old." Referential Subacts may include the identifiability operator. In (5b), for instance, the operator "-id" reflects the fact that the speaker does not expect the addressee to be able to pick out the referent evoked by R_i .

Although most lexemes are introduced at the Representational Level, some lexical information is represented at the Interpersonal Level, including modifiers expressing speaker-bound, non-propositional content. Interpersonal modifiers realized as part of the noun phrase may modify the Referential or the Ascriptive Subact. Some examples are given in (6) and (7), respectively.

- (6) (a) Now, don't let *poor* David's tragedy wear you down. (BYU-BNC, fiction)
 (b) I regard the *whole* idea of privatising the NHS as quite daft. (BYU-BNC, newspaper)
 (c) Why should she be troubled by the *mere* sight of him? (BYU-BNC, fiction)
- (7) (a) We hear much about the *supposed* benefits of object-oriented technology. (BYU-BNC, non-acad)
 (b) Our *so-called* democracy is a complete sham and an insult to the electorate. (BYU-BNC, newspaper)

In (6a), the adjective *poor* is not used to evoke a property of the referent but to express the speaker's sympathy for the referent in question. In (6b), the adjective *whole* has an intensifying function, while in (6c), *mere* performs a downtoning function. In (7a), we find a reportative adjective, used by the speaker to indicate that the property evoked by the noun *benefits* originates elsewhere, while *so-called* in (7b) indicates that the speaker distances him/herself from the use of the term *democracy* (Hengeveld and Mackenzie 2008, 111; see also Hengeveld and Keizer 2011).

At the Representational Level, the input received from the Interpersonal Level is filled in with semantic content, i.e. with descriptions of entities as they occur in some non-linguistic world. The units at this level differ with regard to the type (or "order") of entity they designate (cf. Lyons 1977, 442–7). Four major, cross-linguistically relevant semantic categories are distinguished: Propositional Contents (p), States-of-affairs (e), Individuals (x), and lexical Properties (f^l). Although each of these semantic categories can have a nominal head and can thus be realized by a noun phrase, this is typically the case for Individuals: in (5b), for instance, the Individual x_i has a nominal head ("house," f^l_i), as well as an adjectival modifier ("old," f^l_i).

Minor semantic categories include Times (t), Locations (l), and Quantities (q), all of which can be headed by a nominal Property; some examples are given in (8):

- (8) (a) week
 (t_i : (f^l_i : week (f^l_i)) (t_i))
 (b) place
 (l_i : (f^l_i : place (f^l_i)) (l_i))
 (c) 40 metres
 ($40 q_i$: (f^l_i : metre (f^l_i)) (q_i)) (Hengeveld and Mackenzie 2008, 270)

Operators at layers with nominal heads include those indicating the number (singular "sing,"³ plural "m"). In (5), the singularity operator "sing" at the Representational Level and the identifiability operator "-id" at the Interpersonal Level together determine the form of the determiner.

Modifiers at the Representational Level are typically descriptive in nature. They may express (relatively) objective information, such as *old* in (5), or more subjective information (e.g. *awful*, *depressing*, or

³ For the introduction of the operator "sing" for singularity as distinct from "1" for the numeral 1, see Keizer (2017, 33).

fabulous). When more than one modifier occurs at the same layer, they are stacked, whereby the more objective ones are placed closer to the head than the more subjective ones:

- (9) (a) a depressing old house
 (b) (sing x_i : (f^1_i : house (f^1_i)) (x_i): (f^1_j : old (f^1_j)) (x_i): (f^1_k : depressing (f^1_k)) (x_i))

The descriptive adjectives in (9) are intersective: they denote properties of the referent and can as such (generally) be used predicatively (*The house is old and depressing*). Subjective adjectives, on the other hand, do not predicate properties of the overall referent; instead, they provide further information about the lexical Property. One subclass of subjective modifiers is that of the classifying adjectives, which indicate a subtype of the Property in question. Thus, on a classifying reading, the adjective *criminal* indicates a subclass of lawyers (those who practice criminal law). As shown in (10), such classifying adjectives are analysed as modifiers of the lexical Property.

- (10) (a) a criminal lawyer
 (b) (sing x_i : (f^1_i : lawyer (f^1_i)) (f^1_j : criminal (f^1_j)) (f^1_i)) (x_i))

4 Methodology

The data for the present study were obtained from the *British National Corpus* (BYU-BNC; Davies 2004). The corpus search engine was used to look for prenominal modifiers followed by a numeral;⁴ all instances found were manually checked for relevance. Excluded were proper names (e.g. of musical groups: *a new Four Seasons*, *the Awesome Three*) and cases in which the numeral was part of a compound (*a famous two-act opera*, *a continuous three-month period*). Also excluded were instances containing adjectives that frequently (in many cases typically) occur in the prenumeral position, which are usually categorized as (grammaticalized) postdeterminers (Deictic₂), such as adjectives of comparison (*different*, *same*, *identical*, *similar*) and adjectives like *previous*, *following*, (*a*) *certain*, *specific*, *particular*, *whole*, and *main*, all of which have been argued to serve a determining (“grounding”) rather than a modifying function (e.g. Breban 2010, Davidse 2022). Included, however, were a number of other adjectives that, as mentioned in Section 2, have sometimes also been assigned the status of postdeterminer when occurring prenumerally, such as *famous*, *familiar*, *original*, *normal*, *typical*, *regular*, *usual*, *possible*, and *obvious* (cf. Halliday 1985, 162, Halliday and Matthiessen 2014, 373–4; see also Sinclair 1990, 70, Downing and Locke 1992, 409, Davidse et al. 2009, Davidse 2022). The reason for this decision was that these adjectives readily occur in both prenumeral and postnumeral positions (often preferring the latter) and seem to have retained a regular modifying function in both positions (in the sense of having a descriptive, modal, or intensifying function and, in many cases, being gradable and modifiable). The position taken here is that these are lexical elements functioning as modifiers and that the distinctive subset interpretation associated with the Modifier-Numeral order is not triggered by a different function or status of the adjective but by the position in which it occurs.⁵

This selection procedure resulted in a total of 3,560 tokens, representing 255 different prenominal modifiers (adjectives and participles). From these 3,560 tokens, a sample of 516 examples was extracted

⁴ Since at the time the search was conducted, the corpus did not allow me to do this with a single query (ADJ _mc), I first compiled a list of all adjectives followed by the numerals two, three, four, five, and ten (“ADJ two,” “ADJ 2,” “ADJ three,” “ADJ 3,” etc.). Subsequently, I looked at all cases where any of these adjectives were followed by any numeral (e.g. “cool_j _mc”). Note that the pos-tags ADJ and _j retrieve adjectives of all forms (normative, comparative, and superlative), as well as participles in prenominal position (i.e. premodifiers in general). The tag _mc stands for “cardinal number.”

⁵ Note that in the zone-based approach taken by Halliday and Matthiessen (2014), the very fact that these adjectives occur before the numeral must mean that they function as determiners (Deictics). In a multi-level, scope-based theory like FDG, where the position of an element is determined by a combination of pragmatic (interpersonal) and semantic (representational) factors, there is no need to assume a direct relation between the function of an element (as modifier or determiner) and its position within the phrase or clause (see also Section 6.2).

for further analysis. The sampling method consisted in selecting at least one example of each of the modifiers attested in the prenumeral position. For elements with several (sometimes numerous) occurrences, two or more examples were selected to reflect tendencies, as well as possible variation, in semantic and syntactic behaviour. The study is predominantly qualitative in nature, with some quantitative observations.

The semantic and syntactic properties coded for were the following:

1. The scope of the modifier (numeral, noun, and numeral + noun);
2. The type of the modifier (intensifying, downtoning, amplifying; descriptive, modal, classifying; *etc.*);
3. Gradability of the modifier;
4. Modification of the modifier (attested modifiers of the prenumeral modifiers);
5. Form of the modifier (adjective, past participle, present participle; normative, comparative, superlative);
6. Presence of a second modifier (type and position);
7. The form of the determiner (definite/indefinite article, demonstrative, possessive, genitive, quantifier; singular vs plural);
8. Reversibility of modifier and numeral (syntactic/semantic acceptability of reversed order);
9. The type of noun (human, animate, non-animate, temporal, locational, *etc.*);
10. Verb-noun agreement (singular or plural verb).

In Section 5, the results of the study are presented by considering, in turn, each of these ten factors, as well as by looking at possible combinations, or restrictions on combinations, of these factors. The findings will be used to draw up a classification of Mod-Num NPs (Section 6.1), which in turn will form the basis for the FDG analysis proposed (Section 6.2).

5 Findings: variation, constraints, and tendencies

5.1 Scope of the modifier

As mentioned in Section 2, some previous accounts (e.g. Keenan 2013, Halliday and Matthiessen 2014) mention the fact that prenumeral adjectives can either modify the noun or the numeral. This observation is supported by examples from the sample, as shown in the following examples:

- (11) (a) It's been *a fabulous two years* for me at Leeds and the lack of goals has been my only disappointment. (BYU-BNC, news) (= (1a))
 (b) *These seemingly harmless four words* are repeated several times to form the lyric 'As clouds roll by for you and I.' (BYU-BNC, news) (= (1e))
- (12) (a) Whitham, 26, from Huddersfield, left the opposition well behind on his Yamaha, winning the first 36-mile race by almost five seconds and the second by *a crushing 10 seconds*. (BYU-BNC, news)
 (b) And while pollution incidents for 1991–92 reached an all-time high of 29,524 (National River Authority figures), there were *a meagre 536 prosecutions*. (BYU-BNC, news)

In (11), the adjectives denote properties of the noun; in (11a), it is the years that were fabulous, and in (11b), it is the words that are seemingly harmless; the attribution of the property in question does not depend on the number in question. In (12), on the other hand, the adjectives *crushing* and *meagre* do not modify the nouns but comment on the number, either positively, as in (12a), or negatively, as in (12b).

However, there seems to be a third possibility, where the adjective modifies the combination of numeral and noun. Consider the following examples:

- (13) (a) But much has happened in *that short fourteen months* since the general election. (BYU-BNC, scripted speech) (= (1c))
 (b) The plane was a JU52 with *its famous three engines* and corrugated metal skin. (BYU-BNC, fiction)
 (c) *The inevitable two cups of tea* appeared and Kathleen sat down. (BYU-BNC, fiction)

In (13a), the adjective *short* clearly does not modify the noun (it is not the months that were short) but neither does it seem to comment exclusively on the numeral: the number 14 is not short either. Rather, the adjective denotes a property of the combination of numeral and noun: 14 months is considered a short period of time. Similarly, in (13b), it is not so much the engines that are famous, but the fact that there are three of them, while in (13c), what is inevitable is not just the fact that tea was served, but the fact that it was two cups.

5.2 Type of modifier

As shown in Table 3, Mod-Num NPs accept almost any kind of premodifier.

There is no direct relation between the type of modifier and its scope: descriptive modifiers can scope over the numeral (example (14a)), the noun (example (14b)), or numeral and noun (example (14c)):

- (14) (a) They include Documenta Portraits, *an impressive 170 portraits of participating artists* taken during the installation of their works. (BYU-BNC, pop lore)
 (b) In Atlanta the score of young blacks who have disappeared join *the unlucky 13 women* from Yorkshire in swelling the total. (BYU-BNC, religion)
 (c) ‘Mila III’ is powered with MTU 6V395TB93 diesels, 2–40 KW Northern Lights generator sets, and cruises at *a comfortable 17 knots*. (BYU-BNC, advert)

Modal adjectives typically scope over the combination of numeral and noun, as in the case of the deontic adjective *inevitable* in (13c) above, or the objective epistemic adjective *possible* in (15a); in the latter example, it is the whole group denoted by the numeral and noun (*three hundred days*) that is described as being possible (= available). In (15b), on the other hand, *possible* is used subjectively, indicating an estimation of the number, and as such scopes over the numeral only. Finally, in (15c), the evidential adjective *obvious* modifies the characters Romeo and Juliet (as obvious choices).

- (15) (a) it’s in use for sixty-four days out of *a possible three hundred*. (BYU-BNC, public debate)
 (b) Another 95 were being axed in 51 schools, with *a possible 90 further redundancies* in the pipeline. (BYU-BNC, news)
 (c) So let’s have about six different characters, before we do it I’d like you need drafting books, just to think of a few questions that you would ask the characters. So let’s have *the obvious two*, Romeo and Juliet. (BYU-BNC, classroom)

In some cases, however, the use of a particular type of modifier is restricted to one particular scope. Intensifying, downtoning, and amplifying modifiers, for instance, always only take the numeral in their scope (as in example (12)).

The sample also included some instances of subjective prenumeral adjectives, a possibility denied by Marušič and Žaucer (2013). An example is given in (16), where a caller (John) phones in to a radio show to ask a question of one of the expert guests, whom he refers to as *an ideal two academics*. Given the context, it

Table 3: Types of modifiers

Type	Subtype	#	Examples
Interpersonal (62)	intensifying	32	<i>crushing, emphatic, whacking, whopping</i>
	downtoning	14	<i>mere, bare, scant</i>
	amplifying	8	<i>good</i>
	expletive	4	<i>fucking, bloody, flipping</i>
	reportative	4	<i>supposed, putative, so-called</i>
Representational (454)	descriptive (subj/obj)	389	<i>old, high, busy, delightful, unlucky, wild, intrepid</i>
	modal	28	<i>possible, necessary, obligatory, obvious</i>
	spatial	19	<i>distal, upper, right-hand</i>
	temporal	16	<i>brief, recent, continuous</i>
	classifying	2	<i>nuclear, terrestrial</i>

seems reasonable to assume that the adjective *ideal* is not used to denote a property of the two individuals (whom the caller does not know personally), but of their expertise as academics:

- (16) GUEST: Well you were just talking about children erm my feeling is that we're all children, there is no division between being a child and an adult and I think that they can accept a whole lot, but there's a whole lot of adults that can't accept the shocks that are happening today and they put them into their subconscious and unfortunately it comes out in so many other ways – it comes over as a neurosis or as a mental disorder at some later date HOST: All right. Well John is on the line, joining us from Witney. Hello, John. JOHN: Oh, good afternoon, Bill. HOST: Your views. JOHN: Well Well I've brought the subject up before, but I think you've got *an ideal two academics* there that might be able to answer a question, a very practical one. (BYU-BNC, broadcast discussion)

Moreover, the examples provided here also show that, contrary to what was claimed by Marušič and Žaucer (2013), prenumeral adjectives can be restrictive or non-restrictive. In (15c), for instance, *obvious* is used restrictively: the suggestion is that there are other pairs of characters that are not obvious. In (11b), on the other hand, the four words referred to have already been identified, and the property *seemingly harmless* is merely added here, as a non-restrictive modifier. The same seems to be true for the examples in (13): in (13b), for instance, the adjective *famous* does not restrict the set of engines, which consisted of three to start with (the plane in question has only one set of engines); as such providing *famous* with contrastive stress would be inappropriate (as there are no other sets of (three) engines that the set denoted can contrast with). Contrastive stress would, however, be acceptable in (15c), where Romeo and Juliet are clearly distinguished from other, less obvious, (sets of) characters. In other cases, modal adjectives are used non-restrictively, as in (15a), where the contrast is between the (actual) 64 days and the possible 300 days, not between different sets of 300 days.

As for the distinction between stage-level (temporary) and individual-level (permanent), it is indeed true that most prenumeral adjectives favour a stage-level interpretation (which seems to be generally the case for premodifiers in English). Individual-level adjectives, however, are not excluded, as shown in examples (17a) and (17b), where *nameless* and *traditional* can only be interpreted as denoting permanent properties.

- (17) (a) Damned if the foundation could have this picture; she'd give them *the nameless three condemned as undisciplined talent*. (BYU-BNC, fiction)
 (b) We lined up on the foredeck to give *the traditional three cheers for her Majesty* at the appropriate moment. (BYU-BNC, commerce)

Table 4: Adverbs modifying prenumeral modifiers

even, completely, very (6), pretty (2), still, already, not-yet, seemingly, surprisingly, astonishingly, comparatively, hugely, not quite so, amazingly, most (3),⁶ fairly, reasonably, extremely, now

This shows not only that non-restrictive and individual-level modifiers can be used prenumerally, but also that there is no direct relation between their (non-)restrictiveness and the type of modifier. The only exceptions in this respect are, again, the intensifying, downtoning and amplifying modifiers, which are always used non-restrictively.

5.3 Gradability of the modifier

This factor was included as a means of finding out whether the prenumeral position is restricted in terms of the kinds of modifiers it allows. Although both gradable and non-gradable adjectives were found to occur in the prenumeral position, it turned out that the gradable adjectives were all representational and were possible with any of the three scopes described in Section 5.1. All the interpersonal modifiers listed in Table 3 turned out to be non-gradable and were only found to scope over the numeral.

5.4 Modification of the modifier

This factor was also included as a way of identifying different types of modifiers. The sample included 27 cases where the prenumeral modifier was itself modified; the adverbs in question are listed in Table 4.

All of the 27 modified modifiers were representational in nature, and all but one descriptive. The only exception was the modal adjective *unnecessary* in (18).

- (18) The fact that a man was prepared to drive *a completely unnecessary 1,000 miles* struck me as indicative that the sanctions were not working. (BYU-BNC, biography)

5.5 Form of the modifier

The possible values for the form of the modifier were adjective (normative, comparative, and superlative), past participle, and present participle. The overall numbers are given in Table 5.

Table 5: Form of the modifier

Form	#
normative adj.	388
comparative adj.	16
superlative adj.	45
past participle	52
present participle	15
Total	516

⁶ The element *most* was analysed as modifying the prenumeral modifier when it functioned as an emphaser rather than as the realization of superlative:

(i) It is within United's reach to complete *a most remarkable two years* between May 1990 and May 1992 by landing all three domestic trophies. (BYU-BNC, news).

As to be expected, the normative adjectives formed by far the largest group. They can be found with each of the types of modifiers and can have any of the three scopes. Comparative adjectives can be found with most representational types of modifiers (descriptive, temporal, and spatial). In most cases, comparative adjectives modify the noun (10 out of 16 instances; see (19a)); they can, however, also scope over the numeral (as in (19b)) or the combination of numeral and noun (as in (19c)):

- (19) (a) The industries do not depend on one another, nor on *the larger five basic industries*. (BYU-BNC, non-acad)
 (b) The number of full committees were being reduced from the two or three dozen common in the early 1960s to *a more manageable fifteen or sixteen*. (BYU-BNC, acad)
 (c) who won the 100 in 12.1 seconds and 200 metres in *an even better 24.1 seconds*. (BYU-BNC, news)

Superlatives can also be found with all representational types of modifiers, but, in the current sample at least, scope either over the noun or over the combination of numeral and noun. The participles attested were typically descriptive, with some modal instances (*permitted, required, stipulated*). Past participles were found to scope over the combination of numeral and noun, present participles over just the noun.

5.6 Presence of a second modifier

This factor was included to find out whether the modifier–numeral order imposes any restrictions on the availability of other modifier positions. In all, 22 additional modifiers were found in 21 examples. The modifiers are listed in Table 6.

Table 6: Additional modifiers in Mod-Num NPs

annual, available, basic, British, clear, distressing, emotional, free, gross, hard-fought, long, modest, more brilliant, national, new, nice, outdoor + floodlit, permanent, rational, scanty, wise

In some cases, the modifiers were coordinated and of the same type (example (20a)); in other cases, they were stacked (example (20b)):

- (20) (a) She herself had spent *a distressing and hectic ten minutes* in Rose Lipman's office helping to remove Dawn's costume and button her into her street clothes. (BYU-BNC, fiction)
 (b) It's been *an emotional, turbulent four months*. (BYU-BNC, pop lore)

In those cases where the additional modifier followed the numeral, it tended to be classifying, as in (21):

- (21) It cannot be compared with *the “big six” national brewers* (Allied, Bass, Courage, Watneys, Whitbread, and Scottish and Newcastle). (BYU-BNC, commerce)

5.7 Form of the determiner

The following kinds of determiners were found in the Mod-Num NPs in the sample: the definite and indefinite articles, demonstratives, possessives, genitives, and quantifiers. As can be seen from Table 7, the indefinite article was particularly frequent, despite the presence of a plural numeral and noun.

Table 7: Determiners in Mod-Num NPs

Determiner	#
<i>a</i>	278
<i>another</i>	1
<i>the</i>	182
demonstrative	12
possessive	32
genitive	6
quantifier	4
∅	1
Total	516

An examination of the sample shows that prenumeral modifiers preceded by an indefinite, singular determiner can have any of the three scopes: in (22a), *meagre* modifies the numeral, in (22b), *fabulous* modifies the noun, and in (22c), *incidental* scopes over numeral and noun.

- (22) (a) And while pollution incidents for 1991–92 reached an all-time high of 29,524 (National River Authority figures), there were *a meagre 536 prosecutions*. (BYU-BNC, news) (= (12b))
- (b) It's been *a fabulous two years* for me at Leeds and the lack of goals has been my only disappointment (BYU-BNC, news) (= (1a)/(11a))
- (c) Prayer is far more than a shopping list, or *an incidental five minutes* at the end of a busy day. (BYU-BNC, religion)

Neither is there any restriction with regard to the type of modifier, although there are some strong tendencies. Thus, instances with interpersonal (intensifying, downtoning, and amplifying) modifiers were almost all indefinite (36 out of 40); possessives and the singular demonstrative *this* were, however, also attested:

- (23) (a) Clearly Parliament would last *its full five years* and the Government could not bring it to a premature end. (BYU-BNC, non-acad)
- (b) The human instinct to perpetuate one's own name at every opportunity, whenever more urgent occupation is wanting, had made use even of *this mere three square inches of dusty glass*. (BYU-BNC, fiction)

Mod-Num NPs with plural demonstratives, on the other hand, are subject to restrictions. First, the plural demonstrative never combines with intensifying, amplifying, or downtoning modifiers. This follows from a second restriction, namely that the modifiers in such NPs were only found to modify the noun, as in (24):⁷

- (24) *These seemingly harmless four words* are repeated several times to form the lyric 'As clouds roll by for you and I.' (BYU-BNC, news) (= (1e)/(11b))

Finally, comparative modifiers are typically definite, but, interestingly enough, indefinite determiners can also be found, as in (25) (see also (19c) above):

⁷ Note that the applicability of the epithet *harmless* does not depend on the number of words used; although we clearly have a conceptual unit (four words making up the phrase *for you and I*), the property *harmless* is used to modify the four words individually (as is clear from the fact that the author takes issue with the form of only one of them (*I*)).

- (25) And I couldn't have chosen *a better three weeks* to absent myself. (BYU-BNC, misc)

The superlative form of the modifier, on the other hand, only occurs with definite determiners.

5.8 Reversibility

In principle, it may be assumed that reversing the order of modifier and numeral always leads to some change in meaning (assuming that the modifier-numeral order is triggered by some interpersonal or representational feature; see Section 6.1). In some cases, however, the difference in meaning is minimal, as in example (26a) (cf. Payne and Huddleston 2002, 453). The same is true for many instances with an empty head; in that case, however, reversing the modifier-numeral order requires the addition of the pronoun *ones* (example (26b)).

- (26) (a) Germany and the UK remain *the largest two markets/the two largest markets* growing by 16% and 32% respectively. (adapted from BYU-BNC, non-acad)
 (b) The children were allowed no breakfast, *the younger two* Ø/*the two younger* *(*ones*) were not permitted to go to the bathroom [...]. (adapted from BYU-BNC, non-acad)

In other cases, the result is syntactically unacceptable (due to the presence of the indefinite determiner), even if the modifier is semantically compatible with the noun. Reversing the order of modifier and numeral in these cases becomes acceptable when we omit the indefinite article (again with a slight semantic difference):

- (27) (a) Mansell had started from the outside of the second row after *a troubled two days/two troubled days* with the new car. (adapted from BYU-BNC, pop lore)
 (b) while Douglas, weakened by a stomach upset, survived *a hard three games/three hard games* with Prean at the round-robin stage. (BYU-BNC, news)

Finally, there are cases where reversing the order of modifier and numeral leads either to a semantically anomalous combination of modifier and noun (example (28a)) or to a clear difference in meaning (examples (28b) and (28c)):

- (28) (a) And while pollution incidents for 1991–92 reached an all-time high of 29,524 (National River Authority figures), there were *a meagre 536 prosecutions/#536 meagre prosecutions*. (BYU-BNC, news) (= (12b)/(22a))
 (b) The number of full committees were being reduced from the two or three dozen common in the early 1960s to *a more manageable fifteen or sixteen/fifteen or sixteen more manageable ones*. (BYU-BNC, acad) (= (19b))
 (c) Alcohol also has a dehydrating effect and results in excessive thirst, so don't have more than *your usual two drinks/your two usual drinks tonight*. (BYU-BNC, misc)

What the cases in (26) and (27) have in common is that the modifier modifies the noun; reversibility is not possible where the modifier scopes over the numeral (as in (28a) and (28b)), or over the combination of numeral and noun (as in (28c)).

5.9 Type of noun

As shown in Table 8, Mod-Num NPs basically accept any kind of noun. Many of these nouns do indeed indicate some kind of measure (especially time, but also space, money, score, speed, *etc.*), while nouns denoting non-animate entities are also strongly represented.

Table 8: Types of noun in Mod-Num NPs

Type of noun		#
non-measure (212)	non-anim	159
	human	49
	anim	4
measure (304)	time	179
	space	40
	money	40
	score	18
	weight	9
	speed	7
	scale	5
	electricity	3
	volume	3
Total		516

As shown in (29), non-measure nouns can be found with each of the three scopes: in (29a), the adjective scopes over the numeral; in (29b), over the noun; and in (29c), over the numeral and the noun:

- (29) (a) A worrying report, published by three teachers' unions just a few minutes before national curriculum boss David Pascall issued his 'back to basics' clarion call, revealed *a staggering 80,000 teachers* – one in five – want to quit their jobs. (BYU-BNC, news)
- (b) In Atlanta the score of young blacks who have disappeared join *the unlucky 13 women* from Yorkshire in swelling the total. (BYU-BNC, religion) (= (14b))
- (c) The quartet, which entered the competition with *a leading seven nominations*, accepted via videotape from Minneapolis. (BYU-BNC, news)

Another tendency that can be observed is that temporal nouns seem to favour indefinite Mod-Num NPs more than definite ones (62.6 vs 37.4%), while the reverse is true for human nouns (32.7 vs 67.3%).

Other tendencies do not immediately become clear when we look at the sample as a whole – as we will see in Section 6; however, preferences become clear when we distinguish different subtypes of Mod-Num NPs.

5.10 Verb-noun agreement

The sample contains 22 instances of Mod-Num NPs functioning as subjects combined with finite verbs marked for number. In 11 of these cases, the determiner was definite (plural or unspecified for number) with the verb appearing in the plural form. Some examples can be found in (30):

- (30) (a) *These seemingly harmless four words* are repeated several times to form the lyric 'As clouds roll by for you and I.' (BYU-BNC, news) (= (1e)/(11b)/(24))

- (b) Supposing I didn't have what a child objectively should be entitled to.... In coping with the unsaid and unsayable, oral history is impelled towards aposiopesis. The analyst's response is apt to consist of an '...' But if the work is oral history, it is literature too – a disclosure of predicament and bereavement. *The enigmatic three dots* to which it is impelled are those of a romantic orphan, as well as those of his reticent doctor. (BYU-BNC, acad)

In six instances, the verb was singular and compatible with the determiner (*a(n)* or *the*):

- (31) (a) Each teacher should be able to train 40 pupils in a year. If *the targeted 10 000* is achieved, France will have 400 000 more youngsters a year with computer skills. (BYU-BNC, non-acad)
 (b) The last guest left, or was taken away, after five o'clock in the morning. *A pleasant two hours* was slept. (BYU-BNC, pop lore)
 (c) And at the same time *a paltry 5 million a year* is available for all archaeological survey, conservation and management. (BYU-BNC, non-acad)

Finally, there were five cases with plural subject-verb agreement, but with a singular, indefinite determiner; two of these are given in (32):

- (32) (a) A worrying report, published by three teachers' unions just a few minutes before national curriculum boss David Pascall issued his 'back to basics' clarion call, revealed *a staggering 80,000 teachers* – one in five – want to quit their jobs. (BYU-BNC, news) (= (29a))
 (b) The larger restaurant is at Blakelands, catering for 450 staff, while there are *a regular 150* catered for at Wymbush training centre with perhaps as many again depending on events and courses. (BYU-BNC, misc)

What we see is that when the determiner is singular indefinite, or definite but unspecified for number (definite article, possessive pronoun), the verb can take either the singular or the plural form. Where the determiner is plural (as in (30a)), only a plural verb seems to be possible.

There does not seem to be a direct relation between agreement and scope of the modifier: in (30), the modifier either scopes over the noun (example (30a)) or over the combination of numeral and noun (example (30b)); in (31), we find all three scopes, such as numeral in (31c), noun in (31b), and numeral and noun in (31a); in (32a), the modifier modifies the numeral, and in (32b), the combination of numeral and noun. Finally, all cases of subject-verb agreement in the corpus involved descriptive modifiers.

What has become clear from this section is that Mod-Num NPs are characterized by substantial variation in terms of each of the factors investigated, as well as in the ways in which these were found to combine. In the next section, it will be argued that it is possible to find order in this variation, but only if different subtypes of Mod-Num NPs are distinguished.

6 Classification and FDG analysis

6.1 Classification

So how can we account for the substantial variation observed in the use of Mod-Num NPs – is it possible to detect any kind of systematicity in the data? In this section, it will be argued that the variation, the constraints, and the tendencies described in Section 5 can only be satisfactorily captured if we distinguish different subtypes of Mod-Num NPs. However, before we turn to these subtypes, let us first consider in some more detail of what it is that all these NPs have in common – what is it that triggers the modifier-numeral order?

On the view taken here (as opposed to, for instance, Halliday and Matthiessen (2014)), this has little to do with the function of the prenumeral adjective (or participle) – these will simply be taken to fulfil their normal modifying function. The numeral, too, will be taken to serve its usual, quantifying function. What is different, however, is that, as already mentioned in previous studies, the numeral and the noun form some kind of pre-established conceptual unit (at least for the speaker). The pre-existing nature of these units may have different sources. In some cases, we are dealing with a highly conventionalized unit, which can be assumed to be part of the hearer’s linguistic inventory. Instances of entirely conventionalized units (e.g. *the famous seven wonders of the world*, *The Fabulous Four*, etc.) were not included in the sample used for this study. Very often, however, the conceptual unit in question is textually evoked, in which case the unit has been introduced in the previous discourse, thus constituting “discourse-old” information. An example is the definite Mod-Num NP in example (33a), where the speaker does not just refer to four previously mentioned words, but to the clause they form. The conceptual unit may also be introduced by means of the Mod-Num NPs itself; in that case, the concept may either be inferable from the previous discourse (presenting “discourse-new” but “hearer-old” information; often resulting in definiteness; example (33b)), or it may be entirely new (presenting “hearer-new” information, resulting in an indefinite NP (example (33c)) (Prince 1981, 1992).

- (33) (a) DIANA Ross turned up on Des O’Connor Tonight with the song that has already been a hit in America, *As Clouds Roll By*. *These seemingly harmless four words* are repeated several times to form the lyric ‘As clouds roll by for you and I.’ (BYU-BNC, news) (= (1e)/(11b)/(24)/(30a))
- (b) Each teacher should be able to train 40 pupils in a year. If *the targeted 10 000* is achieved, France will have 400 000 more youngsters a year with computer skills. (BYU-BNC, non-acad) (= (31a))
- (c) The quartet, which entered the competition with *a leading seven nominations*, accepted via videotape from Minneapolis. (BYU-BNC, news) (= (29c))

Note that measure nouns are often used to denote unified wholes rather than individual units: temporal nouns are often used to denote a period of time, currency units are typically used to refer to sums of money, degrees to indicate temperature, etc. Given the fact that the modifier-numeral order is used to indicate the existence (for the speaker) of a conceptual unit, it is not surprising that measure nouns are frequently found in Mod-Num NPs.

Now, if we assume that the numeral and noun form one conceptual unit, it will be clear that this unit forms part of a larger unit, corresponding to the Mod-Num NP as a whole; we are, in other words, dealing with a (plural) unit within a larger (singular or plural) unit. As mentioned in Section 2, some linguists have tried to capture this layered structure by assuming that the NP as a whole functions as a pseudopartitive containing a non-expressed measure or group noun heading an inner (embedded) unit. This will not be the approach taken here; first, because the theory used here, FDG, does not allow for the representation of (non-anaphoric) non-expressed information; and second, because a single analysis cannot account for the variation described in Section 5, and as such fails to account for the semantic and syntactic behaviour of all Mod-Num NPs.

In what follows, a number of subtypes of Mod-Num NPs will be distinguished on the basis of three functional parameters (listed in order of importance):

- The first parameter concerns the semantic category of the overall expression, which can be either a quantity or some other semantic category. The main formal difference between these two categories is that quantities are always singular (take a singular determiner), may be indefinite, and may trigger singular verb agreement, while the “other” category (phrases denoting individuals, times, places, etc.) are always plural and definite, and always trigger plural verb agreement.
- The second parameter is the scope of the modifier, as discussed and illustrated in Section 5.1. It will be shown that whereas quantities allow the modifiers to have any of the three scopes (leading to three subclasses), modifiers in the “other” group can only scope over the noun. One formal corollary of this distinction is the possibility of reversing the modifier-numeral order (as discussed in Section 5.8): this is

always possible in Mod-Num NPs belonging to the “other” group; with quantities, this is restricted to the subclass of Mod-Num NPs with prenumeral modifiers modifying the noun.

- The third parameter concerns the type of modifier. The main distinction here is that between interpersonal (intensifying/downtoning/amplifying) modifiers and representational modifiers: the former are non-restrictive, non-gradable, non-modifiable and non-intersective, and cannot themselves be modified, while the latter can be restrictive or non-restrictive, as well as intersective (typically) or subsective, can be always modified and are often gradable. Whereas representational modifiers can be found in any of the (sub)categories distinguished so far, the interpersonal ones can only be found in quantities with prenumeral modifiers scoping over the numeral only.

Thus, whereas the use of a Mod-Num NP suggests the presence of a conceptual unit (the existence of a set of a certain size), Mod-Num NPs may vary on each of the three parameters. This is particularly relevant in the case of the second parameter, which clearly shows that the presence of a (pre-established) conceptual unit and the scope of the modifier are two different things. Thus, it is the modifier-numeral word order that represents the presence of a conceptual unit; the modifier in question, however, can have each of the three scopes described. An expression like *a fabulous two years* in (1a), for instance, evokes the existence of a conceptual unit of two (continuous) years; nevertheless, as argued in Section 5.1, the modifier *fabulous* is taken to scope over the noun only.

The application of these three parameters leads to the classification in Table 9. In what follows, each of the subtypes distinguished will be discussed in turn.

6.1.1 Quantity-1a (40 instances)

- Determiner: singular or unspecified for number; predominantly indefinite (36); in addition, possessive (3), singular demonstrative (1);
- Modifier: interpersonal (intensifying/downtoning/amplifying), scoping over the numeral (i.e. the quantity as a whole); non-restrictive, non-gradable, non-modifiable, non-intersective;
- Verb form: singular⁸
- Non-reversible;
- Strong preference for measure nouns (27 vs 13).

Examples:

- (34) (a) [...] winning the first 36-mile race by almost five seconds and the second by *a crushing 10 seconds*. (BYU-BNC, news) (= (12a))
- (b) and he returned to St Pierre *a scant twenty-four hours* after he had left. (BYU-BNC, fiction)
- (c) The human instinct to perpetuate one’s own name at every opportunity, whenever more urgent occupation is wanting, had made use even of *this mere three square inches of dusty glass*. (BYU-BNC, fiction) (= (23b))

⁸ As mentioned in Section 5.10, the sample contains only 22 instances of Mod-Num NPs functioning as subjects combining with finite verbs marked for number. Since the Quantity-1a category is largely made up of expressions with measure nouns, and since such expressions typically do not occur as subjects, the sample included no examples of these constructions with a finite verb. As shown by the following example, however, use of a singular verb is clearly possible:

(i) I choose the latter, because *a scant threedays* isn’t enough time to rightly evaluate the smartphone. (NOW Corpus-GB; Davies 2016)

Use of a plural verb, even in the presence of a determiner unspecified for number, may seem to lead to degraded results:

(ii) *His first full 90 minutes* on the patch were a complete nightmare.

Table 9: A classification of Mod-Num NPs

MOD-NUM NP						
Quantity			Other semantic categories			
Numeral		Noun	Noun		Noun	
Interp. mod	Repr. mod	Repr. mod	Repr. mod	Repr. mod	Repr. mod	Repr. mod
Quantity-1a	Quantity-1b	Quantity-2	Quantity-3	Other-1	Other-2	Other-2
– singular determiner (or unspecified for number)	– singular determiner (or unspecified for number)	– singular determiner (or plural quantifier)	– singular determiner (or unspecified for number)	– plural or unspecified determiner	– plural or unspecified determiner	– plural or unspecified determiner
– strong preference for indefinite	– strong preference for indefinite	– strong preference for indefinite	– slight preference for definite	– definite	– definite	– definite
– singular verb	– singular or plural verb	– singular or plural verb	– singular or plural verb	– plural verb	– plural verb	– plural verb
– non-reversible	– non-reversible	– reversible when definite	– non-reversible	– reversible	– reversible	– reversible
– intensifying, amplifying, downtoning modifiers	– descriptive modifiers	– descriptive, modal modifiers	– all types of repr. modifiers except modal	– all types of repr. modifier, except modal	– classifying	– classifying
– preference for measure nouns	– preference for measure nouns	– strong preference for measure (temporal) nouns	– preference for measure nouns	– strong preference for human/non-animate nouns	– strong preference for human/non-animate nouns	– strong preference for human/non-animate nouns

6.1.2 Quantity-1b (89 instances)

- Determiner: singular or unspecified for number; predominantly indefinite (83); in addition, definite article (3), possessive (2), genitive (1);
- Modifier: representational (descriptive), scoping over the numeral (or rather, the quantity as a whole); non-restrictive, gradable, modifiable, non-intersective;
- Verb form: singular or plural, indefinite (singular) determiner possible with both;
- Non-reversible;
- Preference for measure nouns (50 vs 39).

Examples:

- (35) (a) They include Documenta Portraits, *an impressive 170 portraits of participating artists* taken during the installation of their works. (BYU-BNC, pop lore) (= (14a))
- (b) Intended to reach the parts of the population museums do not easily reach, this show in fact attracted *a derisory 9000 or so paying visitors* in the two months that it was open from 16 November last. (BYU-BNC, pop lore)
- (c) And the group is big in gas-guzzling America, where there are *an incredible 125 million cars* on the road. (BYU-BNC, news)
- (d) but the Russians refused to give in and produced *a stunning three goals* in 16 minutes to steal the tie. (BYU-BNC, news)

6.1.3 Quantity-2 (77 instances)

- Determiner: predominantly indefinite singular or unspecified for number: indefinite article (67), definite article (8), genitive (1); in addition, indefinite quantifier (1) (*a few*)
- Modifier: representational (descriptive or evidential modal), scoping over the noun; restrictive or non-restrictive, gradable, modifiable, intersective, or subsective;
- Verb form: singular (one example, with singular indefinite determiner); plural possible with definite determiner or plural quantifier *all*;
- Reversible when plural and/or definite;
- Strong preference for measure nouns (71 vs 6), in particular temporal nouns (62).

Examples:

- (36) (a) The last guest left, or was taken away, after five o'clock in the morning. *A pleasant two hours was* slept. (BYU-BNC, pop lore) (= (31b))
- (b) I recently spent *an inspiring two weeks* in discussion with Third World specialists. (BYU-BNC, pop lore)
- (c) I think you've got *an ideal two academics* there that might be able to answer a question. (BYU-BNC, brdcst disc) (see (16))
- (d) In Atlanta the score of young blacks who have disappeared join *the unlucky 13 women* from Yorkshire in swelling the total. (BYU-BNC, religion) (= (14b), (29b))

6.1.4 Quantity-3 (165 instances)

- Determiner: singular or unspecified for number; more definite (88) than indefinite (77): definite article (73), possessive (12), genitive (1), demonstrative (1x singular, 1x plural?); indefinite article (77);

- Modifier: representational (all types), scoping over the combination of numeral and noun; restrictive, gradable, modifiable, intersective, or subsective;
- Verb form: singular (with definite article) and plural (with indefinite or definite article);
- Non-reversible;
- Preference for measure nouns (113 vs 52).

Examples:

- (37) (a) But much has happened in *that short fourteen months* since the general election. (BYU-BNC, scripted speech) (= (1c)/(13a))
- (b) It's in use for sixty-four days out of *a possible three hundred*. (BYU-BNC, public debate) (= (15a))
- (c) Cullybackey horsewoman Jessica Chesney nearly clinched the Homepride Sauces International stakes on Thursday when she had the fastest clear round in the jump-off but tipped the gate to get *an unlucky four faults*. (BYU-BNC, news)⁹
- (d) *The enigmatic three dots* to which it is impelled are those of a romantic orphan, as well as those of his reticent doctor. (= (30b))
- (e) Each teacher should be able to train 40 pupils in a year. *If the targeted 10 000 is* achieved, France will have 400 000 more youngsters a year with computer skills. (BYU-BNC, non-acad) (= (31a)/(33b))

6.1.5 Other-1 (118 instances)

- Determiner: definite; plural demonstrative (9) or unspecified for number (definite article (90); possessive (14), genitive (3), quantifier (1) (*all*), Ø (1));
- Modifier: representational (all types except modal), scoping over the noun; restrictive or non-restrictive, gradable, modifiable, and intersective; high number of comparative (10 out of a total of 16 comparatives) and superlative forms (28 out of a total of 46 superlatives);
- Verb form: plural;
- Reversible;
- Strong preference for non-measure nouns (human + non-animate) (93 vs 25).

Examples:

- (38) (a) *The biggest 1,000 British companies* now owe a total of 114.4 billion between them. (BYU-BNC, news) (plural agreement)
- (b) *My older two daughters* are married. (BYU-BNC, non-acad) (plural agreement)
- (c) *These seemingly harmless four words* are repeated several times to form the lyric 'As clouds roll by for you and I.' (BYU-BNC, news) (= (1e)/(11b)/(24)/(30a)/(33a))
- (d) Angel One reviewed the events of *the past chaotic two weeks*. (BYU-BNC. Fiction) (non-restrictive)

6.1.6 Other-2 (two instances)

- Modifier: representational, classifying (non-gradable and subsective);
- In other respects: see Other-1 (but too few instances to be conclusive).

⁹ Examples (36d) and (37c), both containing the adjective *unlucky*, show that one and the same modifier may belong to different subtypes depending on the context: in (36d), *unlucky* modifies the noun (the women are unlucky, and they form a set of 13); in (37c) it modifies the numeral and the noun together (*four faults* forming a pre-established unit in the given context).

Examples:

- (39) (a) The other is that it makes it easier to encourage prickly China and France to join in. To get down even to this level among *the nuclear five*, some pretty intrusive inspection (including challenges on site) would be needed. (BYU-BNC, pop lore)
 (b) this means that for the foreseeable future the majority will be stuck with *the terrestrial four channels*. (BYU-BNC, news)

6.1.7 Reportatives

Apart from the instances belonging to the subtypes given in Table 9, the sample included three reportative modifiers (*supposed*, *putative*, *so-called*).¹⁰ These are regarded as constituting a separate, minor category, and will be provided with their own analysis in the next section.

6.2 FDG analysis

In this section, each of the subtypes of Mod-Num NPs will be provided with an FDG analysis capturing their specific semantic and pragmatic properties.¹¹ It will also be shown that the distinctive formal properties of each type follow from the analyses proposed.

Since the main feature of the Mod-Num NP is the fact that the numeral and the noun form one conceptually pre-established unit, and since this feature has formal consequences (triggering the modifier–numeral order), it needs to be captured at one of the two levels of formulation. Given that semantic scope relations are dealt with at the Representational Level, and that this is also the level at which we find the numeral operator, this is assumed to be the relevant level. I therefore suggest the following general frame for Mod-Num NPs:

- (40) $(v_1: (f_1: (NUM\ v_2: (f_1^1: LEX_N(f_1^1)) (v_2)) (f_1)) (v_1))$

where v is a variable representing any type of semantic category.

As pointed out in the previous section, the presence of a conceptual unit of numeral and noun is best captured by assuming the presence of two units: an outer unit, representing the entity denoted by the NP as a whole, and an inner unit representing the pre-established unit of numeral and noun. Since both units can have a range of denotations (Quantity, Individual, Time, Location, *etc.*), these are represented here as v_1 and v_2 . Between these two layers, we find an extra layer (f_1), which serves to indicate that the inner unit is to be regarded as a single Property heading the outer unit. At the Interpersonal Level, the unit as a whole corresponds to a single Referential Subact.

Using (40) as a basis, we can now provide each of the subtypes distinguished above with its own analysis.

¹⁰ Instances with expletive modifiers (*bloody*, *frigging*, *fucking*) and cases of metonymy (*e.g. a deep-frozen two thousand feet* (BYU-BNC, biography)) will not be included in the analysis. For an FDG analysis of expletive elements in FDG, see Mackenzie (2019).

¹¹ Naturally, a complete FDG analysis would also have to include representations at the Morphosyntactic Level (including an account of how the placement rules of FDG lead to the linear ordering of the elements involved). This, however, is not possible within the scope of the present paper.

6.2.1 Quantity-1a

In this subtype, the outer unit denotes a Quantity (q). The modifier¹² is interpersonal, modifying the numeral; in the analysis offered here, this means that it scopes over the Quantity as a whole. This leads to the following interpersonal and representational representations:

- (41) a crushing 10 seconds (see (12a)/(34a))
 IL: (-id R_I : (T_I) (R_I): crushing (R_I))
 RL: (sing q_i : (f_i : (10 t_i : (f_i^I : second (f_i^I)) (t_i)) (f_i)) (q_i))

The adjective *crushing* is represented as a modifier of a Referential Act (R_I) corresponding to a Quantity (q_i), and as such is interpreted as commenting on the number denoted by the numeral.¹³ At the Representational Level, the Quantity is represented as being singular; this triggers singular agreement on the determiner. In (41), the combination of the “-id” operator and the singularity operator triggers the use of the indefinite article. The singularity operator may also trigger singular agreement on the verb (see footnote 7). The inner set, in this case denoting a Time (t_i), contains the numeral, which triggers plural agreement on the noun. The fact that the overall unit is a Quantity explains the preference for measure nouns.

6.2.2 Quantity-1b

The second subtype is very similar to the first, except that the modifier is representational. Since here, too, the modifier modifies the numeral, it is analysed as modifying the Quantity as a whole. This subtype has a slight preference for measure nouns; non-animate nouns are, however, also frequently attested. An example is given in (42), where the inner unit denotes a set of non-animate Individuals (x_i).¹⁴ As shown in example (35c) above, the plural inner set may also result in the use of a plural verb.

- (42) an incredible 125 million cars (see (35c))
 IL: (-id R_I : [(T_I) (T_I)] (R_I))
 RL: (sing q_i : (f_i : (125,000,000 x_i : (f_i^I : car (f_i^I)) (x_i) (f_i)) (q_i): (f_i^I : incredible (f_i^I)) (q_i))

6.2.3 Quantity-2

In this subtype, the modifier assigns a Property to the noun (or rather to the entity denoted by the inner set). The outer unit again denotes a singular Quantity. The representation is therefore very similar to that given in (42), except that the modifier belongs to a different layer, as shown in (43):

¹² It might be argued that in some cases, such as *good* (*a good ten years ago*) and *mere* (*a mere 69 yards*), we are dealing with (partly grammaticalized) lexical operators rather than modifiers.

¹³ This shows that it is important to distinguish between numeral and number (or quantity). Numerals specify the number of items in a set; they do not evoke an entity. They allow for a small range of modifiers, commenting on the level of exactness involved (*almost five hours*, *approximately thirty people*). Numbers, on the other hand, evoke an entity at the Interpersonal Level, and denote a Quantity at the Representational Level. Both the Referential Subact at the Interpersonal Level and the Quantity at the Representational Level can be productively modified (e.g. *crushing* in (41) and *incredible* in (42)).

¹⁴ For the sake of simplicity, all representational modifiers are represented as restrictors. For the analysis of non-restrictive representational modifiers, see Keizer (2019).

(43) a pleasant two hours (see (31b)/(36a))

IL: (-id R_I : [(T_I) (T_I)] (R_I))

RL: (sing q_i : (f_i : (2 t_i : (f_i^1 : hour (f_i^1)) (t_i): (f_i^1 : pleasant (f_i^1)) (t_i)) (f_i)) (q_i))

Note that the fact that the adjective scopes over the noun means that it is semantically compatible with the noun and that the order between numeral and noun can (in principle) be reversed. Thus, in (36d), the reversed order, *the 13 unlucky women*, is both semantically and syntactically acceptable; note, however, that in that case the numeral and noun are not presented as forming a conceptual unit, and the overall denotation is simply that of a set of Individuals.

Finally, the analysis here clearly shows that the scope of the modifier and the presence of a pre-established set are two different features: even when the modifier occurs within the pre-established unit, the presence of this unit (i.e. of the Property f_i) still causes the modifier to appear before the numeral.

6.2.4 Quantity-3

This subtype differs from the previous two in that the (representational) modifier scopes over the pre-established unit, i.e. over the combination of numeral and noun. This leads to an RL analysis like the one in (44), with the adjective modifying the f-unit between the outer and the inner sets:

(44) that short fourteen months (see (1c)/(13a)/(37a))

IL: (+id R_I : [(T_I) (T_I)] (R_I))

RL: (sing q_i : (f_i : (14 t_i : (f_i^1 : month (f_i^1)) (t_i)) (f_i): (f_i^1 : short (f_i^1)) (f_i)) (q_i))

The fact that the modifier scopes over the combination of numeral and noun explains why the order between modifier and numeral is not reversible here: in (44), it is the period of 14 months that is short, not the individual months.

6.2.5 Other-1

We now move on to the second major subtype of Mod-Num NPs, where the overall denotation is not a Quantity but a plural set. This plural set can have various denotations and always shares its denotation with the inner set (as indicated by the co-indexing of the two sets). As we have seen, the preference in this subtype is for sets of Individuals. An example is given in (45):

(45) the biggest 1,000 British companies (see (38a))

IL: (+id R_I : [(T_I) (T_I) (T_K)] (R_I))

RL: (m x_i : (f_i : (1,000 x_i : (f_i^1 : company (f_i^1)) (x_i): (f_i^1 : -biggest- (f_i^1))¹⁵ (x_i)) (f_i)) (x_i))

Since the outer set is plural, only plural determiners (or determiners unspecified for number) are allowed; in the subject position, these constructions also trigger the plural form of the finite verb. The modifiers are representational and scope over the noun; this means that reversibility is possible (*the 1,000 biggest companies*).

¹⁵ The hyphens indicate that this part of the representation is simplified, as the exact internal structure of the unit is irrelevant to the discussion.

6.2.6 Other-2

This subset only differs from the previous one in that the modifier is classifying and scopes over the lexical Property rather than the inner set:

- (46) the terrestrial four channels (see (39b))
 IL: (+id R_I: [(T_I) (T_J)] (R_I))
 RL: (m x_i: (f_i: (4 x_i: (f_i: channel (f_i: (f_i: terrestrial (f_i: (f_i: (x_i)) (f_i)) (x_i))

6.2.7 Reportatives

This leaves us with the minor type of reportative modifiers. These may modify either a Referential or an Ascriptive Subact at the Interpersonal Level. In (47), the reportative seems to function as a comment on the numeral, suggesting that the outer set is a Quantity (note that, although the two examples found in the sample are both definite, the indefinite article is also possible, as in *a supposed 2,428 kWh of primary heating energy* (COCA, blog; Davies 2016)). This leads to the following analysis:

- (47) the supposed three hundred and sixty-five steps to the Calvary (BYU-BNC, fiction)
 IL: (+id R_I: [(T_I)...] (R_I): supposed (R_I))
 RL: (sing q_i: (f_i: (365 x_i: [(f_i: step (f_i: (f_i: (x_i)) (f_i)) (q_i))

The element *so-called*, on the other hand, functions as a modifier of the Ascriptive Subact. Thus, in (48), it serves to indicate that the property assigned by the expression *four skills* is a generally accepted one, not coined by the speaker. In this case, the indefinite determiner seems to be excluded (**a so-called four skills*); therefore, a representational analysis with a plural outer set seems to be more appropriate.

- (48) the so-called four skills (BYU-BNC, news)
 IL: (+did R_I: (T_I: [...] (T_I): so-called (T_I)) (R_I))
 RL: (m x_i: (f_i: (4 x_i: (f_i: skill (f_i: (x_i)) (f_i)) (x_i))

6.2.8 Additional modifiers

Finally, given the analyses proposed in this section, it will be clear that the presence of further modifiers poses no problem, as modifiers can be added at each layer. When the second modifier occurs at the same layer, the two modifiers may be coordinated (as in (49)) or stacked (as in (50)), with both modifiers occurring prenumerally:

- (49) a distressing and hectic ten minutes (see (20a))
 IL: (-id R_I: [(T_I) (T_J) (T_K)] (R_I))
 RL: (sing q_i: (f_i: (10 t_i: (f_i: minute (f_i: (t_i: (f_i: distressing (f_i: (f_i: hectic (f_i: (t_i)) (f_i)) (q_i))
- (50) an emotional, turbulent four months (see (20b))
 IL: (-id R_I: [(T_I) (T_J) (T_K)] (R_I))
 RL: (sing q_i: (f_i: (4 t_i: (f_i: month (f_i: (t_i: (f_i: turbulent (f_i: (t_i: (f_i: emotional (f_i: (t_i)) (f_i)) (q_i))

In those cases where the second modifier scopes over the lexical Property in the inner unit, it is only the wider scope adjective that precedes the numeral:

- (51) the “big six” national brewers

IL: (+id R_I: [(T_I) (T_J) (T_K)] (R_I))RL: (m x_i: (f_i: (6 x_i: (f_i: brewer (f_i: (f_j: national (f_j: (f_i: (x_i: (f_k: big (f_k: (x_i: (f_j: (x_i))

6.3 Some final remarks about quantities

The analyses proposed in the previous section are based on a number of assumptions: (i) it is the presence of an inner set, separated from the outer set by an intervening f-layer, which triggers the modifier–numeral word order; (ii) the outer set is either a singular Quantity, triggering a singular determiner, or a plural set (of any denotation), triggering a plural determiner; (iii) in the case of a Quantity, the verb may exhibit number agreement either with the Quantity (singular) or with the inner set (plural); in the case of a plural outer set, the verb will always appear in the plural form.

Singular quantities may also, however, contain an inner set without the intervening f-layer. In that case, the modifier appears in the postnumeral position, but the singularity operator of the Quantity may still trigger singular verb agreement; as we have seen, the verb can also agree with the plural inner unit:

- (52) (a)
- Three quiet weeks (in the country) is/are what you need.*

(b) (sing q_i: (3 t_i: (f_i: week (f_i: (t_i: (f_j: quiet (f_j: (t_i: (q_i))

Note also that in this case, the use of a singular determiner is not possible: this requires the presence of the intervening f-layer to block plural agreement between the determiner and the noun, thus ruling out expressions like **a/that three quiet weeks in the country* (cf. Keenan 2013, 88; note that here the postnumeral adjective blocks a conceptual-unit reading).

This means that in those cases where we do find a singular determiner in combination with a plural head noun, we must have the additional f-layer, even if there is no prenumeral adjective:

- (53) (a)
- That ten days we spent in Florida*
- was fantastic. (Payne and Huddleston 2002, 354)

(b) (sing q_i: (f_i: (10 t_i: (f_i: day (f_i: (t_i: (ep_i: –we spent in Florida– (ep_i: (t_i: (f_i: (q_i))

Note that without a prenumeral adjective, the postmodifier in (53) cannot be omitted (**That ten days was fantastic*). In other words, the use of a singular determiner requires some explicit indication that we are dealing with a pre-established combination of numeral and noun, either in the form of prenumeral adjective or in the form of a postmodifier (again ruling out **a ten days*; Keenan (2013, 88)).¹⁶

7 Conclusion

This article has presented the results of an empirical study on English NPs with prenumeral modifiers (Mod-Num NPs), based on a sample of 516 instances extracted from the *British National Corpus*, each coded for a range of semantic and syntactic properties (including scope of the modifier, type of modifier, type of noun, form of the determiner, verbal agreement, and reversibility of the modifier–numeral order). It was concluded that what all Mod-Num NPs have in common is the fact that the numeral and the noun form one

¹⁶ As pointed out by one of the reviewers, this is not necessarily the case, as shown in (i):

(i) Right, so given a choice between erm, an average, a guaranteed income of say fifty pounds per hectare (pause) right if they're given a cer– a certain, if *that fifty pounds* is certain every year, alright, they will choose that every time in a, er, well just yes. (BYU-BNC)

The reason for this may be that some measure nouns (e.g. *pound, knot, watt*) are typically used to refer to unified wholes (an amount of money, a speed, a unit of power), and as such are by default interpreted as denoting quantities. In that case use of singular determiner will generally be acceptable.

(pre-established) conceptual unit. In the FDG analyses provided, this is represented by the presence of an additional inner set (in the form of an intervening f-layer), which triggers the modifier–numeral word order. This common feature cannot, however, account for the considerable heterogeneity in the semantic and syntactic behaviour of these NPs, which cannot be captured in a single analysis. Instead, it was argued that, in order to find some systematicity in the use of these NPs, a number of subtypes had to be distinguished. This was done on the basis of three parameters: (i) the denotation of the overall set (Quantity vs any other kind of semantic category), (ii) the scope of the prenumeral modifier (numeral, noun, or numeral + noun), and (iii) the type of modifier (in particular, interpersonal vs representational). This resulted in a classification of Mod-Num NPs consisting of six main types, each characterized by a combination of partly overlapping, but nevertheless distinctive semantic and syntactic features. Finally, each of the subtypes of Mod-Num NP distinguished was provided with its own FDG analysis. It was shown that these analyses not only capture the semantic and pragmatic similarities and differences between the subtypes but also allow us to systematically relate these to their syntactic properties.

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