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DIPLOMOVÁ PRÁCE

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Noun phrase complexity in academic written English

Složitost nominální fráze v anglickém psaném odborném textu

Děkuji vedoucí své diplomové práce PhDr. Markétě Malé Ph.D. za podporu, důvěru, mnoho cenných rad a připomínek a čas, který mi věnovala.

Prohlašuji, že jsem diplomovou práci vypracovala samostatně, že jsem řádně citovala všechny použité prameny a literaturu a že práce nebyla využita v rámci jiného vysokoškolského studia či k získání jiného nebo stejného titulu.

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Abstrakt

Diplomová práce se zabývá analýzou odborného psaného jazyka. Ten bývá obvykle charakterizován složitou větnou stavbou s vysokým počtem vedlejších vět a explicitně vyjádřenými vztahy mezi konstituenty. Nové studie (např. Biber & Gray, 2010) ale ukazují, že složitost odborného psaného textu spočívá spíše v komplexnosti nominální fráze, která často obsahuje množství premodifikátorů a/nebo postmodifikátorů. Práce zkoumá strukturu nominální fráze v odborných článcích dvou vědních disciplín: medicíně a sociologii. Z každé disciplíny byly vybrány dva odborné články, ze kterých bylo excerpováno 50 komplexních nominálních frází. Těchto 200 výskytů bylo analyzováno z hlediska přítomnosti modifikace, jejího typu a hloubky závislostních vztahů. Poznatky z obou disciplín byly porovnány. Cílem práce bylo popsat stavbu komplexní nominální fráze a určit do jaké míry je struktura nominální fráze závislá na vědní disciplíně.

Klíčová slova: nominální fráze, modifikace, odborný text, sociologie, medicína

Abstract

The diploma thesis analyses written academic text. Academic prose is frequently characterized as a highly complex style which is structurally elaborated, contains a large number of subordinate clauses and expresses meaning relations explicitly. However, new research (e.g. Biber & Gray, 2010) shows that complexity of academic writing occurs on the level of noun phrases which often contain extensive premodification and/or postmodification. The thesis studies noun phrase structure in research articles from two disciplines: medicine and sociology. Two articles from each discipline were selected, each yielding 50 complex noun phrases. These 200 examples were analysed with respect to their modification, its form and levels of embedding. The results were compared for both disciplines. The aim of the thesis was to describe complex noun phrase structure and identify its relation to the type of academic discipline.

Key words: noun phrase, modification, academic text, sociology, medicine

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Abbreviations and symbols

Adj	adjective
Adv	adverb
C _p	prepositional complement
C _s	subject complement
CamGEL	<i>Cambridge Grammar of the English Language</i>
CGEL	<i>A Comprehensive Grammar of the English Language</i>
Det	determiner
edPP	past participle
ingPP	present participle
LGSWE	<i>Longman Grammar of Spoken and Written English</i>
MED	medicine, medical texts
N	noun
N _c	common noun
N _{head}	head noun
N _p	proper noun
NP	noun phrase
O	object
P	pronoun
PP	prepositional phrase
S	subject
SOC	sociology, sociological texts
()	round brackets in examples signal optional elements
[]	square brackets in examples signal constituent boundaries
>	an angle bracket symbolizes the direction of modification (Adj>N = an adjective modifies a noun)
*	an asterisk indicates an unacceptable example
?	a question mark indicates a marginally acceptable example

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1 Introduction

Academic writing is commonly described as a highly complex style which is structurally elaborated and expresses meaning relations explicitly (as opposed to, for example, conversation which relies much more on implicit meaning and situational context). The present diploma thesis was inspired by the work of Douglas Biber, an American linguist who uses corpus-based approach to study different aspects of the English language. In the article “Challenging stereotypes about academic writing: Complexity, elaboration, explicitness” (*Journal of English for Academic Purposes*, 2010) he and his colleague present the idea that the complexity of professional academic writing does not consist in the extensive use of clause elements realized by subordinate clauses. Based on their research, adverbial and content subordinate clauses are more often used in conversation, while academic writing tends to be more compressed with complexity occurring on the level of noun phrase where postmodification is frequently realized by finite definite clauses or non-finite clauses.

The aim of the thesis is to explore the idea that noun phrase in academic writing is very complex with frequent use of premodification and postmodification. To accomplish this, the noun phrase structure in academic articles of two different types of discipline will be studied: medicine, representing natural sciences, and sociology, representing social sciences. In addition, we will attempt to investigate how the type of discipline influences the degree of noun phrase complexity and the use of different types of modification.

The following chapter summarizes the theoretical basis of the study. Chapter 3 briefly introduces the corpus used for the analysis and the method; chapter 4 presents the quantitative as well as qualitative results of the actual analysis and their discussion. In chapter 5 we attempt to draw some conclusions and suggestions for further research.

2 Theoretical background

This chapter introduces the concept of a phrase, looks at its different functions and then focuses on the noun phrase and its structure. It touches upon the issue of headedness and complementation, and provides an overview of different types of determination and modification. Finally, it presents the main points raised by Biber and his colleague in the above mentioned article, and draws the attention to a few interesting articles studying the noun phrase structure.

The first part of this chapter draws mainly on *A Comprehensive Grammar of the English Language* written by Quirk et al. (1985, hereafter referred to as CGEL). Discussion of other authors and works is included where they differ in their interpretation of certain linguistic features, suggest different terminology or raise an interesting point.

2.1 The concept of a phrase

The constituents of a clause are clause elements. These can have either a phrasal or clausal realization form: for example, the object can be realized by a nominal relative clause (*He gives her whatever she asks for*) or by a noun phrase (*He gives her expensive presents*). Words¹ which constitute a phrase behave as a unit. This means that they can be moved around in a clause: compare *My beautiful wife wrote a historical novel* and *A historical novel was written by my beautiful wife*. In addition, multi-word phrases can be substituted by a single word with the same general meaning: compare the previous example with *She wrote it*. Phrases can also involve multiple embedding functioning as a mechanism of their extension. In theory, certain types of phrases, in particular noun phrases and prepositional phrases, can be extended indefinitely: e.g. *They live [on the top floor [of a house [in the corner [of the old square [behind the church . . .]]]]]* (CGEL: 44).

There are five types of phrases: noun phrases, adjective phrases, verb phrases, adverbial phrases and prepositional phrases.² According to CGEL, phrases can further be distinguished as headed or non-headed (CGEL: 60-1). A headed phrase has one obligatory central

¹ Traditionally, a phrase was viewed as a unit consisting of more than one word. Since this approach caused difficulties, a phrase is now usually interpreted as consisting of one or more words (CGEL: 40).

² LGSWE distinguishes also some less frequent types of phrases, such as numeral phrases (*nineteen sixty-six*) and genitive phrases (*the President's dramatic decision*) (LGSWE: 97, 108-9).

constituent – the head. This can be accompanied by other optional or obligatory³ elements: for example, the adjective phrase (*very*) *important* (*indeed*) (CGEL: 60) consists of the adjective *important* functioning as the head, and two optional elements. Prepositional phrases are considered non-headed because the preposition and the prepositional complement are both obligatory elements. However, this dichotomy does not fully apply to all types of phrases. The relation of noun phrases to the issue of headedness is discussed in section 2.3 below.

2.2 The noun phrase: functions and structure

From the functional perspective, the noun phrase is, together with the verb phrase, the most important type of phrase. It provides the reader/hearer with essential information, such as what and/or who is the text about. The clause elements typically realized by a noun phrase are subject, object, complement and occasionally adverbial. A noun phrase also usually constitutes a prepositional element following the preposition in a prepositional phrase (*at the restaurant*). In fact, LGSWE suggests the view of a typical prepositional phrase as “a noun phrase extended by a link showing its relationship to surrounding structures” (LGSWE: 103).

The main constituent, or the head, of a noun phrase is typically a noun. This can be accompanied by a number of determining (obligatory or optional), modifying (optional) or complementing (obligatory or optional) elements⁴. In general, one-word elements tend to precede the head, while multi-word elements usually follow it (CGEL: 62-3). It is clear that a noun phrase can thus display a various degrees of complexity. Compare the following six sentences:

- | | |
|--|---------------------------|
| (1) <u>The girl</u> | is my sister. |
| (2) <u>The blonde girl</u> | is my sister. |
| (3) <u>The blonde girl in blue jeans</u> | is my sister. |
| (4) <u>The blonde girl wearing blue jeans</u> | is my sister. |
| (5) <u>The blonde girl who is wearing blue jeans</u> | is my sister. |
| (6) <u>She</u> | is my sister. (CGEL: 245) |

³ Some types of headed phrases may require other obligatory elements, such as determiners in noun phrases.

⁴ CamGEL describes the structure of a noun phrase as a combination of a determinative element and a nominal. A nominal consists of a head and the remaining constituents, i.e. modification and complementation. So the noun phrase *this clear case of dedication to duty* contains the determinative element *this* and the nominal *clear case of dedication to duty* (CamGEL: 22-3).

The first five sentences have the noun *girl* as head of the noun phrase functioning as the subject. In (1) we can see the noun phrase in its simplest form consisting of a head and a determiner (*the*). The more complex structure of (2) is caused by modification: there is a premodifier in the form of an adjective (*blonde*). (3)-(5) exemplify yet another degree of complexity by adding different types of postmodification: a prepositional phrase (*in blue jeans*), a non-finite clause (*wearing blue jeans*) and a finite relative clause (*who is wearing blue jeans*), respectively. In the last sentence the noun phrase is realized by a personal pronoun *she* which cannot take any optional elements (CGEL: 245). The order of elements in the noun phrase structure can be thus illustrated as follows:

<i>The</i>	<i>blond</i>	<i>girl</i>	<i>in blue jeans</i>
determiner	premodifier	head	postmodifier

2.3 The head

It has been said that the main constituent, i.e. the head, of a noun phrase is typically a noun and that other optional elements may be added to it. The head determines the concord of a noun phrase with other parts of the sentence. However, there are some difficulties regarding the concept of headedness in noun phrases. Noun phrase is considered headed (or endocentric⁵) since it contains a central element – the head. However, in many cases, the head of a noun phrase requires an obligatory accompanying element, a determiner. Compare:

(7) The room contains (some) (beautiful) (Flemish) vases.

(8) The room contains a (beautiful) (Flemish) vase. (CGEL, 61)

Another example of irregularity is represented by personal pronouns which also act as noun phrases (*He jumped*) but do not allow determiners, premodifiers and normally also postmodifiers⁶. Additionally, an adjective can sometimes also function as the head in a noun

⁵ A term introduced by the American linguist Leonard Bloomfield denoting the construction which has the same syntactic function as at least one of its elements (see Matthews 1981: 147 or Matthews 1997: 114).

⁶ Pronouns carrying very generic reference can be postmodified, as in ***nothing** I particularly want for Christmas* (LGSWE: 232).

phrase (*The poor rioted*)⁷. There is thus no one-to-one correspondence of form and function⁸ (CGEL: 61).

2.4 Relations within the noun phrase

As mentioned above, we distinguish the following relations between the constituents of a noun phrase: determination, modification and complementation. The last two occur between clause elements too. Determination is noun-phrase specific (CamGEL: 24). Let us look at each of these relations in more detail.

2.5 Complementation

Complementation seems to be the most problematic relation in terms of its definition as each grammar understands it in a slightly different way. CGEL defines complementation as “the function of a part of a phrase or clause which follows a word, and completes the specification of a meaning relationship which that word implies” (CGEL: 65). Syntactically, complementation can be either obligatory or optional and is common with verbs and adjectives.

- (9) He deceived his father. X Joan was eating (her lunch).
- (10) Mr Smith is likely to resign. X The boat was ready (for departure).
- (CGEL: 66)

In the case of omission of the complementation the context is supposed to supply the missing part of the meaning of the preceding word. The difference between complementation and modification is also reflected in the fact that the modifier always relates to the head of a phrase while the complementation can also relate to the premodifiers separated from it by the head (CGEL: 66).

- (11) Greek is a more difficult language than French. (CGEL, 66)

⁷ CamGEL calls such instances ‘fused heads’ on the grounds that the head is fused with a dependent, either a modifier or a determiner. Other examples of fused heads are *several of the boys* or *the cheaper of the two* (CamGEL: 56).

⁸ This counts for the determinative function as well, which typically has a form of a determiner (e.g. *a, the, some, no*), but can also be realized by a genitive construction (*Peter’s bike*). The noun itself is polyfunctional, cf. *the poor city* and *the city poor* (CGEL: 64). See section 2.6 for a more detailed discussion of determination and section 2.7.1.3 for the premodifying function of nouns.

CamGEL ranks complementation together with modification among ‘internal dependents’ and states that it is realized by a prepositional phrase or a clause (finite or non-finite):

- (12) the **journey** to Rome
- (13) the **rumour** that the city had been captured
- (14) the **decision** to abandon the project (CamGEL: 439)

In contrast to verb complements which are usually obligatory, complementation in the noun phrase cannot be easily distinguished syntactically from modification as both types of elements are usually optional. Thus the verb *peruse* has to be completed by an object (compare the unacceptability of **Jill perused* with the correct use of the verb in *Jill perused the documents*) but the noun *perusal* can stand on its own (*After a quick perusal, Jill pushed the documents to one side*)⁹ (CamGEL: 439-40).

LGSWE defines complements as elements which follow the head noun, “complete the meaning of the noun and typically take the form of *that*-clauses or infinitive clauses” (LGSWE: 97). It also points out that the nouns which are followed by a complement are usually deverbal or de-adjectival abstract nouns:

- (15) The popular **assumption** that language simply serves to communicate ‘thoughts’ or ‘ideas’ is too simplistic.
- (16) He feels awkward about her **refusal** to show any sign of emotion. (LGSWE:97)

It has been demonstrated that it is frequently quite difficult to distinguish complementation from modification. Some examples of postmodification can be understood as analogous to complementation. Although they rank among optional elements, the choice of their realization can depend on the head noun. In case of the modification/complementation by a prepositional phrase, the most frequent preposition is *of* (*Muriel’s **rejection** of the plan* (CamGEL: 440)). However, some nouns, especially deverbal nouns, allow other prepositions as well. The choice of a preposition can then slightly affect the meaning: *a **report** on the crash* (CamGEL: 440) is probably more detailed than *a **report** of the crash* (CamGEL: 440) which merely states the fact that a crash has happened. Usually a deverbal noun retains the same preposition as the

⁹ CamGEL notes one exception – the noun *denizen* requires a complement: *They are denizens of the forest* - **They are denizens* (CamGEL: 440).

one licensed by the original verb: see, for example, the pair of constructions *Fiona relies on public support* and *Fiona's reliance on public support* (CamGEL: 440)¹⁰.

For the sake of clarity, complementation will not be taken into account as a separate type of relation in the present paper and will be regarded as postmodification on the grounds of its position in a phrase.

2.6 Determination

Words (or occasionally phrases) with determinative function specify the kind of reference of a noun phrase (e.g. definite, indefinite, universal or partitive). All noun phrases are determined in some way. Regarding the category of definiteness, the meaning of all noun phrases is either definite or indefinite. Some heads, for example proper nouns and pronouns, are self-determined which means that they do not require to be accompanied by a determining element. Common nouns, on the other hand, are normally accompanied by a determiner (e.g. *a, the, some, all*); very often obligatorily (cf. *The driver was a man* (CGEL: 65)). In case of plural and uncountable nouns, the absence of any determiner is viewed by both CGEL and LGSWE as the presence of the zero article (CGEL: 64-65; LGSWE: 261).

Dušková (2003: 61-75) sees the category of definiteness in a slightly different way. She distinguishes two basic types of reference: generic and non-generic (also called singulative or specific). Generic reference, as the name suggests, refers to objects as general concepts. The noun with reference stands for the whole class of the objects (countable nouns, e.g. *The/A child learns from its parents, Children learn from their parents* (Dušková: 63)) or the entire entity in question (uncountable nouns, e.g. *Lead absorbs radiation* (Dušková: 64)). Non-generic reference refers to a single object or a part of an entity which can be either definite (*Put it on the table*) or indefinite (*Take an apple*) in the given context and/or situation. It is interesting to note that Dušková distinguishes the so called 'bezčlennost' (i.e. the absence of article) which sometimes occurs with definite reference. It applies mainly to proper nouns (*John, London*). The absence of article can by no means be confused with the zero article which does not occur in the case of definite reference at all. The zero article is a means of expressing generic or non-generic indefinite reference (*He is making progress*).

¹⁰ For more information about postmodification by prepositional phrases see section 2.7.2.3.

Determinative elements form a set of closed-class items and can be subdivided into three classes, according to their mutual position within the noun phrase, namely predeterminers (e.g. *all, half, double*), central determiners (e.g. *these, the, a/an*) and postdeterminers (e.g. *last, few*, cardinal and ordinal numerals). These can, with certain restrictions, combine: *all these last few days* (CGEL: 253).

2.6.1 Central determiners

The most common central determiners are definite (*the*) and indefinite (*a, an*) articles. In addition, there are few more words that fall into this class: possessive pronouns (e.g. *my*), relative pronouns (e.g. *which*), interrogative pronouns (e.g. *what*), demonstrative pronouns (e.g. *this*), quantifiers (e.g. *no, some, every*), etc. Unlike articles, these can usually be alternatively used as pronouns:

(17) DETERMINER FUNCTION: What's that thing over there?

(18) PRONOUN FUNCTION: That is our computer. (CGEL: 255)

The exceptions to this are *no* and *every* which cannot stand on their own. They can, however, form compound pronouns, e.g. *nobody, everything*. Central determiners are mutually exclusive, i.e. there can always be only one central determiner in a noun phrase (cf. **a some boy*). CGEL calls it a 'choice relation' as opposed to 'chain relation' of postdeterminers which can form chains as in *all these last few days* (CGEL: 253-7). Central determiner can also have the form of a genitive: possessive pronoun (*her new desk*) or a noun phrase comprising a single noun (*Jenny's new desk*) or a noun accompanied by its own determiners and/or modifiers (*the Italian government's recent decision* (CGEL: 326)). Quirk et al. describe the latter phenomenon as "a noun phrase embedded as a definite determinative within another noun phrase" (CGEL: 326). Occasionally, the genitive functions as a modifier with a classifying role – the so called 'descriptive genitive'¹¹ (*women's universities = universities for women*). In contrast to determinative genitives, any modifiers and/or determiners preceding a modifying genitive usually refer to the head noun rather than to the genitive noun (CGEL: 327).

¹¹ LGSWE calls this type 'classifying' genitive as opposed to 'specifying' genitive (LGSWE: 294-5).

2.6.2 Predeterminers

Predeterminers are words which can occur before certain central determiners. They include *all*, *both*, *half*, the multipliers (e.g. *double*, *twice*, *three times*), the fractions (e.g. *one-third*), *such* and *what*. Like central determiners, predeterminers are also mutually exclusive¹² (CGEL: 257-8).

2.6.3 Postdeterminers

Postdeterminers are elements which follow all other determiners (if there are any) and precede the head and its premodification (if there is any). They include cardinal numerals (e.g. *one*), ordinal and ‘general’ numerals (e.g. *first*, *next*), closed-class quantifiers (e.g. *few*) and open-class quantifiers (*a large number of*)¹³ (CGEL: 261).

2.7 Modification

Modification in a noun phrase is optional. It provides additional information, describes the head and often restricts its reference: cf. *a cup* and *a pink cup*. With respect to its position in a phrase we distinguish premodification, which precedes the head, and postmodification, which follows it. Premodifiers always follow determinatives (see the graphical description in section 2.2). Quirk et al. show a parallel between modifiers in a phrase and adverbials in a clause (CGEL: 65):

(19) He arrived (unexpectedly) (in Warsaw) yesterday.

(20) his (unexpected) **arrival** (in Warsaw) yesterday (CGEL: 65)

It should be noted that modifiers may themselves be modified: in the adjective phrase *far more difficult*, the adverb *far* modifies the adverb *more* rather than the adjective *difficult* (cf. the ungrammaticality of **far difficult*) (CGEL: 67).

¹² An exception to this rule is the combination *all such*, where *such* functions as a pro-form:

Although every attempt is made to find suitable foster-homes for the children, it cannot be assumed that all such placements will be successful. (CGEL: 258 note)

¹³ Although open-class quantifiers look like noun phrases themselves, CGEL supports the idea that the whole expression functions as a determiner. Mainly by the fact that the verb is in concord with the second rather than the first noun: *Lots of food was on the table* (CGEL: 264).

Restrictive vs. non-restrictive

Modification can be either restrictive or non-restrictive¹⁴. Restrictive modification imposes limitation on the reference of the head since it is essential for the identification of the referent (*The small boy who is in the garden wants to play football*). In contrast, non-restrictive modification is always optional and accompanies a head that is clearly identified, for example, by the context or by the use of a proper noun (cf. *Jack Brown, who is in the garden, wants to play football*). Almost any head that allows restrictive modification can also be accompanied by non-restrictive modification. Proper nouns allow restrictive modification only when used as common nouns: *the Smith who travelled to America*. Restrictive modification tends to follow the head and is usually given more prosodic prominence. Non-restrictive modification, on the other hand, is mainly unstressed in the pre-head position or given a separate tone unit when following the head (CGEL: 1239-42).

Temporary vs. permanent

Modification in a noun phrase can be either temporary or permanent. Premodification most frequently suggests permanent characteristics. On the other hand, adjectives which occupy only the predicative position usually signal temporary modification (CGEL: 1242). Compare:

- (21) a man who is timid – a timid man X a man who is afraid – *an afraid man
(CGEL: 1242)

Some modifiers can occupy both positions. For instance, the expression *visible stars* denotes a special category of stars. Here, *visible* is a permanent characteristic. On the other hand, *the stars visible* are stars which are visible on a certain occasion (Dušková: 146).

Degree of explicitness

In addition to the position, premodification and postmodification also differ in the degree of explicitness. Premodification tends to be less explicit, with the relations which are explicitly expressed in postmodification only implied: *an oil man* can be *a man who sells oil*, *a man who produces oil* or *a man who advocates the rise of oil* (CGEL: 1243). The possible ambiguity is usually cancelled by the context. Regarding postmodification, finite relative

¹⁴ In LGSWE this distinction is associated mainly with postmodification (LGSWE: 602).

clauses are more explicit than non-finite clauses which, in turn, are more explicit than prepositional phrases.

(22) The boy who was sitting on the bench

(23) The boy sitting on the bench

(24) The boy on the bench

2.7.1 Premodification

Premodification comprises all lexical and grammatical items preceding the head of a noun phrase with the exception of determiners. It is typically realized by adjectives, participles and nouns. Less frequently, it can also be realized by genitives, adverbs and other phrases, or clauses (CGEL: 1321-2).

2.7.1.1 Adjectives

Adjectives are probably the most frequent type of premodification across all registers. Premodifying adjectives can themselves be premodified, especially when they are the first item following the determiner. A parallel can be drawn to adjectives in predicative position:

(25) Her family is [really [quite [unbelievably]]] delightful.

(26) her [really [quite [unbelievably]]] delightful **family** (CGEL: 1323)

Some intensifiers, however, are not normally used with premodifying adjectives, for instance *so* which is replaced by *such* in phrases with indefinite or zero article:¹⁵

(27) a **daughter** who is so beautiful = such a beautiful **daughter**

(28) **daughters** who are so beautiful = such beautiful **daughters** (CGEL: 1323)

Some adjectives are restricted to the attributive position, such as *mere* and *only*. They cannot be intensified by *very* and are often related to adverbial intensifiers, e.g. *merely*. Adjectives related to nouns, such as *poetic* or *nasal*, cannot be predicative or intensified in some of their senses. Compare *her rather nasal pronunciation* – *her pronunciation is rather nasal* with *the nasal cavity* – **the cavity is (rather) nasal/the cavity of the nose* (CGEL: 1324). Some formulaic expressions such as *kind regards* also fall into this category (CGEL: 1323-5).

¹⁵ In formal contexts, *so* can, however, be found with premodifying adjectives: *so beautiful a daughter* (CGEL: 1323).

2.7.1.2 Participles

As mentioned earlier, premodification is usually reserved for terms indicating permanent characteristics. Since the nature of participle is originally verbal, there are certain restrictions on the possibility of their functioning as a premodification in a noun phrase – the participle has to be able to denote a permanent or a characteristic feature: *She has a very interesting mind – Her mind interests me very much* (CGEL: 1325-6).

Present participles

The possibility to use *-ing* (present) participle in premodification depends very much on the context. An expression *wandering minstrel* is acceptable since it denotes a person with the habit of wandering. Conversely, to name a person we just see walking down the street as *a wandering man* is not acceptable because wandering is not a permanent characteristic of that person. CGEL notices a trend in journalism and professional writing (social sciences in particular) to favour premodification by *-ing* participle: *the developing countries, an ongoing concern, a voting member* (CGEL: 1326-7).

Past participles

The same concerns raised in the previous paragraph apply to premodification by *-ed* (past) participles as well but here there are more issues that have to be taken into account. Active *-ed* participles rarely stand as a premodification in a noun phrase (**the arrived immigrant*). There are a few exceptions, such as *a retired teacher* or *reduced prices*. When the active participle is itself premodified by an adverb, it is more common: *a newly-arrived immigrant, a well-read woman*. Most *-ed* participles have, however, passive meaning. But not many of them allow premodification easily. There are a lot of semantic and aspectual factors that come into play. For instance, we can speak of *a lost purse* but not **a found purse, the stolen car* but not **a sold car*¹⁶, etc. (CGEL: 1327-8).

It should be noted that not all premodifiers ending in *-ed* are participles. We often come across denominal adjectives such in *a bearded man*. Again, there are some constraints: **a legged spider* is unacceptable in contrast to *a long-legged spider*. CGEL explains this phenomenon by a simple rule of communication that “what one says should carry useful,

¹⁶ The phrase *a recently sold car* becomes acceptable by modifying the *-ed* participle by an adverb (CGEL: 1328).

nontrivial information” (CGEL: 1329). Since all spiders (usually) have legs, it is only the modified phrase which brings new information. With unmodified *a bearded man* the rule applies as well: not all men have beards (CGEL: 1328-9).

If the *-ed* participle has a prepositional construction (such as a *by*-agent) attached to it, only postmodification is possible. Compare:

- (29) the defeated **army**
(30) *the by the enemy defeated **army** *the for lack of ammunition defeated **army**
(31) the **army** defeated by the enemy the **army** defeated for lack of ammunition
(CGEL: 1329)

Prepositional verbs also tend to follow the head: *the pages referred to*. In some cases, *-ed* participles can have different meaning in pre-position and post-position. Compare: *the people concerned* (i.e. the people in question) and *the concerned expression* (i.e. worried) (CGEL: 1329-30).

2.7.1.3 Nouns

Noun phrases with premodification by nouns are often very close to noun + noun compounds and there is usually no clear-cut boundary between the two. The position of stress can sometimes contribute to the identification of the pair as a compound, when the primary stress lies on the premodifying noun instead of the head: *his 'life story X life im'prisonment*. Usually the premodification can be paraphrased by a postmodifying prepositional phrase: *the story of his life, imprisonment for life*. However, due to lower degree of explicitness carried by premodification the meaning¹⁷ may become unclear in which case premodification is unacceptable: *a tree by a stream - *a stream tree*. On the other hand, when the relationship has already been established earlier in the text, expressions like *the electricity company man* are acceptable¹⁸. They also occur in technical texts where the relationship does not need to be explained or in newspaper headlines where the explanation follows in the text. Sometimes

¹⁷ LGSWE presents a list of 15 major types of logical relations between the head and the premodifying noun: for example, purpose (*chess board*), source (*whale meat*) or time (*Sunday school*). However, many noun + noun sequences do not neatly fit into these categories or express additional meanings (LGSWE: 590-1).

¹⁸ To exemplify this, one may imagine a dialogue such as:

- A: Today a man from the electricity company called.
B: Oh, so what did the electricity company man say? (CGEL: 1331)

there is a difference in meaning between the premodification and postmodification by a prepositional phrase type. Thus *a glass of wine* is a glass containing wine, but *a wine glass* is a particular type of glass intended for wine (CGEL: 1330-2).

2.7.1.4 Minor types of premodification

The genitive

Mainly functioning as a determiner, the genitive can occasionally be found in a premodifying function and belongs thus among the few minor types of premodification. These two functions of the genitive are exemplified below. Notice that the adjective *old* modifies the whole expression *fisherman's cottage* in (32), but in (33) it modifies the head of the determinative phrase (i.e. *friend's*).

(32) PREMODIFICATION: I visited [his [old [fisherman's **cottage**]]].

(33) DETERMINATION: I visited [[his [old friend's]] **cottage**]. (CGEL: 1335-6)

Other phrases

Although not very frequently, other types of phrase can function as a premodifier in a noun phrase, for instance an adverb phrase in *She travelled to many far-away places*. The range of premodifying phrases goes from common expressions to ad hoc creations: *round-the-clock service, an away match, a come-and-fight-me attitude* (CGEL: 1336).

Clauses

A clause or its part can also function as a premodifier. Expressions such as *he had on an "I'm your superior" face* (Dušková 2003: 22) are called quotational (string) compounds. They behave as a unit which is often reflected in their orthography: very frequently these compounds are hyphenated (*hard-to-get items* (Dušková 2003: 20)) or even written as one word (*a whodunit story* (CGEL: 1337)). Like premodifying phrases, they usually have a colloquial, slang, creative and improvised flavour. They are quite productive and are often ad hoc creations, for example *the swallowed-up-by-the-earth theory* (Dušková 2003: 20). Some of them have, however, become widely used, such as *a do-it-yourself job* or *He asked I don't know how many people* (CGEL: 1337).

2.7.2 Postmodification

All the elements that follow the head are postmodifiers. Postmodification is usually realized by a prepositional phrase (*the boy on the bike*), a non-finite clause (*the boy riding a bike*), a relative clause (*the boy who is riding the bike*), or a nominal content clause (*the question what happened*) (CGEL: 1238-39).

2.7.2.1 Finite clauses

CGEL distinguishes two main types of finite clauses with postmodifying function: relative¹⁹ and nominal content clauses. To distinguish between the two, one may try to replace *that* by *which* – only relative clauses allow such substitution. While in relative clauses *that* functions as a clause element (subject in the example below), in content clauses it is a conjunction.

(34) The news that/which appeared in the papers this morning was well received.

(35) The news that the team had won calls for a celebration. (CGEL: 1244)

Relative clauses

Relative clauses are either non-restrictive or, more commonly, restrictive (see above). This distinction determines the choice of the relative pronoun/adverb, also called the relativizer (*who, which, that, whose, whom, where, when, why* or zero). Other contributing factors are the gender of the antecedent (personal vs. non-personal) and the function of the relative pronoun either as a subject (*the boy who came*), an object (*the boy whom we saw*), a complement (*John is a great singer which I am not*), an adverbial (including the function of a prepositional complement; *He sings the way in which his brother did*), or a determiner (*in whose garden*) (CGEL: 1247-8).

Nominal content clauses

Nominal content clauses are introduced by *that* which, in contrast to relative clauses, does not function as a clause element but is a conjunction. The head of the noun phrase is a general abstract noun (*fact, idea, answer, etc.*).

(36) The **idea** that nobody will survive is appalling. (Dušková 2003: 600)

¹⁹ Relative clauses are of three types: adnominal (see the examples in the main text), nominal (*What surprises me is that they are fond of snakes and lizards*) and sentential (*They are fond of snakes and lizards, which surprises me*) (CGEL: 1243). The latter two will not be discussed in the present thesis.

The terminology regarding this type of finite dependent clauses varies across different grammars. CGEL (p. 1260) classifies them as appositive clauses, while LGSWE (pp. 644-5) ranks them among noun complement clauses.²⁰ Both grammars agree on the fact that these clauses can be both restrictive and non-restrictive:

(37) The contrary **assumption**, that common sense will take wholly indistinguishable mental events to be different thoughts, strikes me as remarkable (LGSWE: 646)

2.7.2.2 Non-finite clauses

Participle clauses

Both present and past participle clauses can function as a noun phrase postmodification. They correspond to the type of relative clauses where the relative pronoun functions as a subject, but participle clauses express the relations less explicitly²¹. Without the context, the sentence *The boy playing with a ball is my brother* can be interpreted as, for example, *The boy who is playing...*, *The boy who played...* or *The boy who will be playing...* In the same way, *The book written by the author* may mean *The book that was written...* *The book that is written...* or *The book that will be written...* Both types of participial postmodification are usually restrictive. *-ed* participles of intransitive verbs cannot be used in postmodification unless preceded by certain adverbs: *The train which has arrived at platform 1 is from York* cannot be paraphrased as **The train arrived at platform 1 is from York* but when we use the adverb *recently* the sentence becomes perfectly acceptable: *The **train** recently arrived at platform 1 is from York* (CGEL: 1263-5).

Infinitive clauses

In contrast to participle clauses, infinitive clauses can correspond to relative clauses with the relative pronoun functioning as subject, object, adverbial and occasionally complement.

(38) The **man** to help you/who can help you is Mr Johnson.

(39) The **man** (for you) to see/who(m) you should see is Mr Johnson.

(40) The **time** (for you) to go/at which you should go is July. (CGEL: 1266)

²⁰ For the purposes of the present thesis we will refer to these clauses by the term 'nominal content clause'.

²¹ The distribution of relative and non-finite clauses in postmodification was studied by Šaldová. See section 2.9.

Postmodifying infinitive clauses normally have modal meaning, especially when the object of the infinitive corresponds with the antecedent: *The thing to do* can only mean *The thing we should do* (CGEL: 1269).

Non-restrictive use of non-finite clauses

Non-finite clauses functioning as postmodification can also be non-restrictive. As is the case with restrictive non-finite clauses, these also correspond only to those relative clauses with the relative pronoun functioning as a subject. This time, the rule applies to infinitive clauses too.

(41) The apple **tree**, swaying gently in the breeze, was a reminder of old times.

(42) The **substance**, discovered almost by accident, revolutionized medicine.

(43) The **scholar**, to be found daily in the British Museum, has devoted his life to the history of science. (CGEL: 1270)

2.7.2.3 Prepositional phrases

Prepositional phrases are the most common type of postmodification in English. They compress the language and often correspond to finite clauses with the verb *be*: *the car outside the station* = *the car is outside the station*. However, sometimes there is more to be interpreted than a simple *be*-clause: *the university as a political forum* = *the university is acting as a political forum*; *the man with a red beard* = *the man has a red beard*. The most frequent preposition used in postmodification is *of*. This, too, corresponds to *have*-sentences. The *of*-construction is very often equivalent in meaning to genitive construction: *the population of the city* – *the city's population* (CGEL: 1274-6).

2.7.2.4 Minor types of postmodification

Adverb phrase

Adverbs which postmodify nouns most often denote time or place: *The **way** out was hard to find* (CGEL: 1292-3).

Postposed adjectives

There are three main types of postposed adjectives depending on what causes the postposition. Firstly, postposition of the adjective can be required by the head of the noun phrase (*I want to try **something** different*), secondly, it is caused by the postmodification or

complementation of the adjective (*a **play** popular in the 1890s*) or thirdly, it is an idiomatic phrase (*the **heir** apparent*). The first two types can be considered as reductions of relative clauses: *something (that is) different*, *a play (that was) popular in 1890s*. The first type includes indefinite pronouns ending in *-one*, *-body*, *-thing*, and the adverb ending in *-where*. There are also a few *wh*-forms which can only be postmodified (e.g. *who else*). In the second type, the modifying adjective phrase contains a prepositional phrase or a non-finite verb phrase as a complement which makes it heavy in relation to the head of a noun phrase. This results in postposition. Coordinated adjectives allow both positions: *a both typical and common **mistake*** – *a **mistake** both common and typical*. The third type, fixed expressions are based on French model. They are not very frequent and the adjectives cannot be modified: **the **president** newly elect* (CGEL: 1293-6). Dušková (2003: 145-6) states these fixed expressions are usually of legal nature. She also mentions other types of postposed adjectives; for instance, some adjectives starting with *a-* (*the boat **afloat***) or adjectives with different meanings in preposition and postposition (*the **present** situation X the members **present***).

2.7.2.5 Apposition

Apposition is a relationship between two phrases, typically noun phrases. Appositive linguistic units must be co-referential (*Ann, my best friend, was here last night*) or the reference of one must be included in the reference of the other (*A neighbour, Fred Brick, is on the phone*). This kind of relationship can be paraphrased by a copular construction: *Ann is my best friend*. Apposition can be compared to non-restrictive postmodification, in particular non-restrictive relative clauses: *Ann, who is my best friend, was here last night*. Some grammarians see the noun phrase *my best friend* from the first example as a reduction of such a relative clause and include non-restrictive relative clauses among appositives on these grounds²² (CGEL: 1300-1).

CGEL distinguishes two types of apposition: full and partial. Full apposition has to follow three conditions:

- 1) each appositive can be omitted without affecting the acceptability of the sentence

²² CGEL does not support this idea. It sees apposition as a relation that is between two noun phrases and that does not contain any item similar to a relative pronoun which in relative clauses functions as a constituent of the clause. Moreover, the similarity is not applicable to all types of relative clauses. Compare: *Here is letter from John, who wants a job in London* – **Here is a letter from John, a job in London* (CGEL: 1301).

- 2) each appositive has the same syntactic function in the resultant sentence
- 3) the reference of the resultant sentence remains the same

The example used in the paragraph above can thus be identified as a full apposition:

(44) **Ann**, my best friend, was here last night. = **Ann** was here last night. = My best friend was here last night. (CGEL: 1301)

Partial appositions are such constructions which resemble full apposition but do not meet all the above listed conditions. Sometimes only one item from the pair can be omitted without further reordering of the clause elements. *An unusual present was given to him for his birthday, a book on ethics.* = *An unusual present was given to him for his birthday.* - **Was given to him for his birthday, a book on ethics.* - *A book on ethics was given to him for his birthday.* CGEL calls this type of partial apposition 'discontinuous full apposition'. Sometimes the second condition cannot be fulfilled: *Norman Jones, at one time a law student, wrote several best-sellers.* Here, the first appositive functions as a subject in the original as well as resultant clause (*Norman Jones wrote several best-sellers*). The second appositive cannot, however, perform such function. Another type of partial apposition does not follow the third condition: the original sentence *The reason he gave, that he didn't notice the car till too late, is unsatisfactory* has the same reference as the resultant sentence after the omission of the second appositive: *The reason he gave is unsatisfactory*. When we omit the first appositive it is no longer the reason that is unsatisfactory but the fact of him not noticing the car: *That he didn't notice the car till too late is unsatisfactory* (CGEL: 1302-3).

Non-restrictive apposition can be indicated by a number of explicit expressions (e.g. *namely, i.e., in other words, or rather, for example, including, especially, in particular, mainly*). They express certain semantic relationships between the two appositives. The indicators usually precede the second appositive, but occasionally they can also follow it: *Dickens's most productive period, 1840s, that is, was a time when public demand for fiction was growing at a tremendous rate.* Some indicators can only precede the second appositive (e.g. *namely, including, and*). *Included*, on the other hand, can only follow it (CGEL: 1307).²³

²³ Regarding two noun phrases in appositive relation, the second noun phrase will be treated as a postmodification in the present thesis.

2.7.3 Discontinuity between head and modifier

Quite commonly, other clause elements might be inserted into a noun phrase, thus interrupting its structure: *I met a man this morning carrying a heavy parcel*. To avoid discontinuity the time adjunct can be shifted to the front of the sentence: *This morning I met a man carrying a heavy parcel*. Discontinuity may also occur within a modifier: compare the continuous structure of *facilities comparable to ours* and the discontinuity in *comparable facilities to ours* (CGEL: 1348).

2.7.4 Multiple modification

Both premodification and postmodification can itself be very complex. Premodifiers can form chains, but there is usually a maximum of three or four premodifiers. Factors influencing the length and structure of premodification include the medium of language: longer chains can be found in written texts while they are less likely to be found in a conversation; or the register: for instance, scientific writing may contain long and complex premodification, such as in *Apollo Block II fuel cell voltage current VI **characteristics*** (CGEL: 1338).

Premodifying nouns can themselves be premodified by adjectives or nouns. The latter can again be premodified and can, in theory, form unlimited sequences: e.g. *overseas income tax office furniture* (CGEL: 1342). However, multiple premodification does not always occur in a clean linear sequence. Noun phrase structure can be fairly complicated and with its low degree of explicitness hearers/readers unacquainted with the context might face difficulties in comprehending it. For example, the following two phrases look superficially very similar differing in only one word: *the food price rise warning system* – *the voluntary price rise warning system*. The words *food* and *voluntary* occupy the same slot in the phrase, yet their subject of modification is not identical: *food* premodifies *price* but *voluntary* premodifies *system*. The respective noun phrases can be graphically illustrated as follows:

(45) the [[[food price] rise] [warning **system**]]

(46) the [voluntary [[price rise] [warning **system**]]] (CGEL: 1343)

Multiple premodification used in scientific writing may cause difficulties, especially for lay public. For example, the structure of *cerebral palsied children* is not **[cerebral [palsied children]]* but *[[[cerebral palsi]ed] children]* because the subject are children who suffer from cerebral palsy (CGEL: 1342-4).

A single head can also have more than one postmodifying elements, e.g. *the man in the corner talking to John*. The construction is usually asyndetic which might cause structural ambiguity between coordination of postmodifiers (ex. (47) below) and construction with hierarchical relations (48). However, there is usually little difference in meaning.

(47) [the **man** [in the corner (and) talking to John]]

(48) [[the **man** in the corner] talking to John] (CGEL: 1296-7)

On the other hand, a single modification can apply to more than one noun heads.

(49) [the [**man and woman**] [in [the corner]]] (CGEL: 1297)

Different types of multiple postmodification can then combine and result in such elaborate constructions as:

(50) [the [man and woman] [in [the corner [nearest the door]]] [talking to John]]
(CGEL: 1297)

Sometimes the correct ordering is essential for the message to be understood as intended. Compare *the man in black talking to the girl* and *the man talking to the girl in black* (CGEL: 1296-8).

Premodification can also apply to multiple heads: *the beautiful new table and chairs*. Due to reduced explicitness of premodification these constructions easily create ambiguity, especially if premodification applies to one head only. Thus in the sentence *He writes long papers and books* the structure suggests the adjective *long* premodifies both heads. To avoid ambiguity one can, for instance, reorder the sentence (*He writes books and long papers*) or insert separate determiners (*He writes some long papers and some books*) (CGEL: 1345-6).

2.7.4.1 Coordination

Not only heads but modifiers of a single noun phrase can also be coordinated: *They sell manual and electric typewriters*. Paraphrasing the sentence by shifting the coordination to the phrase level proves the existence of ellipsis: *They sell manual typewriters and electric typewriters*. In other cases, however, ellipsis is not allowed: *Spacious and well-furnished apartments to let* cannot usually be paraphrased as *Spacious apartments and well-furnished apartments to let* (CGEL: 957).

Coordinative *and* can have either combinatory or segregatory function. Combinatory use is illustrated by the second example above. It is connected to non-elliptical use and its conjoins (*spacious, well-furnished*) function in combination, i.e. they work semantically together with respect to the rest of the sentence. Segregatory use can be paraphrased by phrase/clause coordination, as illustrated in the paragraph above. CGEL suggests a test of segregatory coordination which allows the pronoun *both* to be inserted in front of the first conjoin: *They sell both manual and electric typewriters* (CGEL: 958).

This combinatory/segregatory distinction can create ambiguity in the coordination of modifiers. Unless the modifiers denote mutually exclusive properties, such as *old and new books* (segregatory), both meanings are possible:²⁴ *old and valuable books* can thus be interpreted as *old books and valuable books* (segregatory) or *books which are old and valuable* (combinatory). Quite naturally, a single countable head allows only combinatory interpretation: *He is a dishonest and lazy student*. The possibility of asyndetic coordination presents a test of combinatory meaning: *He is a dishonest, lazy student*. X **They sell manual, electric typewriters* (CGEL: 960-2).

2.7.4.2 Relative sequence of premodifiers

When there are more words preceding the head, it is usually their semantic properties that govern their mutual positioning. CGEL distinguishes four ‘zones’. Peripheral, non-gradable adjectives, in particular intensifiers (e.g. *complete, slight*), are put in the pre-central zone, right after the determinatives. Central zone contains the prototypical adjectives (e.g. *hungry, stupid*). They can be intensified (*a very cold day*) and compared (*It's colder than yesterday*) and occur also in predicative position (*Last summer was very cold*). They contain both non-derived as well as derived adjectives (deverbal: e.g. *interesting*, denominal: e.g. *rainy*). In case there are more than one central adjective, the sequence is as follows: non-derived + deverbal + denominal (*a tall attractive woman, a satisfied sleepy look*). Within the class of non-derived adjectives, those denoting size, length and height tend to go first: *long straight hair, tall angry man*. Emotive, evaluative or subjective adjectives tend to precede any other central adjective: *beautiful long hair*. Post-central zone is reserved for participles (e.g. *retired, sleeping*) and colour adjectives (e.g. *green*). Finally, the pre-head zone contains the least

²⁴ Exceptions to this rule are adjectives denoting colours which allow the combinatory meaning: *green and pink cushions*, i.e. cushions which are partly green and partly pink (CGEL: 960).

typical adjectives, i.e. denominal ones (e.g. *Austrian, statistical*). This is also where attributive nouns are placed (*a tourist attraction*). When more than one of the prehead class modifiers occur in a phrase, those denoting place and time tend to precede (*the annual linguistic meeting*) (CGEL: 437, 1338-40).

2.8 Noun phrase complexity according to Biber & Gray

The idea that the complexity of written academic English does not consist in the use of large number of clause elements realized by subordinate clauses but rather elaborated noun phrases with extensive modification was presented by Biber & Gray (2010). They distinguish adverbial and complement (i.e. nominal) clauses which realize clause elements (usually objects and adverbials, respectively) from relative clauses which function as a postmodification in noun phrases (ex. 53):

(51) I don't know how they do it.

(52) So she can blame someone else if it doesn't work.

(53) the quantity of waste that falls into this category... (Biber & Gray 2010: 5)

Other modifying elements considered in the article are attributive adjectives (ex. (54) below), premodifying nouns (55), postmodifying prepositional phrases (56) and postmodifying appositive noun phrases (57).

(54) unusual circumstances

(55) surface tension

(56) Experiments have been conducted to determine the effect of salt on the growth and development of paddy.

(57) In four cohorts (Athens, Keio, Mayo, and Florence), investigators stated that... (Biber & Gray 2010: 6)

Biber & Gray investigated a large corpus of academic texts of different registers and found out that subordinate clauses are much more common in conversation. On the other hand, academic writing is structurally 'compressed' and thus less explicit. This makes it very efficient for experienced readers, but may create difficulties for those who are not well-acquainted with texts of this kind. They claim that "phrasal (non-clausal) modifiers embedded in noun phrases are the major type of structural complexity found in academic writing" (Biber & Gray 2010: 3).

In his previous research based on corpus analysis Biber pointed to the fact that some dependent clause types tend to occur more frequently in speech than in writing, e.g. *wh*-clauses or *because*-clauses. A very detailed analysis is presented in LGSWE.

Surprisingly, conversation is much more structurally elaborated if we consider embedded dependent clauses as a measure. Compare the following two sentences:

(58) But I don't think [we would want [to have it [sound like [it's coming from us]]]].
(Biber & Gray 2010: 6)

(59) From the system perspective, these stages are marked by the appearance of new systematic mechanisms and corresponding levels of complexity. (Biber & Gray 2010: 7)

The first sentence, which was excerpted from a conversation, is relatively short and yet contains four embedded complement (nominal) clauses. On the contrary, the second sentence appears more elaborated yet it does not contain any dependent clause. The complexity has been achieved by extended use of prepositional phrases and complex noun phrases with nouns and adjectives functioning as pre-modifiers. It shows that sentences in academic prose tend to be very simple regarding their main clause syntax (Biber & Gray 2010: 7). By means of corpus research the authors challenge the traditional understanding of the words 'complex', 'elaborated' and 'explicit' with relation to academic prose. They claim it is complex and elaborated indeed, but due to extensive use of embedded noun phrases rather than subordination. The explicitness lies in the fact that the referents are specified. However, logical relations among the elements do not always have to be expressed (Biber & Gray 2010: 18).

2.9 Other authors

This section points out a few authors who dedicated part of their research to the investigation of noun phrase complexity and/or academic discourse.

The topic of noun phrase complexity has been investigated by Ondřej Slóvik (2010). In his BA thesis he compared noun phrase structure in written and spoken academic monologues. His research showed that noun phrases occur with similar frequency in both types of discourse. However, it proved there are differences with regards to their structure. Noun phrases in written texts tend to be longer in terms of number of words they contain. Also

complex NPs are more often found in the pre-verbal position in written rather than in spoken form which supports the idea that written language can be less explicit and more complicated since it can be reread which is not the case with speech. (Słówik 2010: 44-5)

As mentioned above, LGSWE presents the results of a corpus-based analysis which show higher proportion of complex noun phrases (consisting of at least four words) in academic writing and news reporting than in other registers (i.e. fiction and conversation). They claim language of these two registers is lexically denser since they usually deal with complex subject matter and carry high information load (LGSWE: 117).

Fang et al. (2006) investigated the language of academic texts used at elementary and secondary schools focusing on the role of nouns and noun phrases, and the difficulties they may present for the intended readers, i.e. the students of different grades. Their analysis of three types of texts (literature, science and history) follows Halliday's framework of systemic functional linguistics. They support the idea that academic registers differ with respect to each discipline and its specific purposes. They also identify the crucial role of noun phrases in academic discourse: "a powerful resource for making meaning, nominal elements can pack a lot of information into a clause through a variety of pre- and postmodifying elements, including adjectives, adverbs, *-ed/-ing* participles, prepositional phrases, and relative clauses. The use of embedded clauses and other means of expanding nominal groups is characteristic of the registers of advanced literacy" (Fang et al. 2006: 253). They stress the importance of nominalisation as a tool of information condensation, which brings about a higher degree of abstraction and, inevitably, also ambiguity. They suggest several reading and writing strategies which should help students better understand and produce academic texts.

Quite interesting is the article by Córtez & Verdejo (2006) who look at the communicative function of complex noun phrases in scientific texts and study the way they are used to describe new concepts. From the field of psycholinguistic research, the paper by Gordon et al. (2004) examines by a series of experiments the noun phrase complexity and its relation to the use of working memory in syntactical processing.

Šaldová (2005) focuses on the distribution of finite relative clauses and non-finite participial clauses as two types of postmodification in fiction and academic prose. She observes these postmodifiers are generally viewed as having very similar functions, the difference being in the degree of explicitness they exhibit. She proves that academic texts contain more heavily

postmodified noun phrases than fiction. Among other things, she also points to the finding that relative clauses tend to postmodify noun phrases in the post-verbal position. In the pre-verbal position, non-finite participial clauses prevail as means of postmodification.

The last author we want to mention in this chapter has done extensive research on academic discourse. Ken Hyland sees academic writing as extremely heterogeneous. He claims that “[...] academic writing is not a unitary or stable object. Although certain features of writing that we commonly recognize as ‘academic’ may be widespread, writers act as members of groups which see the world in different ways and which change over time” (Hyland 2004: xi).

3 Material and method

In order to explore noun phrase complexity of academic writing the present thesis employs a corpus-based approach. Since one of the goals is to determine whether the type of academic discipline affects the noun phrase structure, the study material was intentionally selected from two different fields: medicine and sociology. Medicine represents the so called ‘hard’ sciences. Professional medical texts are usually highly technical and abound in specific terminology with frequent use of acronyms and foreign words, usually of Latin origin. Sociology, on the other hand, is representative of ‘soft’ sciences²⁵. Being part of academic prose, sociological texts share some common features with medicine, such as involvement of terminology. However, in contrast to medicine, it appears to be less technical and more narrative.

For the purpose of the present study, two articles from each discipline were sampled from professional British and American open access journals. The journals are all available online and publish original peer-reviewed research articles. The medical journals include *Alzheimer’s Research & Therapy* (MED1) and *Annals of Surgical Innovation and Research* (MED2). Sociology is represented by *Advances in Social Work* (SOC1) and *Journal of Rural Social Sciences* (SOC2). The examples for the analysis were excerpted from the section called Discussion, which is located in the second half of the articles. The initial chapters of academic prose such as Introduction, Theoretical Background or Methods may follow some universal stylistic principles, for example in summarizing existing knowledge of the subject, listing other authors or presenting methodology. These principles are probably similar in all disciplines. We presume the section discussing results provides the author with the largest amount of freedom and may thus best display discipline-specific features. The analysis will show if this hypothesis is correct.

For a noun phrase to qualify as a valid example, it must fulfil three conditions:²⁶

1. It is a direct realization of a clause element or it forms a prepositional complement of a prepositional phrase which itself realizes the clause element. Embedded noun phrases

²⁵ The division of sciences into ‘soft’ and ‘hard’ is a traditional one. The term ‘hard knowledge’ corresponds to the natural sciences and engineering, while ‘soft disciplines’ are the social sciences or the humanities (Hyland 2004: 29).

²⁶ The conditions were adopted from Słówik (2010: 25-6).

are not viewed as individual examples and are only discussed in terms of their modifying function. For instance, the sentence *Many of the families in our study lived in several predominately African American neighborhoods where it is difficult to find sufficient affordable housing* (SOC1-20) yielded two examples: a noun phrase functioning as a subject and headed by the plural noun *families* (*Many of the families in our study*) and a very complex noun phrase headed by the plural noun *neighborhoods*, containing both pre- and postmodification and representing the complement of the prepositional phrase introduced by the preposition *in* and functioning as an adverbial of place in the clause (*several predominately African American neighborhoods where it is difficult to find sufficient affordable housing*). The noun phrase *sufficient affordable housing* is embedded in another noun phrase and is thus not considered a separate example.

2. It is headed by a common noun. Phrases whose head is a proper noun or a member of another word class (typically a pronoun) are not subject of the analysis but are noted together with the number of embedded and simple noun phrases (see the next paragraph) and used as a measure of the complex noun phrase density in the text.
3. It is a complex noun phrase, i.e. except for the head and the determiner(s) it also contains modifiers. The following sentence contains examples of a complex phrase (in bold), a simple phrase (underlined) and a phrase with a pronoun as its head (double underlining): *We* encountered *failure* in two cases where ***oesophageal shortening had to be treated by a Leigh Collis type gastroplasty*** (MED2-6).

Each discipline is represented by a 100 (50 from each article) complex noun phrases headed by a common noun. The list of examples is attached in the Appendix II. Each example has been assigned a label indicating the discipline and the serial number of text and sentence. Since it is often necessary to refer to an individual noun phrase, the label can also contain the serial number of a noun phrase: for example, the label SOC1-8 refers to the eighth sentence from the first sociological article and the label MED2-15-34 indicates the 34th complex noun phrase (out of 50) which can be found in the 15th sentence of the second medical text.

In the first step, the texts were evaluated with respect to the total number of words and number of sentences needed for the excerption of 50 common-noun headed complex noun

phrases²⁷ and we looked at the total number of words constituting noun phrases in the articles. The number of simple noun phrases and noun phrases not headed by a common noun was used to assess their ratio to complex noun phrases. Marginally we also analysed the simple noun phrases to see if there are any significant differences in their form and distribution across the texts. In the next step, all 200 complex noun phrases were further analysed. Each example was characterized with respect to the clause element it realizes, the type of determination and the presence of modification.

Special attention was then given to modification: in each case it was determined whether the noun phrase contains premodification, postmodification or both. Each occurrence of modification was analysed with respect to its form and complexity. The degree of complexity was investigated with respect to the number of modifying elements as well as the levels of embedding.

Regarding premodification, the examples were at first divided into two basic groups: simple and complex. Simple premodification contains elements which are directly dependent on the head. There can be a single premodifying element, as in *the research literature* (SOC1-24-47), or more, as in *patient and caregiver **quality** of life* (MED2-2-7). Figure 1 illustrates simple premodification graphically:

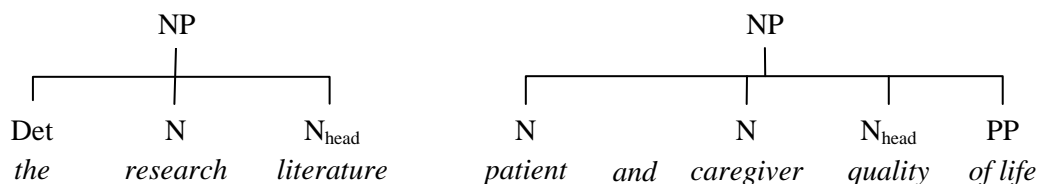


Figure 1: Complex noun phrases with simple premodification

Complex premodification has a more complicated dependency structure with multiple premodifiers occurring on more levels. For example, *high residential mobility* (SOC1-3-6) contains two levels of premodification and *hiatal and lower mediastinal oesophageal dissection* (MED2-2-5) three. See Figure 2 below.

²⁷ In both medical texts the last sentence contains more complex noun phrases than needed. For example, in the sentence *In a separate paper, we demonstrated that persistent anti-dementia drug treatment impacts observed progression over time, an observation which is consistent with a recent analysis using a very different approach* (MED1-16) the first complex noun phrase *a separate paper* is also the 50th example from MED1. The last sentences in MED1 and MED2 are not included in the statistics so that they do not distort the results.

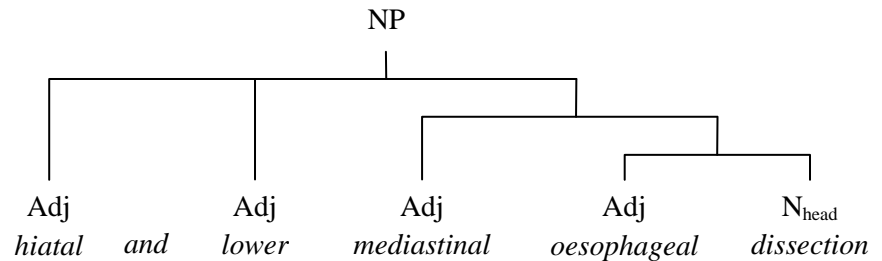
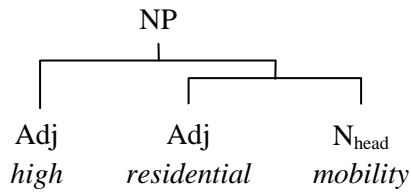


Figure 2: Complex noun phrases with complex premodification

In the next step, the form of premodification was analysed. In complex premodification each example was assigned a premodification pattern. For instance, the above mentioned example, *high residential mobility* has the pattern **Adj>[Adj>head]** which means the head noun *mobility* is premodified by the adjective *residential* and the whole expression is then premodified by the adjective *high*. Another example has a structure which looks superficially similar, but a careful analysis discovers a different pattern: in *high mobility students* (SOC1-4-8) the adjective *high* does not premodify the following two words, as in the preceding example; it premodifies the premodifying noun *mobility*. The whole unit then premodifies the head noun *students*. The pattern is thus **[Adj>N]>head**.

The process of analysing postmodification was similar. In the first step, the noun phrases were divided into groups according to the complexity of postmodification. Simple postmodification contains only those postmodifiers that are directly dependent on the head. For instance, both postmodifying prepositional phrases in *the cost of renting* (SOC1-17-34) and in *ischaemic perforation of the strangulated gastric greater curvature* (MED2-13-30) are considered simple (see Figure 3). The fact that the prepositional phrase in the second example contains complex premodification of the noun functioning as the prepositional complement was not taken into account for the purposes of the present analysis.

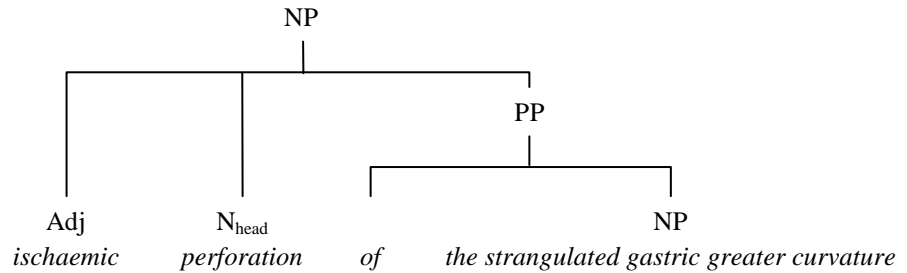
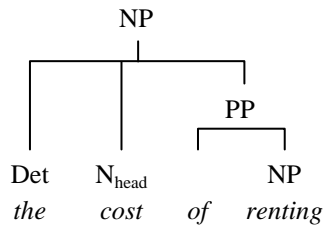


Figure 3: Complex noun phrases with simple postmodification

Complex noun phrases containing more postmodifying elements which are, however, on the same level are also ranked among simple postmodification. For instance, in *the relationship found here between food insecurity and mental health* (SOC2-19-41) there are two postmodifiers directly dependent on the head *relationship*: the participial clause *found here* and the prepositional phrase *between food insecurity and mental health* which contains two coordinated noun phrases functioning as the prepositional complement.

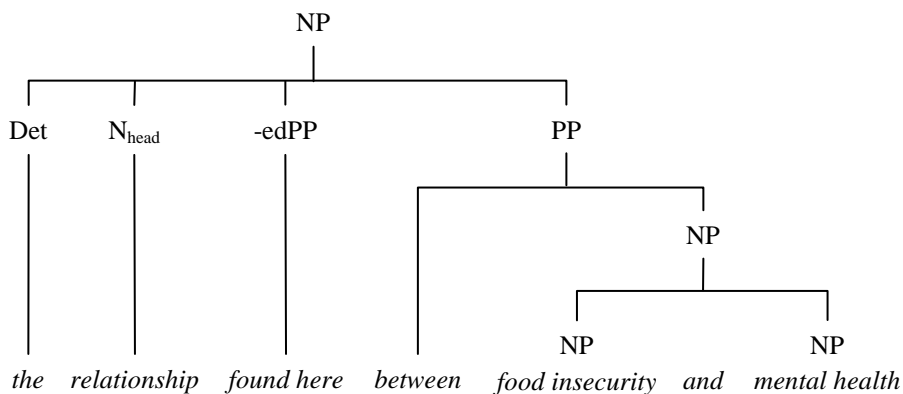


Figure 4: Simple postmodification with two postmodifying elements

Complex postmodification contains multiple postmodifying structures on various levels of embedding. For example, the noun phrase *CPS investigations into allegations of abuse and*

neglect of children and for reported incidents of domestic violence (SOC1-23-45) contains five postmodifying prepositional phrases on three levels: the head noun *investigations* is postmodified by two coordinated prepositional phrases. The first prepositional phrase contains one embedded prepositional phrase which contains another embedded prepositional phrase. The second coordinated prepositional phrase contains only one embedded prepositional phrase. See Figure 5 below.

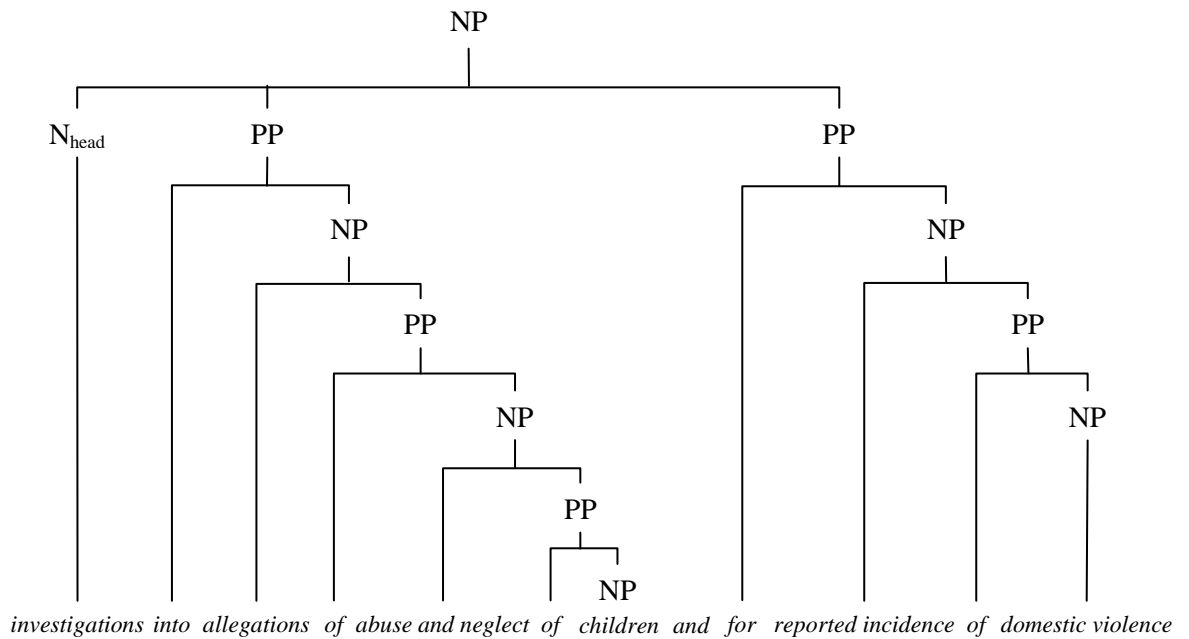


Figure 5: Complex noun phrase with complex postmodification

In the next step, the type of individual postmodifiers was identified with special attention paid to the postmodifier immediately following the head noun. The position right after the head is referred to as ‘Position 1’ in the text.²⁸

In each step, the results for both disciplines were compared.

²⁸ The term ‘Position 1’ has been adopted from LGSWE (p. 642).

4 Results and discussion

Let us open this section with the presentation of some general quantitative data. In order to excerpt 50 common-noun headed complex noun phrases from each of the four articles we needed 49 sentences in the sociological texts containing 1,111 words and 38 sentences in the medical texts containing 968²⁹ words. The average length of a sentence in sociology is 22.7 words. In medicine it is slightly more: 26.3 words per sentence. The longest sentence in medical articles contains 57 words (MED1-9), in sociology it is 49 (SOC1-8). It is worth mentioning that no sentence is shorter than 7 words in the entire corpus.

In addition to the 100 complex noun phrases, the sociological texts contain 41 simple noun phrases³⁰ and medical texts 48. The average length of these phrases is almost the same in both types of discipline, approximately 1.5 words. The longest simple noun phrase in both disciplines has 4 words, for example *most of the time* (SOC1-9) which contains a complex determiner composed of a quantifier *most of* and the definite article. The two sentences with the highest number of simple noun phrases (5) are both found in MED1. One example is MED1-9:

- (1) Intermediate progressors (46 % of the patients) also maintained better cognition (ADAScog and VSAT) and function (IADL) compared to fast progressors, but they were less differentiated at baseline and sped up over time on a global measure, the CDR sum of the boxes score, and they were not differentiated at any time on the basic ADL (PSMS).³¹

Sentences which do not contain any simple noun phrase can be found in all texts. However, only one sentence from the total of 87 lacks a complex noun phrase:

²⁹ This number includes all words from the last sentence in MED1 as well as MED2. Since not all complex noun phrases from these two sentences were excerpted (see Chapter 3 note 27), we include only 36 sentences containing 946 words for the analysis of average sentence length. This is also reflected in Table 1 below.

³⁰ For the purposes of this study and for the sake of simplicity the term ‘simple noun phrase’ will from now on refer to both simple noun phrases (i.e. common-noun headed noun phrases without modification) and noun phrases headed by proper nouns or words belonging to other word classes.

³¹ This sentence also contains numerous examples of apposition and acronyms. In the present thesis, apposition is ranked among postmodification and acronyms are treated as a single word.

- (2) The clinician could predict that a patient would generally progress slowly, moderately, or rapidly over several years. (MED1-14)

Looking at noun phrases in general, there are 141 simple and complex noun phrases with the word count of 849 in sociology and 148 noun phrases containing 708 words in medicine. Approximately three quarters of the texts is thus constituted by noun phrases. This finding points to the importance of a noun phrase in the English language. Another finding, that almost 70% of all words in the texts are part of a complex noun phrase, supports the hypothesis that the complexity of academic writing consists in extensive use of modification within the noun phrase structure rather than in the use of clause elements realized by dependent clauses.

The average length of a complex noun phrase in medicine is 6.3 words. In sociology it is 7.9 words. Considering both simple and complex noun phrases the numbers change to 4.8 and 6.0 respectively. The longest complex noun phrase has 32 words and contains a heavy postmodification realized by a relative clause:

- (3) a number of **problems** that emanate from both the immediate adjustments that children have to make when changing residences and schools, and the disruptive impact that mobility has on instruction and learning (SOC1-6-12)

The longest complex noun phrase in medical excerpts has “only” 20 words:

- (4) These **measures** of cognition (ADAScog), attention and concentration (VSAT), global performance (CDR-SB), and activities of daily living (PSMS and IADL) (MED1-2-5)

It is interesting that even though it has a long postmodification realized by a prepositional phrase, the phrase functions as the subject of the clause and stands thus in the preverbal position. The highest number of complex noun phrases in one sentence is 5 and can be found in both disciplines.

The data discussed so far are summarized in Table 1 below. So far, no significant differences between the two types of academic disciplines have been detected.

	SOC1	SOC2	SOC	MED1	MED2	MED	TOTAL
Sentences	25.0	24.0	49.0	15.0	21.0	36.0	85.0
WORDS	565.0	546.0	1111.0	474.0	472.0	946.0	2057.0
Average length (in words)	22.6	22.8	22.7	31.6	22.5	26.3	24.2
Complex NPs	50.0	50.0	100.0	50.0	50.0	100.0	200.0
Words	409.0	379.0	788.0	269.0	361.0	630.0	1418.0
Average length (in words)	8.2	7.6	7.9	5.4	7.2	6.3	7.1
Complex NPs (in %) ³²	72.4	69.4	70.9	56.1	74.8	65.4	68.4
Simple NPs	19.0	22.0	41.0	28.0	20.0	48.0	89.0
Words	28.0	33.0	61.0	44.0	34.0	78.0	139.0
Average length (in words)	1.5	1.5	1.5	1.6	1.7	1.6	1.6
Simple NPs (in %)	5.0	6.0	5.5	9.3	6.8	8.0	6.7
Total NPs	69.0	72.0	141.0	78.0	70.0	148.0	289.0
Words	437.0	412.0	849.0	313.0	395.0	708.0	1557.0
Average length (in words)	6.3	5.7	6.0	4.0	5.6	4.8	5.4
Total NPs (in %)	77.4	75.5	76.4	65.4	81.6	73.5	75.1

Table 1: The corpus – overview of general quantitative data

4.1 Simple noun phrases

Although our main focus is on complex noun phrases, let us briefly look at simple noun phrases as well. Both types of discipline show similar representation of different kinds of simple noun phrases. The majority (approximately three quarters) comprise common-noun headed noun phrases without any modification, such as *many families* (SOC1-21) or *herniation* (MED2-12). Many of these simple noun phrases refer to the study/paper as such, especially in SOC2: *these results* (SOC2-8, 23), *this study* (SOC2-5, 9, 10), *the findings* (SOC2-12, 16). On the other hand, in medicine they often denote the participants, such as *clinicians* (MED1-13), *a patient* (MED1-14), *all our patients* (MED2-14), *such patients* (MED2-24). There is only one instance of coordination of heads: *both abilities and survival* (MED1-12).

The remaining simple noun phrases are pronouns; mainly anaphoric *they* (e.g. MED1-7 or SOC1-19) and authorial *we* (e.g. MED2-6 or SOC1-12). The author of SOC2 uses the personal pronoun *I* to refer to himself (SOC2-18, 23).³³

³² These numbers indicate the proportion of complex noun phrases in the corpus, i.e. what is the percentage of words belonging to complex noun phrases in the corpus. In MED, only complete sentences are included in the statistics (see note 29). This applies for Simple NPs and Total NPs as well.

Not a single instance of a simple noun phrase headed by a proper noun has been detected in the whole corpus. It can be assumed that proper nouns occur mainly in the theoretical part of articles where authors summarize the existing knowledge of the subject and refer to other authors and researchers.

	SOC1		SOC2		SOC		MED1		MED2		MED		TOTAL	
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
N_c	13	68.4	18	81.8	31	75.6	23	82.1	14	70.0	37	77.1	68	76.4
P	6	31.6	4	18.2	10	24.4	5	17.9	6	30.0	11	22.9	21	23.6
N_p	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Σ	19	100.0	22	100.0	41	100.0	28	100.0	20	100.0	48	100.0	89	100.0

Table 2: Simple noun phrases – form and distribution

4.2 Complex noun phrases

4.2.1 Function

Complex noun phrases excerpted from the corpus are realizations of the following clause elements: subject, object, subject complement and prepositional complement. Noun phrases in subject and object positions comprise 75% of all noun phrases (83% in SOC and 66% in MED). The difference between the two disciplines is caused by a relatively high proportion of noun phrases functioning as a prepositional complement in medical articles. In MED2 they are even more frequent than subject or object representations (see Table 3 below). Most of the prepositional phrases function as an adverbial:

- (5) One patient had presented after ingestion of more than a litre of beer, though we routinely advise all our patients to avoid carbonated drinks for six weeks after surgery. (MED2-14)

³³ Biber & Gray (2010: 17) notice the decline in the use of *I* in research articles in the second half of the 20th century. However, the opinions on the authorial *I* and *we* change quickly nowadays.

	SOC1		SOC2		SOC		MED1		MED2		MED		TOTAL	
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
O	18	36	28	56	46	46	19	38	14	28	33	33	79	39.5
S	19	38	18	36	37	37	19	38	14	28	33	33	70	35.0
C_p	8	16	3	6	11	11	12	24	16	32	28	28	39	19.5
C_s	5	10	1	2	6	6	0	0	6	12	6	6	12	6.0
Σ	50	100	50	100	100	100	50	100	50	100	100	100	200	100.0

Table 3: Function of complex noun phrases

37% of all complex noun phrases stand in the pre-verbal position. The results are almost identical in both disciplines: 38% in sociology and 36% in medicine. Complex noun phrases in the pre-verbal position usually function as a subject; occasionally, they form the prepositional complement in a pre-posed prepositional phrase:

- (6) In most patients with large hiatus hernias, adequate intra-abdominal length can be achieved by a meticulous and higher mediastinal dissection. (MED2-5)

The complexity of the noun phrases in the pre-verbal position usually consists in premodification, or postmodification by a prepositional phrase(s).

- (7) The poorer school performance of mobile students may be related to... (SOC1-11)
 (8) Accurate intraoperative measurements of the oesophageal intra-abdominal length after full mobilisation were made. (MED2-7)

Although the most complex noun phrases containing heavy postmodification occur mainly in the post-verbal position, example (8) shows that the noun phrases in the pre-verbal position can also have a very complex structure: the head noun *measurements* is premodified by two adjectives and postmodified by two prepositional phrases, both of which contain a complex noun phrase functioning as a prepositional complement. Such complex constructions occurring in the pre-verbal position can cause difficulties in understanding the meaning of a sentence, especially to inexperienced readers.

In comparison to complex noun phrases, the proportion of simple noun phrases occurring in the pre-verbal position to those found in post-verbal position is reversed: 66% precede the verb (73% in sociology, 60% in medicine). Considering the noun phrases functioning as subjects in the corpus, 42% are simple noun phrases. The results are again very similar in both disciplines: 41% in sociology and 43% in medicine. The tendency to follow the principle of end weight thus seems to be universal.

4.2.2 Determination

As mentioned above, determination is a relation between constituents typical of noun phrases. Although it does not contribute to their complexity, let us briefly discuss some of the similarities and differences between the two types of disciplines and look at some interesting examples.

Both disciplines display a high rate of generic reference. In sociology, 38% of complex noun phrases denote general concepts. In medicine it is 39%. Zero article is the most common means of expressing this type of reference in all texts:

(9) For example, while contending that food **insecurity** predisposes individuals to poor **health**, the reverse could also be true. (SOC2-17)

(10) Wrap **migration** is synonymous with transdiaphragmatic **herniation**. (MED2-9)

As Table 4 below shows, almost a half of the total number of complex noun phrases has a zero article. In both studied disciplines this type of determiner clearly constitutes the majority, but it is by 16% more frequent in medicine (56% in medicine as opposed to 40% in sociology). In medicine it is by far the most frequent type of determiner, while in sociology the zero article competes with the definite article. It is worth noting that in MED2 more than a half (16) of the head nouns with zero article are deverbal nouns formed by the suffix –TION: e.g. *herniation, ingestion, migration, mobilization* and *perforation*.

Regarding other types of determinative elements, there are slight differences between the two disciplines. The second most frequent determiner in the whole corpus is the definite article *the* which, as mentioned above, rivals the zero article in sociology, but in medicine occupies the third place after the indefinite article *a/an*. This, in turn, ranks fourth in sociology after determination by different types of quantifiers and numerals. Quantifiers comprise quite a heterogeneous group of expressions. The corpus contains instances of quantifiers specifying a large quantity (*many, most of the*) and small or moderate quantity (*several, a number of, fewer*)³⁴. The numerals identified in the articles include cardinals (*two, six*) as well as ordinals (*the first*) and percentages (*nearly 36% of*). Here are some examples:

³⁴ The classification of quantifiers has been adopted from LGSWE (pp. 275-7).

- (11) most patients with large hiatus hernias (MED2-5-11)
- (12) a number of problems that emanate from both the immediate adjustments that children have to make when changing residences and schools, and the disruptive impact that mobility has on instruction and learning (SOC1-6-12)
- (13) six weeks after surgery (MED2-14-33)
- (14) the first empirical verification of this relationship demonstrating that maltreating families had high rates of residential mobility (SOC1-25-50)
- (15) nearly 36% of female-headed households in the Alabama Black Belt (SOC2-2-5)

Example (15) illustrates modification of the determiner by an adverb; another example is *only*³⁵ in *only two patients* (MED2-12-27). Most of the quantifiers and numerals were found in SOC1. Medical texts contained only numerals, with the only exception given in the example (11) above. Greater variety of quantifiers and their higher use in sociology may reflect the need to express generalization, while numerals in medicine can express the urge of natural sciences to show high degree of accuracy in the presentation of results.

Demonstrative and possessive pronouns, and the genitive were quite rare in our sample:

- (16) these residential changes (SOC1-13-25)
- (17) our knowledge of this relationship (SOC2-9-16)
- (18) the patient's age and life expectancy at diagnosis (MED1-11-38)

The overview of determiners is provided in the table below.

	SOC1		SOC2		SOC		MED1		MED2		MED		TOTAL	
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
Zero article	18	36	22	44	40	40	25	50	31	62	56	56	96	48.0
Definite a.	13	26	19	38	32	32	7	14	7	14	14	14	46	23.0
Indefinite a.	7	14	3	6	10	10	13	26	7	14	20	20	30	15.0
Quantifiers	10	20	3	6	13	13	1	2	5	10	6	6	19	9.5
Demonstrative	2	4	2	4	4	4	2	4	0	0	2	2	6	3.0
Possessive	0	0	1	2	1	1	1	2	0	0	1	1	2	1.0
Genitive	0	0	0	0	0	0	1	2	0	0	1	1	1	0.5
Σ	50	100	50	100	100	100	50	100	50	100	100	100	200	100.0

Table 4: Types of determinative elements in sociological and medical research articles

³⁵ *Only* in this example can also be analysed as a focusing subjunct (CGEL: 604-8). In this case, it modifies the whole noun phrase.

4.2.3 Modification

At the beginning of the thesis we defined complex noun phrases as those which are modified by a premodifier or a postmodifier, or both. The first paragraph of this section provides a general overview of the modification patterns in the corpus and is followed by a detailed discussion of premodification and postmodification in both disciplines.

Generally, complex noun phrases containing only premodification represent the largest number of all studied examples in the corpus, comprising 37% (see Table 5 below). Phrases with only postmodification and phrases combining both types of modification are represented by a similar number of examples. With regards to the two disciplines, there seem to be certain differences. The largest number (42%) of phrases in medicine contain only premodification. In sociology, on the other hand, it is postmodification that is the most frequent (39%) type of modification. The most complex noun phrases, i.e. those combining pre- and postmodification are the least frequent (29%) in sociology; in medicine they occupy the second place (32%).

	SOC1		SOC2		SOC		MED1		MED2		MED		TOTAL	
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
Premodification	12	24	20	40	32	32	26	52	16	32	42	42	74	37.0
Postmodification	20	40	19	38	39	39	7	14	19	38	26	26	65	32.5
Both	18	36	11	22	29	29	17	34	15	30	32	32	61	30.5
Σ	50	100	50	100	100	100	50	100	50	100	100	100	200	100.0

Table 5: Overall distribution of modification

4.2.3.1 Premodification

On the whole, 67.5% of the excerpted complex noun phrases contain some premodification. It is more frequent in medicine where almost three quarters (74%) of the example noun phrases are premodified. In sociology it is 61%. Regarding the complexity of premodification, both disciplines display very similar results, which are summarized in Table 6 below:

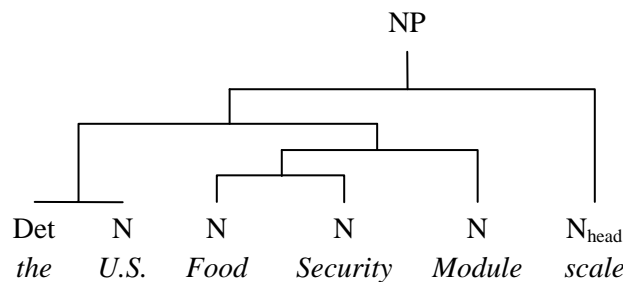
	SOC1		SOC2		SOC		MED1		MED2		MED		TOTAL	
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
Simple	20	66.7	23	74.2	43	70.5	33	76.7	17	54.8	50	67.6	93	68.9
2 levels	7	23.3	6	19.4	13	21.3	9	20.9	13	41.9	22	29.7	35	25.9
3 levels	3	10.0	1	3.2	4	6.6	1	2.3	1	3.2	2	2.7	6	4.4
4 levels	0	0.0	1	3.2	1	1.6	0	0.0	0	0.0	0	0.0	1	0.7
Σ	30	100.0	31	100.0	61	100.0	43	100.0	31	100.0	74	100.0	135	100.0

Table 6: Complexity of premodification

In both disciplines, more than two thirds comprise simple premodifiers. Most of them contain a single premodifying element, but there are a few cases of coordinated premodifiers. One example was found in sociology: *academic and behavioral problems in elementary school children* (SOC1-3-7). In medicine there are three occurrences: for example *slow and fast progressors* (MED1-11-36) or *patient and caregiver quality of life* (MED1-2-7). In all these examples the coordination of premodifiers is of the segregatory type.

Regarding complex premodification, the majority (83%) consists of two levels. In medicine, two-level premodification represents 91.7% of all complex premodifiers. In sociology this number is smaller by almost 20% (two-level premodification represents 72.2%). The reason for this discrepancy is in the higher number of three- and four-level premodifiers in sociological articles. In fact, the only instance of four-level premodification identified in the whole corpus can be found in sociology: *the U.S. Food Security Module scale* (SOC2-10-20). The dependency structure in multi-level premodifiers can sometimes be challenging to decode, especially when they consist of nouns only. Such complex noun phrases can be ambiguous and may cause difficulties to inexperienced readers or those without the knowledge of the context and topic. Since *food security* is a fixed expression, we analysed the structure as follows:

[[the U.S. [[Food Security] Module]] scale]



Let us now turn to the form of premodification. Concerning simple premodification, the analysis proved that adjectives are the most frequent type of premodifier (ex. (19) below): in both disciplines they constitute more than a half of all simple premodifiers. The biggest variance among medicine and sociology was identified in premodification by nouns (ex. (20)). Although it ranks second in both disciplines, it is by more than 12% more frequent in sociology than in medicine. Both disciplines also include examples of premodification by both types of participle (exx. (21) and (22)). In addition, sociology contains the only example

of premodifying prepositional phrase (ex. (23)), which occurs very rarely in this position. The following examples illustrate the individual types of premodification:

- (19) transdiaphragmatic **herniation** of the wrap (MED2-8-17)
- (20) food **insecurity** (SOC2-2-4)
- (21) a standardized **approach** to estimating duration (MED1-13-45)
- (22) longstanding **herniation** with chronic post-operative reflux or retro-sternal pain symptoms (MED2-10-23)
- (23) an at-risk **population** who are likely to have academic and behavioral problems in school (SOC1-1-3)

Notice the hyphenation within the prepositional phrase in (23), which is a common feature of phrases or clauses functioning as premodifiers. The distribution of individual types of simple premodification is summarized in Table 7 below.

	SOC1		SOC2		SOC		MED1		MED2		MED		TOTAL	
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
Adj	10	50.0	14	60.9	24	55.8	24	72.7	9	52.9	33	66.0	57	61.3
N	7	35.0	7	30.4	14	32.6	7	21.2	3	17.6	10	20.0	24	25.8
edPP	1	5.0	2	8.7	3	7.0	1	3.0	4	23.5	5	10.0	8	8.6
ingPP	1	5.0	0	0.0	1	2.3	1	3.0	1	5.9	2	4.0	3	3.2
PP	1	5.0	0	0.0	1	2.3	0	0.0	0	0.0	0	0.0	1	1.1
Σ	20	100.0	23	100.0	43	100.0	33	100.0	17	100.0	50	100.0	93	100.0

Table 7: Form and distribution of simple premodification

The analysis of complex premodification shows it can be extremely variable. We identified 19 different patterns, a lot of them occurring only once. Their list together with examples is given in Table 11 in Appendix I at the end of the thesis. Three types of pattern are worth mentioning, all of them can be found in both disciplines. In pattern **Adj>[N>head]** a noun premodifies the head and the pair is then premodified by an adjective: e.g. *acute wrap migration* (MED2-12-28) or *the poorer school performance* (SOC1-6-11).³⁶ It appears in all articles and with 9 occurrences constitutes almost a quarter of all complex premodifiers. The pattern **Adj>[Adj>head]** occurs with same frequency (9 occurrences). It has the same structure but there is a premodifying adjective instead of a noun: e.g. *short lateral moves*

³⁶ Examples following this pattern may also be analysed as a compound noun (*wrap migration, school performance*) premodified by an adjective. The boundary between fixed expressions and compound nouns is not always very clear.

(SOC1-13-26) or *posterior crural repair* (MED2-19-44). With 4 occurrences, the pattern [Adj>N]>head is the third most common. It contains a nominal premodifier which is itself premodified by an adjective: e.g. *those elementary school students* (SOC1-1-2) or *long duration reliability* (MED1-11-37). All instances of complex premodification contain at least one adjective or noun.

4.2.3.2 Postmodification

63% of all excerpted complex noun phrases contain postmodification. It is by 10% more frequent in sociology (68%) than in medicine (58%). Regarding the complexity of postmodification, the analysis shows that almost three quarters of all the noun phrases contain simple postmodification, i.e. postmodification formed by a single postmodifier or two postmodifiers on the same level. The reason for such a high rate of simple postmodification is the extremely frequent use of postmodifying prepositional phrases (see the discussion of the types of postmodification below). Within the category of simple postmodification there are only four noun phrases with two postmodifiers, most of them in sociology:

- (24) a major **stressor** for children that probably presents more challenges and needed adjustments for them than it does for adults (SOC1-8-14)
- (25) many **challenges** for teachers and administrators related to enrollment and attrition (SOC1-11-22)
- (26) the **relationship** found here between food insecurity and mental health (SOC2-19-41)
- (27) the **strategies** we employed to reduce this complication (MED2-18-39)

The head in (24) is postmodified by a prepositional phrase and a relative clause. In (25) the postmodification contains a prepositional phrase and a participial clause, in (26) it is a participial clause and a prepositional phrase and in (27) a relative clause and an infinitive clause.

Within the group of complex postmodification, almost 72% of the examples contain two-level postmodification (exx. (28) and (29) below). This tendency is shared by both disciplines, but it is more prominent in medicine, where two-level postmodification represents 80%. In sociology it is almost 65%. Sociology, on the other hand, contains twice as many occurrences of three-level postmodification than medicine (exx. (30) and (31)).

- (28) the true **nature** of the relationships found in this rural sample (SOC2-20-43)
- (29) **performance** of basic ADL (PSMS) (MED1-7-23)
- (30) the **brunt** of the “shelter-poverty” crisis in America that has been created by a serious decline in available low-income housing (SOC1-19-38)³⁷
- (31) an increased **incidence** of wrap migration following laparoscopic repair of the hiatus rather than open repair (MED2-15-34)

In (28) the head *nature* is postmodified by a prepositional phrase which in turn contains a postmodifying participial clause. The head in (29) is also postmodified by a prepositional phrase but this time it contains an apposition functioning as a postmodification. The head noun of the complex noun phrase in (30) is postmodified by a prepositional phrase whose noun-phrase head *crisis* is postmodified by a relative clause within which there is a prepositional phrase postmodifying the noun *decline* embedded. The head *incidence* in the example (31) is modified by a prepositional phrase *of wrap migration*. The whole expression is then postmodified a participial clause which contains a postmodifying prepositional phrase *of the hiatus*.

The highest number of levels we identified is three. Regarding the number of postmodifiers, each discipline contains one noun phrase with more than three postmodifying elements:

- (32) CPS **investigations** into allegations of abuse and neglect of children and for reported incidents of domestic violence (SOC1-23-45)
- (33) these **measures** of cognition (ADAScog), attention and concentration (VSAT), global performance (CDR-SB), and activities of daily living (PSMS and IADL) (MED1-2-5)

The structure of (32) is analysed in chapter 3. In example (33) the head noun *measures* is postmodified by a very complex prepositional phrase consisting of the preposition *of* and a chain of coordinated noun phrases (*cognition, attention and concentration, global performance, and activities of daily living*). Each of these noun phrases is postmodified by an apposition given in parentheses. In addition, the noun *activities* is modified by a prepositional phrase of its own.

³⁷ The structure of finite and non-finite postmodifying clauses is not further analysed unless they contain a noun phrase which is itself postmodified, such as *a serious decline in available low-income housing* in this example.

	SOC1		SOC2		SOC		MED1		MED2		MED		TOTAL	
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
Simple	29	76.3	22	73.3	51	75.0	19	79.2	24	70.6	43	74.1	94	74.6
2 levels	7	18.4	4	13.3	11	16.2	4	16.7	8	23.5	12	20.7	23	18.3
3 levels	2	5.3	4	13.3	6	8.8	1	4.2	2	5.9	3	5.2	9	7.1
Σ	38	100.0	30	100.0	68	100.0	24	100.0	34	100.0	58	100.0	126	100.0

Table 8: Distribution of simple and complex postmodification

Let us now discuss the types of postmodification found in the corpus. The analysis determined the following types of constructions to occur in postmodifying function (in order of frequency): prepositional phrases, relative clauses, *-ed* participial clauses, apposition, *-ing* participial clauses, infinitive clauses and a nominal content clause. We will now examine the postmodifiers occurring in Position 1, i.e. those that immediately follow the head noun. Their frequency and distribution are summarized in Table 9 below.

	SOC1		SOC2		SOC		MED1		MED2		MED		TOTAL	
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
PP	30	78.9	21	70.0	51	75.0	17	70.8	24	70.6	41	70.7	92	73.0
Relative cl.	4	10.5	2	6.7	6	8.8	0	0.0	3	8.8	3	5.2	9	7.1
<i>-ed</i> PP	1	2.6	2	6.7	3	4.4	3	12.5	3	8.8	6	10.3	9	7.1
Apposition	1	2.6	0	0.0	1	1.5	4	16.7	2	5.9	6	10.3	7	5.6
<i>-ing</i> PP	2	5.3	2	6.7	4	5.9	0	0.0	1	2.9	1	1.7	5	4.0
Infinitive	0	0.0	2	6.7	2	2.9	0	0.0	1	2.9	1	1.7	3	2.4
Content cl.	0	0.0	1	3.3	1	1.5	0	0.0	0	0.0	0	0.0	1	0.8
Σ	38	100.0	30	100.0	68	100.0	24	100.0	34	100.0	58	100.0	126	100.0

Table 9: Types of postmodification in Position 1

It can be seen that our findings support the premise that prepositional phrase is the most frequent type of postmodification in English: it represents approximately three quarters of all Position 1 postmodifiers in the corpus. In total, we counted 15 different prepositions. Needless to say, the majority comprises OF (62%). Five prepositions occur only in medical articles (AFTER, AROUND, AT, LIKE, OVER), three can be found only in sociology (FROM, INTO WITHIN). Otherwise, there are no noticeable differences between the two disciplines. Following is the list of noun phrases exemplifying each preposition:³⁸

(34) six **weeks** AFTER surgery (MED2-14-33)

(35) a short floppy **fundoplication** AROUND the lower oesophagus (MED2-1-4)

³⁸ For the sake of brevity, phrases (37) and (41) were shortened. The full version of these noun phrases can be found in Appendix II.

- (36) the patient's **age and life expectancy** AT diagnosis (MED1-11-38)
- (37) the **link** BETWEEN food insecurity and depression... (SOC2-9-17)
- (38) many income-related **reasons** FOR frequent family moves (SOC1-14-27)
- (39) short lateral **moves** FROM one low-income neighborhood to another (SOC1-13-26)
- (40) the only **solution** IN symptomatic patients (MED2-22-50)
- (41) CPS **investigations** INTO allegations... (SOC1-23-45)
- (42) non-absorbable **material** LIKE Ethibond (MED2-19-45)
- (43) the **risk** OF depression (SOC2-13-27)
- (44) previous **findings** ON child mobility (SOC1-7-13)
- (45) nearly a 10-point **advantage** OVER fast progressors (MED1-4-12)
- (46) a standardized **approach** TO estimating duration (MED1-13-45)
- (47) most **patients** WITH large hiatus hernias (MED2-5-11)
- (48) better overall **health** WITHIN this population (SOC2-14-32)

With regards to the remaining types of postmodifiers in Position 1, the most salient disagreement between the disciplines is in the use of apposition. It occurs almost ten times more often in medicine (10.3%) than in sociology (1.5% - only one occurrence). It seems that apposition is quite popular among authors of medical articles. They use it to introduce abbreviations (*the basic ADL (PSMS)* – MED1-9-32), to give examples (*good post-operative analgesia and anti-emetics, such as ondansetron* – MED2-18-43), to provide quantification (*only two patients (0.714%)* – MED2-12-27) or as an explanatory note (*a global measure, the CDR sum of the boxes score* – MED1-9-31). As can be seen, they can be given in parentheses, attached asyndetically or introduced by an explicit expression (e.g. *such as*). Apposition is very compressed in conveying information and can thus be a very convenient tool for the writers of academic prose. Due to its high informational density it can be favoured in more technical texts, such as medicine.

There is only one nominal content clause in postmodifying function in the whole corpus and it appears in sociology: *previous research findings that food insufficient households were more likely to exhibit major depression and poor health* (SOC2-8-15).

The tendencies in the distribution of types of postmodification in Position 1 are reflected in their overall distribution in the corpus, i.e. if all the embedded postmodifying structures are considered. Compare Table 9 above with Table 10 below.

	SOC1		SOC2		SOC		MED1		MED2		MED		TOTAL	
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
PP	38	69.1	29	64.4	67	67.0	20	66.7	30	63.8	50	64.9	117	66.1
Relative cl.	10	18.2	6	13.3	16	16.0	1	3.3	4	8.5	5	6.5	21	11.9
-edPP	2	3.6	3	6.7	5	5.0	3	10.0	4	8.5	7	9.1	12	6.8
Apposition	2	3.6	0	0.0	2	2.0	6	20.0	3	6.4	9	11.7	11	6.2
Infinitive	0	0.0	4	8.9	4	4.0	0	0.0	4	8.5	4	5.2	8	4.5
-ingPP	3	5.5	2	4.4	5	5.0	0	0.0	2	4.3	2	2.6	7	4.0
Content cl.	0	0.0	1	2.2	1	1.0	0	0.0	0	0.0	0	0.0	1	0.6
Σ	55	100.0	45	100.0	100	100.0	30	100.0	47	100.0	77	100.0	177	100.0

Table 10: Types of postmodification

5 Conclusion

Academic prose is generally viewed as a very complex style with elaborated structure and elements carrying high information density. This complexity has often been described as consisting in a large number of clause elements realized by subordinate clauses. Inspired by the work of Biber & Gray (2010), the aim of the present diploma thesis was to explore the idea that the complexity of written academic texts resides in the complex structure of the noun phrase which frequently contains extensive premodification and/or postmodification.

The second objective was to examine the relation between different academic disciplines and noun phrase complexity. Two disciplines were selected as the source of the study material: medicine, representing a very technical field, and sociology as a more narrative type of discipline. Each discipline was represented by two research articles; from each article 50 common-noun headed complex noun phrases were excerpted and thoroughly analysed. We defined the complex noun phrase as a noun phrase which has a common noun as its head, contains modification and is a direct realization of a clause element or functions as a prepositional complement in a prepositional phrase realizing a clause element. We attempted to answer the questions whether there were differences between the degree of noun phrase complexity and the type of discipline, and to what extent different disciplines use various types of modification.

Except for the already mentioned article by Biber & Gray (2010), the theoretical basis for the analysis represented mainly two grammar books, *A Comprehensive Grammar of the English Language* (1985) and *Longman Grammar of Spoken and Written English* (1999). The methodology was inspired by the BA thesis of Ondřej Slóvik (2010).

We opened the discussion of results with a few general remarks on the nature of studied academic texts. We found out that the sentences in both disciplines were considerably long: the average length was almost 23.9 words and all sentences were longer than 6 words. The studied material contained 200 complex and 89 simple noun phrases. 75.1% of the total number of words in the corpus were part of noun phrases. This finding emphasizes the importance of a noun phrase in academic prose and the English language as such. It also supports the hypothesis that the complexity of academic writing occurs on the phrase level.

Simple noun phrases comprised only 6.7% of all the words in the corpus. Their average length was 1.6 words. Complex noun phrases, on the other hand, represented 68.4% with the average length of 7.1 words.

Although the thesis focused on the complex noun phrases, a short section was devoted to the analysis of simple noun phrases as well. We found out that 76.4% of all simple noun phrases were formed by common-noun headed noun phrases without any modification. The rest represented pronouns. There was no proper-noun headed noun phrase directly realizing a clause element in the corpus. Simple noun phrases in sociology often denoted the research or the findings. In medicine they often referred to the participants of the study, such as patients or clinicians.

Complex noun phrases identified in the corpus functioned as subjects, objects, subject complements and prepositional complements. Prepositional phrases containing a complex noun phrase as a prepositional complement most often functioned as adverbials. Complex noun phrases in subject and object positions together represented 74.5%. In sociology, this proportion was even higher: 83%. On the contrary, in medical texts it was “only” 66%. This discrepancy was caused by the high number (28%) of complex noun phrases functioning as a prepositional complement in medical prose. Prepositional phrases are very condensed and carry high information load. For this reason they can be favoured by authors of highly technical texts, such as those represented by medicine. In sociology, prepositional complements formed only 11% of complex noun phrases.

The function of complex noun phrases is related to their position with respect to the verb. In general, longer and more complex structures with “heavier” information load tend to follow the verb because their placement in the pre-verbal position may complicate the understanding of the sentence. The analysis showed that 37% of complex noun phrases occurred in the pre-verbal position. In general, their structure was not as complex as of those occurring in post-verbal position. Their complexity usually consisted in premodification or postmodification by a prepositional phrase. Simple noun phrases were found in the pre-verbal position in 66%. 42% of all subjects in the corpus were simple noun phrases. The results were almost identical for both disciplines.

Regarding the issue of reference and determination, both disciplines had a large proportion of noun phrases with generic reference (38% in sociology and 39% in medicine). This is

probably caused by the fact that researchers attempt to draw general conclusions from their findings and present them together with the results. The most common means of expressing generic reference was the zero article. The definite article was the second most frequent determinative element identified in the corpus. In most cases it was used to express non-generic definite reference. In medicine, the indefinite article was more frequent than the definite article. It was interesting to note the use of quantifiers and numerals functioning as determinative elements. While medicine contained only numerals (the only exception was the use of *most* in one noun phrase), sociology displayed a wider range of numerals as well as quantifiers expressing various degrees of quantity. The motivation for the lack of quantifiers in medical articles can be a greater requirement of accuracy imposed on researchers in medicine.

Modification was the indicator of the degree of complexity in our analysis. The highest proportion of complex noun phrases in medical texts contained only premodification (42%, as opposed to 32% in sociology). In sociology, the noun phrases containing only postmodification were the most frequent (39%, as opposed to 26% in medicine).

Regarding premodification, 74% of complex noun phrases in medical articles were premodified. In sociology the proportion was lower (61%). Concerning the complexity of premodification, there were only slight differences between the two disciplines. Simple premodification prevailed in both types of discipline and represented more than two thirds of all premodified noun phrases. Medicine contained more occurrences of two-level premodification (29.7%, as opposed to 21.3% in sociology). On the other hand, sociological texts yielded more examples of three-level premodification and the only instance of four-level premodification was also found there.

The analysis proved that adjectives are the most common type of premodifier. In medicine they represented two thirds of all simple premodifiers, in sociology slightly more than one half. The second most common simple premodifier was a noun which was by more than 12% more frequent in sociology (32.6%) than in medicine (20%). Sociology also contained a rare example of premodifying prepositional phrase.

Complex premodification was very variable. There were 19 different patterns, most of them occurring only once or twice. The three most frequent patterns can be found in both disciplines.

Regarding postmodification, 68% of complex noun phrases in sociology contained at least one postmodifier. In medicine it was by 10% less. The analysis showed that three quarters of noun phrases in both disciplines contained simple postmodification, i.e. one or two postmodifying elements directly dependent on the head noun. The most complex simple postmodifiers (i.e. those containing two postmodifiers) were found mainly in sociology. 80% of complex postmodifiers in medicine occurred on two levels. In sociology this proportion was by 15% lower due to higher number of three-level postmodifiers.

The analysis proved the prepositional phrase to be the most common type of postmodifier. It constituted more than 70% in both disciplines. Altogether there were 15 different prepositions but only one occurred with high frequency: *of* was identified in more than 60% of postmodifying prepositional phrases in sociology as well as medicine. The rest of the prepositions occurred in small numbers, some of them only in one discipline.

Apposition was found almost exclusively in medicine, where it was used to introduce acronyms, explanations, examples or quantification. Again, the reason for its high use in this type of genre may be due to its brevity and high degree of information density. Postmodifying relative clauses and non-finite clauses occurred with similar frequency in both discipline. The only occurrence of postmodifying nominal content clause was found in sociology.

The analysis was successful in supporting the idea that the complexity of academic prose consists in the complex structure of noun phrases rather than in a large number of clause elements realized by subordinate clauses. However, the relationship between the type of discipline and noun phrase complexity has not been fully clarified. We managed to identify some tendencies, such as higher degree of premodification in medicine and postmodification in sociology, larger number of prepositional phrases in medicine and greater variety of quantifiers in sociology. We also discovered that some of the most complex noun phrases were found in sociology, which displays a greater variety in the use of different modification forms and levels. On the other hand, the two disciplines behave in similar ways in many respects.

Future research in noun phrase complexity and its relation to academic disciplines is needed. A more extensive corpus can be used to obtain more data and compare more disciplines. The structure of complex noun phrases can be analysed into more depth, especially regarding the postmodification.

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Resumé

Předmětem zkoumání diplomové práce je odborný psaný jazyk. Ten bývá obvykle charakterizován složitou větnou stavbou s vysokým počtem vedlejších vět a explicitně vyjádřenými vztahy mezi konstituenty. Nové studie (např. Biber & Gray, 2010) ale ukazují, že složitost odborného psaného textu spočívá spíše v komplexnosti nominální fráze, která často obsahuje množství premodifikátorů a/nebo postmodifikátorů. Cílem práce je tedy prozkoumat strukturu nominální fráze v odborných člancích dvou vědních disciplín: medicíně a sociologii. Z každé disciplíny byly vybrány dva odborné články, ze kterých bylo excerpováno 50 komplexních nominálních frází. Těchto 200 výskytů bylo analyzováno z hlediska přítomnosti modifikace, jejího typu a hloubky závislostních vztahů. Poznatky z obou disciplín byly porovnány. Cílem práce bylo popsat stavbu komplexní nominální fráze a určit do jaké míry je struktura nominální fráze závislá na vědní disciplíně.

Druhá kapitola se věnuje přehledu dosavadních poznatků v oblasti struktury nominální fráze. Práce se opírá především o dvě gramatiky: *A Comprehensive Grammar of the English Language* (1985) a *Longman Grammar of Written and Spoken English* (1999). V některých případech porovnává také poznatky jiných autorů, především Duškové (2003) a Huddlestona & Pulluma (2002).

V teoretickém úvodu je nejprve představen pojem „fráze“ a tzv. „head“, neboli řídicí člen. Nominální fráze je uvedena jako jeden z typů frází a je popsána její funkce a základní struktura. Vztahy mezi členy uvnitř nominální fráze mohou mít povahu determinace, modifikace nebo komplementace.

Na rozdíl od modifikace a komplementace je determinace vztah typický pro nominální frázi. Jednotlivé typy determinátorů poukazují na druh určenosti fráze (generická, singulativní neurčitá nebo singulativní určitá). Vzhledem k postavení ve frázi rozeznáváme predeterminátory, centrální determinátory a postdeterminátory. V této části je také vysvětlen rozdíl mezi nulovým členem a bezčlenností.

Komplementaci je často těžké rozlišit od modifikace a názory jednotlivých autorů se zde různí. Z tohoto důvodu tato práce komplementaci nerozlišuje jako samostatný typ vztahu a řadí ji k modifikaci.

Modifikaci se kapitola o teorii věnuje nejvíce. Charakterizuje ji jako volitelný člen, který může stát před řídicím členem (premodifikace) nebo za ním (postmodifikace). Modifikace může být restriktivní nebo nerestriktivní, dočasná nebo trvalá a může vyjadřovat různou míru explicitnosti. V části o premodifikaci se práce věnuje především přídavným jménům, participiím (přítomnému i minulému) a podstatným jménům. Mezi méně běžné premodifikátory patří genitiv, fráze a věty. Jako postmodifikátor fungují nejčastěji předložkové fráze, polovětné vazby (infinitiv, přítomné a minulé participium), vztažné věty adjektivní a věty obsahové. Výjimečné se v této roli vyskytují také adverbia nebo adjektiva. K postmodifikaci zde řadíme také apozici. V závěru sekce o modifikaci se práce také krátce věnuje koordinaci a několikanásobné modifikaci.

Podkapitola 2.8 sumarizuje článek, který byl inspirací k napsání této práce (Biber & Gray, 2010) a podkapitola 2.9 zmiňuje několik dalších autorů, kteří se nějakým způsobem dotýkají tématu komplexnosti nominální fráze či akademického diskurzu.

Třetí kapitola představuje studijní materiál a metodologii, která částečně vychází z bakalářské práce Ondřeje Slówika (2010). Pro účely analýzy byly zvoleny dvě disciplíny: medicína, jakožto přírodní věda, a sociologie, zastupující humanitní vědy. Z každé disciplíny byly vybrány dva odborné články pro excerpci 50 komplexních nominálních frází. Komplexní nominální frázi charakterizuje práce jako nominální frázi, která je přímou realizací větného členu nebo realizuje člen ve spojení s předložkou (tj. nominální fráze je komplementem předložky), jejím řídicím členem je obecné substantivum a obsahuje modifikátory. Jednoduché nominální fráze slouží jako měřítko hustoty komplexních frází v textu. Největší pozornost byla věnována analýze složitých frází. Ty byly zkoumány z hlediska jejich funkce, postavení ve větě, determinace a především typu a složitosti modifikace. U každé komplexní nominální fráze byl určen počet jednotlivých premodifikujících nebo postmodifikujících členů a hloubka jejich závislostních vztahů. Na základě toho byla modifikace rozdělena na dva typy: jednoduchou a složitou. Jednoduchá modifikaci obsahuje pouze modifikátory přímo závislé na řídicím členu. Většinou se jedná o jeden, maximálně dva modifikátory. Dále byla určena forma modifikace a výsledky obou disciplín byly vždy porovnány.

Pojďme se nyní podívat na analýzu jako takovou a její výsledky. Bylo zjištěno, že věty v obou typech textů jsou poměrně dlouhé: jejich průměrná délka v celém korpusu činí 23,9 slov a všechny věty obsahují minimálně šest slov. Kromě 200 komplexních nominálních frází

bylo z textu excerpováno 89 jednoduchých nominálních frází. 75% veškerého textu je součástí nějaké nominální fráze. Toto zjištění poukazuje na důležitost nominální fráze v anglickém jazyce. Kromě toho ale také dokládá, že složitost odborného textu spočívá především v komplexní struktuře nominálních frází. Komplexní nominální fráze tvoří více než 68% veškerého textu. Jejich průměrná délka je 7,1 slova. Oproti tomu jednoduché fráze jsou většinou tvořeny jedním nebo dvěma slovy a v celém korpusu zabírají necelých 7%.

Přestože je předmětem práce analýza složitých substantivních frází, krátce jsme se věnovali i frázím jednoduchým. Bylo zjištěno, že více než tři čtvrtiny všech jednoduchých nominálních frází tvoří ty, jejichž řídicím členem je obecné substantivum, ale které neobsahují žádnou modifikaci, například *many families* (SOC1-21) nebo *herniation* (MED2-12). Zbytek tvoří zájmena. Zajímavé je, že ani v jednom případě není řídicím členem vlastní jméno. Dále bylo poznamenáno, že jednoduché fráze v sociologických textech často odkazují na práci nebo výsledky jako takové. V medicíně jsou zase častými referenti účastníci výzkumu (pacienti nebo lékaři).

Vraťme se ale ke složitým nominálním frázím. Ty v korpusu nejčastěji zastávají funkci podmětu, předmětu, doplňku podmětu nebo komplementu předložky. Předložkové fráze obsahující tyto komplexní nominální fráze potom nejčastěji fungují jako příslovečné určení. Největší zastoupení mají fráze v pozici podmětu a předmětu; celkem tvoří téměř tři čtvrtiny všech výskytů. Toto číslo je ještě větší v sociologii, kde tvoří celých 83%. Oproti tomu v medicínských textech jde „pouhých“ 66%. Tento rozdíl mezi disciplínami je způsoben velkým počtem (28%) komplexních frází vyskytujících se v pozici předložkového komplementu v medicínských článcích. Předložkové fráze jsou velmi stručné, ale zároveň mohou být nositeli mnoha informací. Z toho důvodu jich je hojně využíváno v technicky orientovaných textech, jako je například medicína. Pro srovnání, v sociologických článcích je těchto komplexních nominálních frází pouze 11%.

U komplexních nominálních frází je důležité také jejich postavení ve větě. Pro usnadnění komunikace jsou většinou delší a složitější větné členy umístěny v postverbální pozici. Jejich postavení před slovesem může výrazně ztížit porozumění dané větě. Analýza ukázala, že více než jedna třetina všech komplexních nominálních frází se nachází v preverbální pozici. Tyto fráze však neobsahují tak složitou modifikaci jako fráze, které nalezneme ke konci věty. Ve většině případů jde o fráze s premodifikací nebo o fráze postmodifikované předložkovou

frází. Výsledky umístění jednoduchých frází jsou přesně opačné: dvě třetiny se nachází v preverbální pozici. Podíváme-li se na všechny podmínky v korpusu, 42% je tvořeno jednoduchými substantivními frázemi. Obě disciplíny se v tomto chovají téměř identicky.

Co se týče kategorie určenosti, jak v medicíně, tak v sociologii byl identifikován velký podíl prostředků vyjadřujících generickou referenci (téměř 40% v obou disciplínách). Důvodem je pravděpodobně to, že autoři se společně s prezentací výsledků své práce snaží formulovat i nějaké obecné principy. Nejčastějším prostředkem generické reference je v obou vědách nulový člen. Následuje člen určitý. Ten ale většinou vyjadřuje referenci singulativní určitou. Zajímavé je užití kvantifikátorů a číslovek. Zatímco v medicíně se, kromě jedné výjimky (*most*), vyskytují pouze číslovky, sociologie využívá velké množství číslovek i kvantifikátorů k vyjádření různé míry. Důvodem může být velký tlak, který je vyvíjen na autory působící v oblasti medicíny, aby svůj výzkum a výsledky prezentovali s co možná největší přesností.

Co se modifikace týče, i zde byly zjištěny nějaké rozdíly mezi disciplínami. Nejvíce komplexních nominálních frází v medicíně obsahuje pouze premodifikaci (42% oproti 32% v sociologii). Naproti tomu v sociologii mají největší podíl fráze, které jsou pouze postmodifikované (39% oproti 26% v medicíně).

Nejprve si shrneme výsledky analýzy premodifikace. Téměř tři čtvrtiny komplexních nominálních frází v článcích o medicíně obsahují premodifikátory. V sociologii je tento poměr o 13% nižší. Co se ale týče složitosti premodifikace, jsou mezi disciplínami jen drobné rozdíly. Jednoduchá premodifikace tvoří většinu všech příkladů (více než dvě třetiny). V medicíně bylo identifikováno více dvouúrovňových premodifikací (29.7% oproti 21.3% v sociologii). V sociologii bylo ale identifikováno více výskytů premodifikace na třech úrovních a také jediná ukázka čtyřúrovňové premodifikace.

Analýza prostředků premodifikace potvrdila, že přídavná jména jsou obecně nejčastějším typem premodifikátoru. V medicíně představují dvě třetiny všech jednoduchých premodifikátorů; v sociologii je to o trochu méně (asi 55%). Druhý nejčastější postmodifikátor, substantivum se naopak mnohem častěji vyskytuje v článcích na sociologická témata, a to o 12% více než v medicíně. V sociologii jsme také objevili vzácný případ premodifikace předložkovou frází.

Co se týče komplexní víceúrovňové premodifikace, existuje mnoho různých variant a kombinací. V celém korpusu jich bylo identifikováno celkem 19, mnoho z nich se vyskytuje pouze jednou nebo dvakrát. Tři typy kombinací, které jsou nejčastější, se vyskytují v obou typech textů.

Jak již bylo řečeno, postmodifikace je častější v sociologii: 68% všech komplexních nominálních frází obsahuje alespoň jeden postmodifikující element. To je o 10% více než v medicíně. Oba typy vědních disciplín se ale shodují v tom, že ve třech čtvrtinách jde o jednoduchou postmodifikaci obsahující jeden nebo dva postmodifikátory přímo závislé na řídicím členu. Případy se dvěma postmodifikátory se vyskytují většinou v sociologii. Porovnáme-li výsledky analýzy komplexní postmodifikace, je zřejmé, že zatímco 80% případů v medicíně se odehrává na dvou úrovních, v sociologii nalezneme i více tříúrovňových postmodifikátorů.

Co prostředků postmodifikace týče, analýza prokázala, že nejčastěji se v této funkci vyskytuje předložková fráze. V obou disciplínách tvoří více než 70% příkladů. Celkem bylo spočítáno 15 různých předložek, ale pouze *of* překročí hranici 10%: v celém korpusu tvoří více než 60%.

Zajímavé výsledky přinesla analýza apozice. Bylo zjištěno, že se téměř výhradně vyskytuje v medicínských textech. Zde se používá k uvádění zkratk, příkladů, vysvětlivek či kvantifikace. Důvodem pro její oblibu v medicíně bude pravděpodobně opět její stručnost a schopnost nést velké množství informací. Postmodifikující vztahné věty a nefinitní konstrukce se vyskytují v několika případech v obou disciplínách. Jediný výskyt postmodifikující věty obsahové byl zjištěn v sociologii.

Diplomová práce si kladla dva hlavní cíle. Popsat strukturu komplexní nominální fráze v odborném psaném textu a poukázat na to, že složitost tohoto typu diskurzu nespočívá v nadměrném užívání větných členů realizovaných vedlejšími větami, ale odehrává se uvnitř substantivních frází, které často obsahují různé modifikátory. Pevně věříme, že tohoto cíle bylo dosaženo. Druhým cílem bylo zjistit závislost jednotlivých typů disciplín na formě s komplexností fráze. V tomto případě se nám podařilo identifikovat určité tendence. Například, větší počet premodifikátorů a předložkových frází v medicíně, oproti převaze postmodifikace a velkém počtu různých kvantifikátorů v sociologii. Také bylo zjištěno, že

některé velmi komplikované struktury se vyskytují spíše v sociologii než v medicíně. Na druhou stranu se ale oba typy textů chovají v mnoha případech velmi podobně.

Další výzkum studující složitost nominální fráze a její návaznost na jednotlivé vědní disciplíny je třeba. Studium většího množství dokladů by mohlo přinést zřetelnější výsledky. Bylo by možné porovnávat více jiných disciplín. Ani stavba nominální fráze nebyla prostudována do všech detailů: velký prostor zůstává především v analýze postmodifikace.

Appendix I

	S1	S2	S	M1	M2	M	Σ
[Adj>N]+edPP <i>single parent impoverished families</i> (SOC1-2-4)	1	0	1	0	0	0	1
[Adj>N]+N <i>a new school and neighborhood environments</i> (SOC1-8-16)	1	0	1	0	0	0	1
[Adv>Adj]>[ingPP>head] <i>significantly lower reading scores</i> (SOC1-4-9)	1	0	1	0	0	0	1
[edPP>N]>[N>head] <i>mixed effects regression modeling</i> (MED1-5-15)	0	0	0	1	0	1	1
[N>Adj]>[Adj>head] <i>food insecure single mothers</i> (SOC2-7-13)	0	1	1	0	0	0	1
Adj+[Adv>edPP] <i>the clearest and best maintained differences</i> (MED1-3-9)	0	0	0	1	0	1	1
[Adj+Adj]>[Adj>head] <i>a meticulous and higher mediastinal dissection</i> (MED2-5-13)	0	0	0	0	1	1	1
[Adj+Adj]>[Adj>[Adj>head]] <i>hiatal and lower mediastinal oesophageal dissection</i> (MED2-2-5)	0	0	0	0	1	1	1
Adj+edPP>[N>head] <i>a simple, calculated, progression rate</i> (MED1-1-2)	0	0	0	1	0	1	1
Adj>[Adj>head] <i>poor mental well-being</i> (SOC2-18-39)	2	2	4	0	5	5	9
Adj>[N>head] <i>the initial clinic visit</i> (MED1-1-3)	1	2	3	3	3	6	9
Adj>N <i>high mobility students</i> (SOC1-4-8)	2	1	3	1	0	1	4
Adv>[Adj>Adj] <i>several predominately African American neighborhoods</i> (SOC1-20-40)	1	0	1	0	0	0	1
Adv>[N>head] <i>nearly a four-point advantage</i> (MED1-4-14)	0	0	0	2	0	2	2
Adv>Adj <i>most of the highly mobile families</i> (SOC1-18-36)	1	0	1	1	0	1	2
edPP>[Adj>head] <i>reduced postoperative pain</i> (MED2-16-37)	0	0	0	0	2	2	2
N>[[N>N]>N] <i>the U.S. Food Security Module scale</i> (SOC2-10-20)	0	1	1	0	0	0	1
N>N <i>health care providers</i> (SOC2-14-29)	0	1	1	0	1	1	2
N>ingPP <i>life threatening complications</i> (MED2-10-22)	0	0	0	0	1	1	1
TOTAL	10	8	18	10	14	24	42

Table 11: Complex premodification patterns with examples

Appendix II

The list of complex noun phrases

SOC1

SOC1-1-1	The <u>findings</u> from this study
SOC1-1-2	those elementary school <u>students</u> living in families that make frequent residential moves
SOC1-1-3	an at-risk <u>population</u> who are likely to have academic and behavioral problems in school
SOC1-2-4	single parent impoverished <u>families</u>
SOC1-2-5	<u>involvement</u> with child protective services
SOC1-3-6	high residential <u>mobility</u>
SOC1-3-7	academic and behavioral <u>problems</u> in elementary school children
SOC1-4-8	High mobility <u>students</u>
SOC1-4-9	significantly lower reading <u>scores</u> (97 points) than stable students
SOC1-5-10	behavioral <u>problems</u>
SOC1-6-11	The poorer school <u>performance</u> of mobile students
SOC1-6-12	a number of <u>problems</u> that emanate from both the immediate adjustments that children have to make when changing residences and schools, and the disruptive impact that mobility has on instruction and learning
SOC1-7-13	previous <u>findings</u> on child mobility
SOC1-8-14	a major <u>stressor</u> for children that probably presents more challenges and needed adjustments for them than it does for adults
SOC1-8-15	fewer coping <u>abilities</u>
SOC1-8-16	a new school and neighborhood <u>environments</u>
SOC1-9-17	school <u>changes</u>
SOC1-9-18	residential <u>moves</u>
SOC1-10-19	an immediate <u>adjustment</u> to a new school setting, new teachers and students, possibly a different academic focus and curriculum, and perhaps a more accelerated pace of curriculum coverage
SOC1-11-20	student <u>mobility</u> occurring during the school year
SOC1-11-21	the <u>continuity</u> of instruction
SOC1-11-22	many <u>challenges</u> for teachers and administrators related to enrollment and attrition
SOC1-12-23	low-income <u>families</u> headed by a single parent
SOC1-12-24	other <u>types</u> of family configurations and income levels
SOC1-13-25	these residential <u>changes</u>
SOC1-13-26	short lateral <u>moves</u> from one low-income neighborhood to another

- SOC1-14-27 many income-related reasons for frequent family moves
- SOC1-15-28 The lack of affordable housing
- SOC1-15-29 a major problem for most low-income families
- SOC1-16-30 The growth of single parent families over the past thirty years, many of whom are poor
- SOC1-16-31 the demand for more affordable housing
- SOC1-17-32 An increase in demand
- SOC1-17-33 a lack of available affordable housing, especially inexpensive rental units
- SOC1-17-34 the cost of renting
- SOC1-17-35 the cost of owning
- SOC1-18-36 Most of the highly mobile families in this study
- SOC1-19-37 other low-income families
- SOC1-19-38 the brunt of the “shelter-poverty” crisis in America that has been created by a serious decline in available low-income housing
- SOC1-20-39 Many of the families in our study
- SOC1-20-40 several predominately African American neighborhoods where it is difficult to find sufficient affordable housing
- SOC1-21-41 housing that they cannot afford
- SOC1-22-42 One of the strongest findings of the study
- SOC1-22-43 CPS involvement
- SOC1-22-44 families with high residential mobility
- SOC1-23-45 CPS investigations into allegations of abuse and neglect of children and for reported incidents of domestic violence
- SOC1-23-46 rates of substantiation
- SOC1-24-47 the research literature
- SOC1-24-48 the rates of residential mobility for maltreating families
- SOC1-25-49 The work of Eckenrode and associates
- SOC1-25-50 the first empirical verification of this relationship demonstrating that maltreating families had high rates of residential mobility

SOC2

- SOC2-1-1 The objectives of this research
- SOC2-1-2 the prevalence of food insecurity in selected counties in rural Alabama
- SOC2-1-3 the extent to which food insecurity is associated with depression
- SOC2-2-4 Food insecurity
- SOC2-2-5 nearly 36% of female-headed households in the Alabama Black Belt

SOC2-3-6	this <u>sample</u> of female-headed families
SOC2-3-7	the general U.S. <u>population</u>
SOC2-4-8	those of other studies that have found levels of food insecurity to be substantially higher among welfare recipients than among the U.S. population
SOC2-5-9	food <u>insecurity</u>
SOC2-5-10	a significant <u>predictor</u> of depression
SOC2-6-11	employment <u>status</u>
SOC2-6-12	educational <u>attainment</u>
SOC2-7-13	Food insecure single <u>mothers</u>
SOC2-7-14	higher <u>levels</u> of depression than their peers who are food secure
SOC2-8-15	previous research <u>findings</u> that food insufficient households were more likely to exhibit major depression and poor health
SOC2-9-16	our <u>knowledge</u> of this relationship
SOC2-9-17	the <u>link</u> between food insecurity and depression in rural areas where access to physical and mental health treatment can be even more difficult to obtain than in urban areas
SOC2-10-18	the <u>majority</u> of the previous studies
SOC2-10-19	a single item <u>measure</u> of food insufficiency
SOC2-10-20	the U.S. Food Security Module <u>scale</u>
SOC2-10-21	food <u>insecurity</u>
SOC2-10-22	the <u>reliability and validity</u> of the finding
SOC2-11-23	the <u>association</u> of food insecurity with self-reported mental health, regardless of causal direction
SOC2-11-24	the precarious <u>situations</u> that poor single mothers in rural areas face
SOC2-12-25	the <u>need</u> to prevent food insecurity and ensure that all rural southerners are adequately fed to improve their mental health and social well-being
SOC2-13-26	food <u>insecurity</u>
SOC2-13-27	the <u>risk</u> of depression
SOC2-13-28	the <u>potential</u> to improve physical health
SOC2-14-29	Health care <u>providers</u>
SOC2-14-30	multiple <u>barriers</u> faced by food insecure single mothers
SOC2-14-31	<u>access</u> to balanced meals
SOC2-14-32	better overall <u>health</u> within this population
SOC2-15-33	Two <u>limitations</u> of this study
SOC2-16-34	the cross-sectional <u>design</u>
SOC2-16-35	causal <u>inferences</u>

SOC2-17-36	food <u>insecurity</u>
SOC2-17-37	poor <u>health</u>
SOC2-18-38	mental <u>health</u> .
SOC2-18-39	poor mental <u>well-being</u>
SOC2-18-40	the <u>ability</u> of single mothers to earn a productive income that may prevent food insecurity
SOC2-19-41	the <u>relationship</u> found here between food insecurity and mental health
SOC2-20-42	Longitudinal <u>data</u>
SOC2-20-43	the true <u>nature</u> of the relationships found in this rural sample
SOC2-21-44	the dependent <u>variables</u>
SOC2-21-45	self-reported <u>conditions</u>
SOC2-22-46	Future <u>research</u> examining these relationships in relation to objective measures of health and food insecurity to confirm my finding
SOC2-23-47	additional <u>research</u> using the U.S. Food Security scale to examine how social factors can lead to personal well-being
SOC2-24-48	The <u>results</u> of this study
SOC2-24-49	a substantial <u>percentage</u> of single mothers in rural Alabama who are responsible for taking care of their families
SOC2-24-50	food <u>shortages</u>

MED1

MED1-1-1	a large <u>cohort</u> of probable Alzheimer's disease patients
MED1-1-2	a simple, calculated, progression <u>rate</u>
MED1-1-3	the initial clinic <u>visit</u>
MED1-1-4	longitudinal <u>performance</u> on multiple cognitive and functional measures over time
MED1-2-5	These <u>measures</u> of cognition (ADAScog), attention and concentration (VSAT), global performance (CDR-SB), and activities of daily living (PSMS and IADL)
MED1-2-6	caregiving <u>needs</u>
MED1-2-7	patient and caregiver <u>quality</u> of life
MED1-2-8	<u>measures</u> commonly employed in clinical trials of AD treatments
MED1-3-9	The clearest and best maintained <u>differences</u>
MED1-3-10	the slow <u>progressors and those</u> classified as fast progressors, who together constituted 54% of the population
MED1-4-11	slow <u>progressors</u>
MED1-4-12	nearly a 10-point <u>advantage</u> over fast progressors

MED1-4-13	intermediate <u>progressors</u>
MED1-4-14	nearly a four-point <u>advantage</u>
MED1-5-15	Mixed effects regression <u>modeling</u>
MED1-5-16	slow <u>progressors</u>
MED1-5-17	fast <u>progressors</u>
MED1-5-18	standard outcome <u>measures</u>
MED1-5-19	up to seven <u>years</u> of observation
MED1-6-20	slow <u>progressors</u>
MED1-6-21	fast <u>progressors</u>
MED1-6-22	baseline <u>differences</u> on the VSAT, CDR-SB and IADL
MED1-7-23	<u>performance</u> of basic ADL (PSMS)
MED1-7-24	slow <u>progressors</u>
MED1-7-25	<u>disability</u> in this area
MED1-7-26	a slower <u>rate</u> than fast progressors
MED1-8-27	Slow <u>progressors</u>
MED1-9-28	Intermediate <u>progressors</u> (46 % of the patients)
MED1-9-29	better <u>cognition</u> (ADAScog and VSAT) <u>and function</u> (IADL)
MED1-9-30	fast <u>progressors</u>
MED1-9-31	a global <u>measure</u> , the CDR sum of the boxes score
MED1-9-32	the basic <u>ADL</u> (PSMS)
MED1-10-33	The survival <u>differences</u> between intermediate and fast progressors
MED1-10-34	a small <u>difference</u>
MED1-11-35	<u>prognostications</u> based upon initial progression rate
MED1-11-36	slow and fast <u>progressors</u>
MED1-11-37	long duration <u>reliability</u> of an intermediate progression rate
MED1-11-38	the patient's <u>age</u> and life <u>expectancy</u> at diagnosis
MED1-12-39	an intermediate <u>progressor</u>
MED1-12-40	a long <u>time</u> after diagnosis
MED1-13-41	Our <u>methodology</u> for classifying patients as slow, intermediate or rapid progressors
MED1-13-42	pre-progression <u>rate</u>
MED1-13-43	an initial clinic <u>visit</u>
MED1-13-44	the MMSE <u>score</u>
MED1-13-45	a standardized <u>approach</u> to estimating duration
MED1-15-46	an important <u>question</u>

- MED1-15-47 these apparently intrinsic rates of disease progression
- MED1-15-48 the pre-progression approach
- MED1-15-49 clinical purposes
- MED1-16-50 In a separate paper

MED2

- MED2-1-1 The cardinal principles of the operation
- MED2-1-2 the high-pressure zone and length of lower oesophagus exposed to the abdominal pressure
- MED2-1-3 repair of the hiatal defect
- MED2-1-4 a short floppy fundoplication around the lower oesophagus
- MED2-2-5 hiatal and lower mediastinal oesophageal dissection
- MED2-2-6 reduction of the hiatus hernia
- MED2-2-7 division of short gastric vessels to release the fundus from the spleen
- MED2-3-8 threepoint fixation of the wrap to the crura
- MED2-3-9 the incidence of wrap migration and rotation
- MED2-4-10 the sutures inserted to create the wrap in order to prevent oesophageal injury
- MED2-5-11 most patients with large hiatus hernias
- MED2-5-12 adequate intraabdominal length
- MED2-5-13 a meticulous and higher mediastinal dissection
- MED2-6-14 two cases where oesophageal shortening had to be treated by a Leigh Collis type gastroplasty
- MED2-7-15 Accurate intraoperative measurements of the oesophageal intra-abdominal length after full mobilisation
- MED2-8-16 A shortened oesophagus
- MED2-8-17 transdiaphragmatic herniation of the wrap
- MED2-8-18 adequate mobilisation of the oesophagus
- MED2-8-19 patients who have otherwise had a routine repair with uneventful postoperative recovery
- MED2-9-20 Wrap migration
- MED2-9-21 transdiaphragmatic herniation
- MED2-10-22 life threatening complications
- MED2-10-23 longstanding herniation with chronic post-operative reflux or retro-sternal pain symptoms
- MED2-11-24 Incidence of wrap migration
- MED2-11-25 published literature
- MED2-11-26 up to 84% of failed laparoscopic repairs

MED2-12-27	Only two <u>patients</u> (0.714%)
MED2-12-28	acute wrap <u>migration</u>
MED2-12-29	an acute <u>setting</u>
MED2-13-30	ischaemic <u>perforation</u> of the strangulated gastric greater curvature
MED2-14-31	<u>ingestion</u> of more than a litre of beer
MED2-14-32	carbonated <u>drinks</u>
MED-14-33	six <u>weeks</u> after surgery
MED2-15-34	an increased <u>incidence</u> of wrap migration following laparoscopic repair of the hiatus rather than open repair
MED2-16-35	<u>Reasons</u> cited for this
MED2-16-36	a <u>tendency</u> to extend the laparoscopic perioesophageal dissection high into the mediastinum
MED2-16-37	reduced postoperative <u>pain</u> allowing greater abdominal force to be transmitted to the hiatal region in the initial postoperative period
MED2-17-38	the <u>incidence</u> of acute wrap migration in our series
MED2-18-39	The <u>strategies</u> we employed to reduce this complication
MED2-18-40	<u>mobilisation</u> of the oesophagus to achieve adequate length of the intraabdominal oesophagus
MED2-18-41	routine suture <u>repair</u> of the hiatus (posterior crural repair in particular)
MED2-18-42	three point wrap <u>fixation</u>
MED2-18-43	good post-operative <u>analgesia and anti-emetics</u> , such as ondansetron
MED2-19-44	Posterior crural <u>repair</u>
MED2-19-45	non-absorbable <u>material</u> like Ethibond that can hold the repair for prolonged periods
MED2-20-46	Longstanding wrap <u>herniation or migration</u>
MED2-20-47	<u>symptoms</u> of chronic postoperative reflux with or without dysphagia or odynophagia
MED2-21-48	an <u>OGD</u> followed by CT-Scan or Barium meal
MED2-22-49	small <u>hernias</u>
MED2-22-50	the only <u>solution</u> in symptomatic patients

Appendix III

Passages of the articles used for the excerption

SOC1

The findings from this study suggest those elementary school students living in families that make frequent residential moves are an at-risk population who are likely to have academic and behavioral problems in school. These children are more likely to be African American, living in single parent impoverished families and to have involvement with child protective services.

More specifically, the findings indicate that high residential mobility is related to academic and behavioral problems in elementary school children. High mobility students had significantly lower reading scores (97 points) than stable students. They were also more likely to be referred for behavioral problems. The poorer school performance of mobile students may be related to a number of problems that emanate from both the immediate adjustments that children have to make when changing residences and schools, and the disruptive impact that mobility has on instruction and learning. These findings are consistent with previous findings on child mobility (Hango, 2003; Schuler, 1990; Tucker et al., 1998; Warren-Sohlberg & Jason, 1992). Changing residences can be viewed as a major stressor for children that probably presents more challenges and needed adjustments for them than it does for adults, not only because children may have fewer coping abilities, but also because they must also adapt to a new school and neighborhood environments.

Most of the time school changes accompany residential moves. When children change schools, it requires an immediate adjustment to a new school setting, new teachers and students, possibly a different academic focus and curriculum, and perhaps a more accelerated pace of curriculum coverage. Additionally, student mobility occurring during the school year disrupts the continuity of instruction and can create many challenges for teachers and administrators related to enrollment and attrition (Schaff, 2005).

As we found in the study, low-income families headed by a single parent are likely to change residences more often than other types of family configurations and income levels. It is common for these residential changes to be short lateral moves from one low-income neighborhood to another (Schaff, 2005). There are many income-related reasons for frequent family moves. The lack of affordable housing is a major problem for most low-income families. The growth of single parent families over the past thirty years, many of whom are poor, have greatly increased the demand for more affordable housing. An increase in demand along with a lack of available affordable housing, especially inexpensive rental units, has disproportionately raised the cost of renting compared to the cost of owning. Most of the highly mobile families in this study were renters. They, like other low-income families, have taken the brunt of the “shelter-poverty” crisis in America that has been created by a serious decline in available low-income housing (Mulroy, 2002; Mulroy & Lane, 1992). Many of the families in our study lived in several predominately African American neighborhoods where it is difficult to find sufficient affordable housing. Perhaps many families are forced to accept housing that they cannot afford.

One of the strongest findings of the study indicated that CPS involvement was 5.5 times more likely to occur in families with high residential mobility. The referrals involved CPS investigations into allegations of abuse and neglect of children and for reported incidents of domestic violence and unfortunately did not reflect rates of substantiation. There is very little in the research literature on the rates of residential mobility for maltreating families. The work of Eckenrode and associates (1995) stands out as the first empirical verification of this relationship demonstrating that maltreating families had high rates of residential mobility.

SOC2

The objectives of this research were to estimate the prevalence of food insecurity in selected counties in rural Alabama and to determine the extent to which food insecurity is associated with depression. Food insecurity was moderately high in nearly 36% of female-headed households in the Alabama Black Belt. It was three times as common in this sample of female-headed families as in the general U.S. population in 2004 (Nord et al. 2005). (see Table 2). This finding supports those of other studies that have found levels of food insecurity to be substantially higher among welfare recipients than among the U.S. population (Siefert et al. 2000; 2001).

This study also found that food insecurity is a significant predictor of depression. The association remained statistically significant after controlling for age, employment status, race and educational attainment. Food insecure single mothers reported higher levels of depression than their peers who are food secure. These results extend previous research findings that food insufficient households were more likely to exhibit major depression and poor health (Heflin et al. 2005; Olson et al. 2004; Siefert et al. 2000, 2001, 2004; Tarasuk and Beaton 1999; Vozoris and Tarasuk 2003). This study advances our knowledge of this relationship by focusing on the link between food insecurity and depression in rural areas where access to physical and mental health treatment can be even more difficult to obtain than in urban areas. Moreover, the majority of the previous studies used a single item measure of food insufficiency, whereas this study used the U.S. Food Security Module scale to measure food insecurity allowing researchers to be more confident in the reliability and validity of the finding (Alaimo et al. 1998, 2001; Heflin et al. 2005; Siefert et al. 2001, 2004).

In sum, the association of food insecurity with self-reported mental health, regardless of causal direction, shows the precarious situations that poor single mothers in rural areas face. The findings highlight the need to prevent food insecurity and ensure that all rural southerners are adequately fed to improve their mental health and social well-being. Alleviating food insecurity may lower the risk of depression, as well as having the potential to improve physical health. Health care providers must be sensitive to multiple barriers faced by food insecure single mothers; acknowledging and improving access to balanced meals and assessing for depression will promote better overall health within this population.

Two limitations of this study should be noted. First, the cross-sectional design makes it impossible to draw causal inferences from the findings. For example, while contending that food insecurity predisposes individuals to poor health, the reverse could also be true. Therefore, I cannot say exactly how mental health changes and whether poor mental well-being limits the ability of single mothers to earn a productive income that may prevent food insecurity. However, the relationship found here between food insecurity and mental health is likely to be

condition specific. Longitudinal data are required to ascertain the true nature of the relationships found in this rural sample. Second, the dependent variables were based on self-reported conditions. Future research examining these relationships in relation to objective measures of health and food insecurity to confirm my finding is needed. I hope that these results will encourage additional research using the U.S. Food Security scale to examine how social factors can lead to personal well-being.

Recommendations

The results of this study indicate that a substantial percentage of single mothers in rural Alabama who are responsible for taking care of their families are experiencing food shortages and worry about whether their children will have enough to eat.

MEDI

We have demonstrated in a large cohort of probable Alzheimer's disease patients that a simple, calculated, progression rate at the initial clinic visit is predictive of longitudinal performance on multiple cognitive and functional measures over time. These measures of cognition (ADAScog), attention and concentration (VSAT), global performance (CDR-SB), and activities of daily living (PSMS and IADL) are highly relevant to caregiving needs and to patient and caregiver quality of life, as well as representing measures commonly employed in clinical trials of AD treatments. The clearest and best maintained differences were observed between the slow progressors and those classified as fast progressors, who together constituted 54% of the population. On the ADAScog, for example, slow progressors maintained nearly a 10-point advantage over fast progressors (intermediate progressors maintained nearly a four-point advantage). Mixed effects regression modeling showed that, in effect, slow progressors are unlikely to *catch up* with fast progressors on standard outcome measures, even after up to seven years of observation. In fact, slow progressors diverge further from fast progressors over time on the ADAScog, while maintaining baseline differences on the VSAT, CDR-SB and IADL. Even though they did not differ in performance of basic ADL (PSMS) at baseline, slow progressors added disability in this area at a slower rate than fast progressors so that their performance diverged over time. Slow progressors also survived longer than fast progressors.

Intermediate progressors (46 % of the patients) also maintained better cognition (ADAScog and VSAT) and function (IADL) compared to fast progressors, but they were less differentiated at baseline and sped up over time on a global measure, the CDR sum of the boxes score, and they were not differentiated at any time on the basic ADL (PSMS). The survival differences between intermediate and fast progressors were not significantly different, but our study may have been underpowered to detect a small difference. Our results suggest that prognostications based upon initial progression rate are most reliable for slow and fast progressors, but that long duration reliability of an intermediate progression rate may depend upon the patient's age and life expectancy at diagnosis. It would be safe to say that an intermediate progressor may remain so for several years, but that, if the patient lives for a long time after diagnosis, the rate may increase sufficiently to affect both abilities and survival.

Our methodology for classifying patients as slow, intermediate or rapid progressors could be easily employed by clinicians to calculate pre-progression rate at an initial clinic visit, using the MMSE score and a standardized

approach to estimating duration [1, 2]. The clinician could predict that a patient would generally progress slowly, moderately, or rapidly over several years. However, an important question remains as to whether these apparently intrinsic rates of disease progression can be modified, and this question must be resolved before the pre-progression approach is widely adopted for clinical purposes. In a separate paper, we demonstrated that persistent anti-dementia drug treatment impacts observed progression over time [20], an observation which is consistent with a recent analysis using a very different approach [21].

MED2

The cardinal principles of the operation are to restore the high-pressure zone and length of lower oesophagus exposed to the abdominal pressure, repair of the hiatal defect, and a short floppy fundoplication around the lower oesophagus [10,11]. This is achieved by hiatal and lower mediastinal oesophageal dissection [12], reduction of the hiatus hernia, and division of short gastric vessels to release the fundus from the spleen. We perform threepoint fixation of the wrap to the crura to decrease the incidence of wrap migration and rotation. The oesophagus was not included in the sutures inserted to create the wrap in order to prevent oesophageal injury.

In most patients with large hiatus hernias, adequate intraabdominal length can be achieved by a meticulous and higher mediastinal dissection [12]. We encountered failure in two cases where oesophageal shortening had to be treated by a Leigh Collis type gastropasty. Accurate intraoperative measurements of the oesophageal intra-abdominal length after full mobilisation were made. A shortened oesophagus may predispose to transdiaphragmatic herniation of the wrap; adequate mobilisation of the oesophagus may prevent this complication in patients who have otherwise had a routine repair with uneventful postoperative recovery [12].

Wrap Migration/Transdiaphragmatic Herniation

Wrap migration is synonymous with transdiaphragmatic herniation. These patients can present acutely with life threatening complications or may have longstanding herniation with chronic post-operative reflux or retro-sternal pain symptoms. Incidence of wrap migration ranges between 7% – 20% in published literature and accounts for up to 84% of failed laparoscopic repairs [13-16].

Only two patients (0.714%) had acute wrap migration or herniation in our series, and both presented in an acute setting. One of these patients was further complicated by ischaemic perforation of the strangulated gastric greater curvature. One patient had presented after ingestion of more than a litre of beer, though we routinely advise all our patients to avoid carbonated drinks for six weeks after surgery [16].

Some studies have demonstrated an increased incidence of wrap migration following laparoscopic repair of the hiatus rather than open repair. Reasons cited for this include: a tendency to extend the laparoscopic perioesophageal dissection high into the mediastinum, fewer adhesions and reduced postoperative pain allowing greater abdominal force to be transmitted to the hiatal region in the initial postoperative period [13]. However, the incidence of acute wrap migration in our series is low compared to others [13-16]. The strategies we employed to reduce this complication were mobilisation of the oesophagus to achieve adequate length of the intraabdominal oesophagus, routine suture repair of the hiatus (posterior crural repair in particular), three point wrap fixation, good post-operative analgesia and anti-emetics, such as ondansetron [13,14]. Posterior crural

repair was snug and made with non-absorbable material like Ethibond that can hold the repair for prolonged periods [14].

Longstanding wrap herniation or migration may present with symptoms of chronic postoperative reflux with or without dysphagia or odynophagia [14,15]. We investigated such patients with an OGD followed by CT-Scan or Barium meal. However, these investigations may not be accurate enough for small hernias thus the only solution in symptomatic patients is to dismantle the complete repair laparoscopically (small transdiaphragmatic hernias are almost like a Richter's Hernia and may become evident only on taking down the full wrap) and redoing it carefully [14,16].