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**English Sentence Condensers and Their Czech Equivalentents in the Scientific
and Popular Scientific Style.**

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Z á s a d y p r o v y p r a c o v á n í :

Cílem práce je zhodnotit distribuci a užívání větných kondenzorů v anglických odborných a populárně naučných textech a porovnat je s jejich potencionálními českými ekvivalenty. V teoretické části student podrobněji popíše anglické větné kondenzory a zaměří se na oblast tzv. -ing forms (nefinitních sloves ve funkci gerundií a participií). Zároveň definuje funkci kondenzoru jako stylového prostředku ve stylu odborném a populárně naučném. Analýza obou textových typů v praktické části směřuje k testování hypotézy, že v odborném stylu lze očekávat vyšší frekvenci kondenzorů než v textech na pomezí stylu odborného a prostě sdělovacího. Zároveň bude mít tato analýza kontrastivně-lingvistický přesah, tj. vymezení možné ekvivalenty anglických kondenzorů v českých překladových textech a zhodnotí jejich stylovou funkčnost.

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ANNOTATION

This bachelor paper is focused on the sentence condensation in the English language in selected functional styles. In the first part of this work, various ways to condense English sentences are proposed with the attention to non-finite clauses, namely present participles and gerunds. The second part of this thesis deals with the analysis of occurrences of present participles and gerunds gathered from texts written in scientific prose and popular scientific functional style. The main purpose of this analysis is to test the hypothesis that gerundive and present participial clauses are more frequent in scientific texts than in popular science. The second goal is to propose the possibilities of the Czech translation of these non-finite clauses.

KEYWORDS:

Condensation, clause, non-finite, participle, gerund, full clause, translation

ANOTACE

Tato bakalářská práce se zaměřuje na kondenzaci větné struktury v anglickém jazyce ve vybraných funkčních stylech. V první části práce jsou popsány různé prostředky kondenzace anglických vět, přičemž hlavní pozornost je věnována nefinitním větám, zejména přítomným participiím a gerundiím. Druhá část práce se zabývá analýzou výskytů přítomných participií a gerundií získaných z odborných a populárně naučných textů. Hlavním cílem tohoto výzkumu je otestovat hypotézu, že nefinitní gerundiální a participiální konstrukce jsou častější ve stylu vědeckém než v populárně naučném. Druhým cílem je vytyčit možnosti českého překladu těchto nefinitních vět.

KLÍČOVÁ SLOVA:

Kondenzace, věta, nefinitní, participium, gerundium, finitní věta, překlad

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I. INTRODUCTION

The English language shows a certain habit to remove redundant language items to communicate without unnecessary repetition. To achieve this, there are various opportunities to successfully condense the English sentence structure. These will be discussed in this thesis. The paper will evaluate a sentence condensation realised by non-finite *-ing* clauses in scientific prose and popular scientific functional styles along with their adequate translation into the Czech language. Basically, there are two main purposes of this work. The first is to test the hypothesis that there are more non-finite *-ing* clauses in scientific prose texts than in popular scientific texts. The second goal is to propose their possible Czech translations. To do this, the analysis of selected texts belonging to scientific prose and popular scientific functional styles will be conducted. In the analysis, occurrences of non-finite *-ing* clauses (present participles and gerunds) will be collected and their frequency will be calculated. Moreover, they will be distinguished based on the type of the subordinate clause since it determines their meaning, which is crucial for a realization of their full clauses and translations.

The paper is divided into two main parts, theoretical and analytical. In the first part of the paper, the theoretical background concerning the sentence condensation will be introduced. First, the general meaning of the term condensation will be promptly discussed along with its specific meaning and purpose in linguistics. Next, the different means of sentence condensation will be discussed since not only non-finite clauses are used in the process of condensing. Afterwards, present participles and gerunds will be described from the perspective of morphology and syntax. The rest of the theoretical part will deal with the condensational potency of gerunds and present participles in different types of subordinate clauses, whereas the possible full clause paraphrases will be sought as well as evaluating the patterns of the possible Czech translations. Before moving onto the analytical part of the paper, both functional styles, e.g. scientific prose and popular scientific styles, will be characterised.

The second part of the work will deal with the analysis of selected texts. Instances of gerunds and participles collected from the texts will be sorted by the type of subordinate clauses which were described in more detail in the theoretical part. The stress will be placed on their condensational potency i.e. the possibility to paraphrase them into the full clauses. Moreover, choices of their translation into the Czech language will be proposed.

II. THEORETICAL PART

1. CONDENSATION AS TERM

1.1. General Meaning of Condensation in English and Czech.

Dealing with the wide topic of sentence condensation will be started with the interpretation of its general meaning. Before the linguistic approach to the term is specified and further discussed in the thesis, it is influential to mention its general meaning. Two explanations of the term which are taken from widely used English monolingual dictionaries will now be proposed along with the definition taken from the Czech dictionary.

The first definition is provided by *The Oxford Dictionary of English*. The next dictionary to convey the definition is the *Merriam-Webster's Collegiate Dictionary*. The former defines the term as “a concise version of something, especially a text” (The Oxford Dictionary of English Online 2018), whereas it does not describe the process of condensing. The latter explains it as a “compression of a written or spoken work into more concise form” (Merriam-Webster Online 2018). It is interesting that both definitions, although not provided by grammarians and being rather general, highlight the connection of the word to the text. There are, of course, additional definitions concerning chemistry or psychology. Yet it suggests that the term is used specifically in different sciences. Therefore, it could be assumed that synonyms like *reduction* or *shortening* are more likely to be used in everyday English.

Having shown the general meanings of the term in English, it is time to devote attention to the meaning and definitions of the term in the Czech language. It is essential to mention that the term is of a foreign origin, borrowed probably from English i.e. *condensation* is changed into *kondenzace* (or more obsoletely *kondensace*) in Czech. Due to its foreign origin, different words carrying the same meaning but originating from the Czech language are more likely to be known by Czech speakers. The Czech definition is provided by the Klimeš's Czech dictionary of foreign expressions *Slovník cizích slov*. It states that the general meaning of the term is to thicken something i.e. make something more dense and shorter. (Klimeš 2005, 376)

1.2. Condensation in Linguistics

Having introduced the general meaning of the term, the focus will now be shifted to the more specific meaning of condensation in linguistics. It is now understood that condensation

generally means to make something shorter. However, it must be acknowledged that condensation is not a widely used term by all linguists and many grammarians use different terminology yet carrying the same or similar meaning.

Condensation as a linguistic term connected with non-finite clauses was used for example by Mathesius in *A Functional Analysis of Present Day English On a General Linguistic Basis* or in Vachek's *Selected Writings in English and General Linguistics*. Dušková also describes the process called "English syntactic condensation" (Dušková et al. 2012, 542). However, famous grammarians outside of the Czech environment tend to use different terms. For example, Quirk uses the term "means of syntactic compression" (Quirk et al. 1985, 995). Another source, *A Dictionary of Linguistics and Phonetics* by David Crystal provides the term *reduction*. However, he uses the term in connection with reduced elliptical clauses (these will be closely described in chapter 2.2.). He describes them as clauses which are missing one or more elements, thus they are not self-sufficient. He further demonstrates an example using a to-infinitive which is a verb form included in a non-finite clause (Crystal 2008, 406). It could be understood that Crystal's definition of reduction has the similar meaning as condensation provided by Czech linguists Vachek, Mathesius and Dušková. The last authors whose insight is provided are Biber et al. In *Longman Grammar of Spoken and Written English* they claim that non-finite clauses are "more compact and less explicit" (Biber et al. 2007, 198), suggesting that they tend to omit some elements and contribute to effective condensation of the language. Some authors do not devote any attention to description of condensed structures and they only describe the way these clauses are formed, i.e. mainly the differences between finite and non-finite clauses (these will be described in more detail in chapter 3.1.). They do not mention any circumstances in which these structures are used and why. Such missing information was found for example in the *Cambridge Encyclopedia of The English Language* by David Crystal or *A University Course in English Grammar* by Angela Dwoning and Philip Locke. However, the former is an encyclopedia dealing with the English language as a whole and not a work specialised in grammatical (syntactical or morphological) properties of the language.

Various approaches to condensed structures provided by these authors will be discussed more closely in the following chapters. Basically, condensed structures refer to processes which make the final sentence shorter. Linguists mention that these include mainly elliptical sentences, agentless (short) passives, verbless clauses and non-finite clauses. Sometimes processes of nominalisation, adjectivisation and even adverbialisation may be considered condensing devices.

2. Minor Devices Used as Means of Condensation

2.1. Short Passive

Before moving onto the topic of non-finite structures which will be dealt with in the analytical part of the work, it is purposeful to introduce the other means to be found in English language which are potent in reducing the amount of superfluous language items and create more compact text. Apart from forming a condensed non-finite structure, it is possible to simply reduce the length of sentence by deleting some elements. According to Biber, short passives and ellipses could be considered the form of language condensation too (Biber et al. 2007, 155). In the following chapters, both short passive and ellipsis will be described.

Biber alleges that the short passive is a useful tool in condensation and is more frequent than long passive (Biber et al. 2007, 154). Quirk explains that the term voice describes the grammatical category which allows to depict the sentence in two different ways without changing the general meaning (Quirk et al. 1985, 159). Two types of voice are distinguished. The first is an active voice which marks the active verb phrase such as in:

(1) The huge dog broke the window.

In this sentence (1), *the huge dog* is a subject of the sentence. Crystal states that subject may also be called a doer of the action (Crystal 2008, 461). In the active sentence, the doer is directly followed by its predicate, in this case *broke* and object *the window*. However, if one changes the voice from the active to the passive, the sentence (2) will go as follows:

(2) The window was broken by a huge dog.

The passive transformation causes that the agent *a huge dog*, introduced by the preposition *by*, moves towards the end of the sentence and a noun phrase *the window* becomes a subject. The verb changes from the active voice *broke* into the passive *was broken*. This structure is called a long passive where all the elements are expressed, and nothing is deleted. To create a short passive and condense the sentence, the agentless sentence may be formed.

(3) The window was broken.

The example (3) shows that the agent (*the huge dog*) was completely omitted. According to Downing and Locke this is used because the speaker wants to place stress on the predicator and not on the agent. They further propose more situations in which the deletion of the agent is used. It is mainly due to the fact that the agent is implied (*He was imprisoned in the Gulag*) or

because the agent is to be understood from the context (*After winning the lottery, John had a party in the local club. Many people were invited.*) (Downing and Locke 1992, 254).

To conclude, short passives are simple, yet effective means of sentence reduction, allowing the speaker to avoid unnecessary details in certain context. The second minor type of sentence condensers which is to be discussed are elliptical sentences.

2.2. Elliptical Reduced Clauses

In addition to short passives, there are more possibilities to omit the superfluous language elements. In this chapter, the attention will be paid to ellipsis which is another frequent type of a deleting operation. Crystal calls elliptical structures the reduced clauses because by deleting the elements one achieves the reduction (Crystal 2008, 406). Biber agrees and provides the definition that “*Ellipsis is the omission of elements which are precisely recoverable from the linguistic or situational context*” (Biber et al. 2007, 152). It has already been stated, that the main function of ellipsis is to reduce the text and make it more compact by not repeating the same parts of the utterance again. Such as in the example (4).

(4) She came home late but (she) wasn't tired.

In the sentence (4) the subject in the second clause is not realised since it is clear who was tired after coming home late (*she*).

Further treatment of this topic should be started with basic division of types of ellipses. According to Quirk, three different types of ellipsis can be distinguished. These are *textual*, *situational* and *structural* ellipses (Quirk et al. 1985, 892).

The first type to describe is a textual ellipsis. McArthur establishes its main distinction from the other two types as recoverability, i.e. in textual ellipsis the full form of the elided structure is to be found in the previous or the following part of the text (McArthur 1992, 344). Moreover, such full form can be found either before or after the elided structure. Quirk alleges that the former is called *anaphoric ellipsis* and the latter *cataphoric ellipsis* (Quirk et al. 1985, 892). Examples of both may look as follows:

(5) Thomas went to school and (Thomas) was very tired – anaphoric reference

(6) Peter was tired but (Peter) continued driving – anaphoric reference

(7) They didn't plan to (cancel the appointment), however, they needed to cancel the appointment – cataphoric reference

(8) I don't want to (go home), but unfortunately have to go home – cataphoric reference

In the first two instances (5 – 6), it is an example of anaphoric ellipsis since the subject occurs in the first clause of the sentence i.e. the elided structure follows it. However, in the following two examples (7 – 8), the phrases *go home* and *cancel the appointment* are elided in the first clause and realised in the second clause, therefore it is an example of a cataphoric ellipsis. As regards the frequency, McArthur pleads that anaphoric ellipsis is more commonly found. Cataphoric ellipsis is mostly used when author wants to apply stress on certain parts of the sentence and wants to make listener more curious about what follows (McArthur 1992, 199).

The last two types of ellipses are situational and structural. McArthur explains that these two types differ from the textual ellipsis by recoverability which is either based on the context of the given situation or syntax (McArthur 1992, 345).

The first type to describe is situational ellipsis. It is a matter of the spoken language as it is based on the context which gives the meaning to the structure. Quirk alleges that in such structures it is crucial to know the extralinguistic context to interpret such structures correctly (Quirk et al. 1985, 895). Biber adds that situational ellipsis is very frequently used even by highly educated speakers of English although it is grammatically incorrect (Biber et al. 2007, 158). Examples of the situational ellipses (9 – 11) are listed below:

(9) I will wait there for you. When?

(10) Have you ever been to Italy? Not yet.

(11) Pity she won't come.

In the first instance (9), only the adverb *when* is used instead of the full clause (*When will you wait for me?*) The second example (10) is similar. Only a negative element *not* + adverb *yet* is used instead of full negative clause (*I have not been to Italy yet*). In the third sentence (11) only *pity* is used instead of the whole clause (*It is pity [...]*).

The last type of ellipsis to describe is structural ellipsis. According to Quirk, the interpretation of its meaning depends highly on the knowledge of grammar (Quirk et al. 1985, 900). This is consistent with Yamamoto's opinion who describes that in situational ellipsis there is an omission of function words (Yamamoto 1999, 91). One of the most frequent manifestations of structural ellipsis could be example: *I think (that) you are not right*. Another frequently omitted elements are determiners and pronouns. However, Quirk says that structural ellipsis is usually used in book titles or headlines and this phenomenon is known as the block language (Quirk et

al. 1985, 900). This can be illustrated on the instance *UK moving out from EU* where determiners and auxiliary verb is omitted (*The UK is moving out from the EU*).

Lastly, it is very important to mention that there are more minor means of sentence condensation such as verbless clauses and processes of nominalization, adjectivisation and even adverbialisation. These will not be discussed, since the length of this paper is limited.

3. Non-Finite Clauses in English

3.1. Non-Finite and Finite Clauses

To properly understand the potency of non-finite clauses to condense the sentence structure. It is important to describe the differences between finite and non-finite clauses, namely regarding morphology and syntax. Finite clauses apart from non-finite ones contains a finite verb. In terms of morphology, Crystal explains that finite verb can be inflected i.e. it shows tense, mood and person (Crystal 2008, 190). Examples of finite clauses are listed below:

- (12) He stays at home.
- (13) She likes tennis.
- (14) They run very quickly.
- (15) You take it for granted.

Notice suffixes *s* in *stays* (12) and *likes* (13), providing additional information about person and number i.e. indication of third-person singular.

Regarding the topic of the thesis, it is more important to focus on the syntactical properties of finite structures. According to Biber, finite clauses always contain a subject. The only difference are imperative clauses such as *Close the door* etc. (Biber et al. 2007, 123). He highlights that finite clauses are independent, which means that it is possible for them to stand alone, yet they may be coordinated or even subordinated to a different independent clause (Biber et al. 2007, 193, 202). This is seen in examples (16 – 17).

- (16) *We do not know why they stay at home.*
- (17) *She is always late and she seems lazy.*

The main reason why finite clauses are not comparably economical as non-finite clauses is that they must carry a subject and a finite verb. Although such sentences are semantically clear it makes them longer and less compact. Non-finite clauses, on the other hand, show certain characteristics which make them potent as means of sentence condensation. These will be described in the next chapter.

3.2. Defining a Non-finite Clause

The treatment of non-finite clauses will be started with definition provided by various grammarians. Non-finite structures will be evaluated from the morphological and syntactical point of view and then the attention will be shifted mainly to their function as means of sentence condensation.

From the syntactical point of view, it is important to name some specific features of non-finite clauses that make them significantly different from finite clauses. Quirk alleges that non-finite clauses generally do not contain a subject and a finite verb. It is the reason why the number, person and tense cannot be determined (Quirk and Greenbaum 1973, 310-311). Regarding the category of time, Dušková adds that non-finite clauses do show time relations i.e. present and past forms but only for the verb form which they go with (Dušková et al. 2012, 266). Biber agrees and concludes that “Non-finite clauses are regularly dependent. They are more compact and less explicit than finite clauses: they are not marked for tense and modality, and they frequently lack an explicit subject and subordinator” (Biber et al. 2007, 198). An interesting point is provided by McArthur who explains that similarly to verbless structures, non-finite structures should not be formally considered clauses since they do not contain any finite verb. Nevertheless, he continues that they are sentence-like, since they may be analysed into sentence elements such as subject or object (McArthur 1992, 221).

3.3. Types of Non-finite clauses

Pursuing the topic of non-finite clauses further, there are different types of non-finite clauses. According to Dušková, three major types of non-finite clauses can be distinguished. These are infinitives, gerunds and participles (Dušková et al. 2012, 266). Since the practical part of this thesis will be dealing only with non-finite structures containing the -ing verb forms (present participles and gerunds), infinitives will be described only very briefly and attention will then be paid to properties and functions of gerunds and present participles.

3.3.1. Infinitives

As previously mentioned, attention will first be paid to *infinitives*. Infinitive clause contains an infinitive verb phrase which Huddleston and Pullum call a verb in a plain form (Huddleston and Pullum 2005, 204). Biber adds that infinitives along with ing-clauses are the most universal in terms of grammar (Biber 2008, 198). Formal realisations of voice and aspect are shown in the table 1.

	Non-perfective Non-progressive	Non-perfective Progressive	Perfective Non-progressive	Perfective Progressive
Active voice	To write	To be writing	To have written	To have been writing
	To do	To be doing	To have done	To have been doing
Passive voice	To be written	To be being written	To have been written	To have been being written
	To be done	To be being done	To have been done	To have been being done

Table 1.

According to the function, Huddleston and Pullum distinguish two types of infinitives. The first type is *to-infinitive* which is the most versatile because it may have many functions in the sentence. They distinguish up to ten different functions but since the length of this paper is limited, only three main are proposed. To-infinitive may function as a subject of the sentence (*To go there is not a good idea*), as an extraposed subject (*It is not a good idea to go there*) or as an extraposed object (*We wanted it to be a great party*). They further argue that extraposed subjects are much more common than these sentences with infinitival subject or object (Huddleston and Pullum 2005, 212).

The second type of infinitive structures are bare infinitives. These are significant for a missing preposition *to* (*She made me do it*). Huddleston and Pullum explain that “in contrast to to-infinitives with their wide range of uses, bare infinitival clauses occur in only a very limited set of functions. They hardly occur except as internal complements of certain verbs with no subject permitted” (Huddleston and Pullum 2005, 213).

Pursuing this further, Dušková pleads that infinitives without *to* are mainly found following the modal auxiliaries where they function as their complements such as in examples (18 – 19).

(18) You should go there

(19) they can play the guitar etc.

The only exceptions are modal verbs *ought to* and *used to* which are always accompanied by a to-infinitive (Dušková et al. 2012, 180-181).

(20) I used to play football when I was younger.

Since the topic of infinitives is not included in the practical analysis of this thesis, it will not be described anymore. The attention will be devoted only to participles and gerunds.

3.3.2. Participles

Apart from infinitival clauses, another two types of non-finite structures are distinguished. These are gerundive and participial clauses. This chapter will focus on the formal properties of different participial clauses along with their syntactic functions.

The treatment of participial constructions will start with their basic division into two main categories. McArthur explains that two different types of participles are found in the English language. The first one is the *-ing participle* also known as the *present participle* and the second is the *-ed participle* also being referred as the *past participle* (McArthur 1992, 751). This vague terminology is often used because these clauses are commonly found in connection with clauses that are containing a finite verb in a particular tense or are showing a time distinction for example when stating results of past actions (*The advice provided by him is not sufficient*) (McArthur 1992, 751). Crystal explains that terms *present participle* and *past participle* are incorrect and should not be used. In some cases, it is almost impossible that a participle would refer to past (*I shall be kicked*) thus the terms like *-ing participial forms* or *-ed participial forms* should be used instead (Crystal 352, 2008).

Before their syntactical functions in a sentence will be evaluated, it is important to quickly look at the morphological characteristics of participial verb forms. Both types are characterised by a change in the form of the verb. McArthur describes that present participles are verbs with the *-ing* suffixation at the end of the structure. Moreover, he explains that in finite complex verb phrases they are used in combination with the auxiliary *to be* (20).

(21) He is driving his car.

(22) They are running around.

In terms of *-ed participles* he further alleges that *-ed participles* are verb forms with either inflectional endings *-ed*, *-t* or *-d* (*Liked*, *sent*) in regular verbs or many different endings such as *-n* or *-en* if irregular verbs are concerned. Some verbs such as *swim* are formed by a change in a middle vowel (*swum*) (Mc Arthur 1992, 75). Dušková adds that a negative form is formed adding *not* in front of the participle (*not using*) (Dušková et al. 2012, 270). Formal realisations of voice and aspect are shown in the table 2.

	non-perfective non-progressive	non-perfective progressive	perfective non-progressive	perfective progressive
active voice	writing	writing	having written	having been writing
	doing	doing	having done	having been doing
passive voice	written	being written	having been written	having been writing
	done	being done	having been done	having been doing

Table 2.

Dušková explains that syntactically present participles function as an attribute where they frequently premodify and postmodify nouns (*A crying children at home / Children crying at home*). They can stay in the position of an object complement (*I caught him running around the school*) and they may also be found in the position of condensed adverbial and supplementive clauses (*frankly speaking, I don't think that you are right*). (Dušková et al. 2012, 280 – 288).

3.3.3. Gerunds

The last type of non-finite structures to describe are gerunds. A gerundive clause is a structure in which a gerund verb phrase is a heading element. Gerunds are carrying the same form as present participles i.e. it is a verb which takes the *-ing* suffixation. It is essential to mention that for example Huddleston and Pullum do not distinguish these two forms and call it a *gerund-participle*. Gerunds and participles are then distinguished only according to their different functions in the sentence which considerably differ (Huddleston and Pullum 2005, 213).

As regards morphology, Dušková claims that it is possible to distinguish the present and past form and active or passive voice. She further alleges that the negative form is formed by adding the negative *not* element (*not doing, not having done*). Different forms are described in the table 3.

	non-perfective non-progressive	non-perfective progressive	perfective non-progressive	perfective progressive
active voice	writing	writing	having written	having been writing
	doing	doing	having done	having been doing
passive voice	written	being written	having been written	having been writing
	done	being done	having been done	having been doing

Table 3

The main problem which is frequently encountered is the differentiation of gerunds from present participles. Dušková explains that since their form is the same, the difference between them is based solely on their different syntactic functions. The major difference is that participle basically acts as an adjective and gerund as a noun (Dušková et al. 2012, 268).

From the syntactical point of view, gerunds can have many different functions in the sentence. According to Dušková it may function mainly as subjects (*Baking is one of his favourite activities*), objects (*Peter loves reading thrillers*) or complements of nouns, adjectives and verbs where it usually follows a preposition (*Various effects of playing a game*) Sometimes, both gerunds and present participles may have the same function in the sentence, thus they should be distinguished formally. This may be achieved by adding a prepositions or conjunctions. Regarding present participles, adverbial clauses are formed using a conjunction (*while scanning her mobile phone*). However, gerundial adverbial clauses use a preposition (*on scanning her mobile phone*). A special situation emerges when a gerund stands in the position of a noun premodifier. The differentiation between a gerund and a present participle is then based on the different meaning and intonation (Dušková et al. 2012, 269) See examples (23 – 24).

(23) Drinking water (gerund)

(24) Running water (participle)

In the example (23) *drinking* is a gerund since the sentence can be paraphrased as *water for drinking*. The instance (24) is a participle (*water that runs*) (Dušková 2012, 268).

Attention will further be devoted to different types of gerundive and participial clauses based on their meaning. This will help with establishing their different meanings needed to identify their condensational potencies along with suitable Czech translations.

4. Clauses Condensed by Gerunds and Present Participles

In this part, types of condensed non-finite clauses will be discussed. In the theoretical part, different ways to condense the sentence have already been proposed (see chapter 2). It was already said that the term “condensation” is rather versatile and grammarians tend to use it with different structures resulting in reduced length of sentence by avoiding and deleting sentence elements. Non-finite clauses participate in a process which Mathesius calls *complex condensation* (Mathesius 1975, 146). The same opinion is held by Dušková who uses the term *syntactical condensation* (Dušková et al. 2012, 568). Mathesius pleads that “we use the term to describe the fact that English tends to express by non-sentence elements of the main clause such circumstances that are in Czech, as a rule, denoted by subordinate clauses.” (Mathesius 1975, 146). Dušková adds the definition and says that non-finite structures carry a *secondary predication* which basically means that non-finite clauses show both verbal and nominal / adjectival properties. This allows them to create variety of condensed clauses which are in the Czech language often communicated using subordinate clauses which are not a must but rather an alternative in English (Dušková et al. 2012, 569).

Gerunds does not exist in the Czech language. However, as Dušková claims, the closest meaning is communicated by verbal nouns (*plavání, skákání, ježdění*) (Dušková et al. 2012, 569). The similar approach might be applied on present participles. Mathesius, when seeking the closest equivalents, proposes that verbal adjectives may be used to communicate the meaning of English present participles (Mathesius 1975, 147). However, verbal nouns and adjectives are by no means the same as English gerunds and participles and some participial and gerundive structures must be translated using the subordinate clauses. Different types of participial and gerundive will be proposed in the following chapter along with their specific possibilities of translation.

4.1. Participial Clauses

4.1.1. Participle Functioning as a Noun Premodification

One of the uses of present participles is as a premodifier of a noun and although it is not a case of true sentence condensation, it may be paraphrased as a condensed relative clause, which one of the most easily condensed structures in English.

(25) The refining process / The process that is refining.

In this case, however, one needs to be careful when evaluating such constructions since the form and position of the present participle and deverbal adjective are the same. However, the absence of possibility to grade and intensify the structure orients the classification towards present participles and away from deverbal adjectives. The possible paraphrases and translations are described along with condensed relative clauses in the following chapter.

4.1.2. Condensed Relative Clauses

Full relative clauses can be condensed by participial relative clauses omitting the relative pronoun. Nevertheless, Biber describes that this omission can appear only when a relativizer carries the function of subject. (Biber 2008, 619) When paraphrasing into the full clause, it is important to remember that one must use a correct form of the relativizer. As Dušková pleads, there are three main relative pronouns introducing the relative clauses: *Who*, *which* and *that*. When referring to the animate item describing a person, the relative pronoun *who* or *that* must be used. However, when describing a non-person item (including animals), pronouns *which* or *that* are used instead (Dušková 2012, 115).

(26) Children running around. (condensed relative clause)

(27) Children who are running around / Children who run around. (full relative clause)

In the example (27) the antecedent is children, thus the relative pronoun *who* is used. Moreover, it is functioning as a subject and thus can be completely omitted and the sentence becomes condensed.

The Czech translation of participial relative clauses may be basically achieved in two ways. Translators may use verbal adjectives (*běhající*, *plavající*, *skákající* etc.) which are basically the only variation of transgressives widely used in modern Czech language. These might be considered a direct equivalent of English present participles in the Czech languages. The second possibility of translation is using Czech subordinate relative clauses. These are introduced by relative pronouns *který* or *jež* in the correct form, depending on the gender, number and case (see example 28).

(28) Yesterday, I saw a crying girl / Včera jsem viděl dívku, která / jež brečela

4.1.3. Adverbial and Supplementive Clauses

Participial adverbial clauses are condensed structures of full adverbial clauses. They mainly function as adjuncts, conjuncts and subjuncts.

(29) You will have to be very careful, when dealing with such issues.

However, supplementive clauses seem to be more common. According to Quirk, these are structures with no conjunctions. He further adds that “like non-restrictive relative clauses and clauses in an and-coordination, they do not signal specific logical relationships, but such relationships are generally clear from the context (Quirk 1985, 1124). Such constructions may be viewed as condensed non-restrictive and sentential relative clauses, therefore paraphrased and translated in the similar way as restrictive relative clauses which were described in the previous chapter (4.1.2). The problem may occur when the supplementive clause appears in the first part of the sentence. Then one must guess the missing conjunction and in many cases the paraphrase by a full clause is not possible.

(30) I have seen many horror movies, including *The Ring* (condensed adverbial / supplementive clause)

(31) I have seen many horror movies, which includes *The Ring*. (paraphrased non-restrictive relative clause)

When considering the possible Czech equivalents of these clauses, translators would again use either verbal adjectives or subordinate relative clauses headed by pronouns *který* and *jež* (again with respect to the gender, number and case). If the supplementive clause carries more adverbial meaning i.e. appears in the first part of the sentence, it is usually translated using various adverbial subordinate clauses.

4.1.4. Present Participles the Function of Object Complement (Nominal Clauses)

Probably the least frequent type of condensed participial clauses are participles in the function of an object complement. According to Dušková such a participle usually occurs after verbs of perception (*see, feel, hear*) and verbs such as *catch, find, want* etc.

(32) I caught him sneaking around my house.

The possible paraphrases by full clauses would use *as* or *when* clauses (*I caught him when he was sneaking around my house*). Dušková adds that possible Czech equivalents are usually made using the conjunction *jak* (33). Another option are infinitives (34) and prepositional phrases (Dušková 2012, 587).

(33) Přistihl jsem ho, jak slídí okolo mého domu. (conjunction)

(34) Přistihl jsem ho slídit okolo mého domu. (infinitive)

4.2. Gerundial Clauses

4.2.1. Gerund Functioning as Noun Premodification

Although a noun premodification is usually a matter of present participles which carry the adjectival meaning, gerund may present in this position, too. Dušková explains that the meaning and intonation of the gerundive phrase is different from the participial phrase. (Dušková 2012, 577)

(35) We need to find drinking water.

In the example (35) *drinking water* is a condensed structure of *water for drinking* not *a water which is drinking*.

Gerunds in the position of noun premodifiers are often a matter of codified lexical unit i.e. the whole phrase stands for one lexeme. This projects into the Czech translation where these phrases sometimes have equivalents consisting of just one word (*jumping rope* – švihadlo, *spending money* – kapesné).

Gerunds in the position of premodifiers will not be included in the analysis due to their missing condensational qualities. Nevertheless, the occurrences found in the texts will be described in terms of their translation.

4.2.2. Nominal Clauses

Gerundive nominal clauses show nominal features, which cause that they usually occur with prepositional adjectives and verbs or nouns which are followed by a preposition (Nováková 2008, 31).

(36) He wrote an article about making money. (Noun + preposition)

(37) She likes running at the gym. (Verb)

(38) Peter was capable of coping with the situation. (Adjective + preposition)

In the example (36) a gerund follows the noun using the preposition *about*. The example (37) shows that a gerund directly follows a verb *like*. The last example (38) shows the predicate

adjective *capable* with a preposition *of* before the gerund. Gerundive nominal clauses are usually barely paraphrasable. Some may be paraphrased using *that* clauses. However, the resulting sentence usually sounds unnatural and should not be used (see example 39).

- (39) trying to stay active may be achievable. / the fact that we try to stay active may be achievable.

The Czech translation would use verbal nouns (*plavání, skákání* etc.) in vast majority of cases. Dušková even considers them equivalents of gerunds in the Czech language (Dušková 2012, 569) Another option is use of nouns or paraphrases by various subordinate clauses.

- (40) To, že se pokoušíme zůstat aktivní může být dosažitelné.

4.2.3. Adverbial Clauses

The last type of clauses to discuss are gerundial adverbial clauses. According to Dušková, gerunds in adverbial clauses almost always follow prepositions (unlike participles which go with conjunctions) (Dušková 2012, 578). Variety of types of subordinate adverbial clauses may be used with gerunds. These are mainly adjuncts of time, manner, means, purpose and circumstance.

- (41) On my starting the studies at the university I was very doubtful. (adverbial of time)
(42) After living in the USA for few years, she is much more experienced. (adverbial of time)
(43) We can stay safe and sound by being careful. (adverbial of means)
(44) It is better than working all night. (adjunct of concession)
(45) Apart from eating all the food, he is also very thirsty. (adjunct of accompanying circumstance)
(46) It serves for making a coffee. (adverbial of purpose)

Nováková claims that since adverbial gerundive clauses go with prepositions (*after, by* etc.) it is not easy to identify their condensational properties. However, since some prepositions carry the same function as conjunctions (*after, before* etc.) it is possible to paraphrase them into the full adverbial clause. Another possibility is to paraphrase some prepositions, using the relative clause. (Nováková 2008, 29)

- (47) Due to having a sore throat, I took a medicine. (condensed clause)
(48) Due to the fact that I had a sore throat, I took a medicine. (full clause)

In example (47) there is a gerundive adverbial clause (*due to + having*) which can be considered condensed variation of the full clause proposed in the example (48).

The Czech translation is frequently headed by direct translations of prepositions (*for – pro, instead of – místo / namísto*) or various phrases (*jen tím, že* or *bez toho, aniž* etc.). It must be stressed that gerundive adverbial clauses are very heterogenous thus unlike for example condensed relative clauses, it is difficult to come up with one single pattern of translations.

5. Scientific Prose and Popular Scientific Functional Styles

5.1. Characteristics of Scientific Prose Style

Because in the practical part of this paper, texts written in scientific and popular scientific style will be analysed, it is essential to describe both styles and summarize the main differences between them.

First the scientific prose style will be examined. Urbanová and Oakland explain that the main purpose of this style is to provide readers with facts which are concise, precise and not biased. This is achieved by special terminology that is usually frequently used. In English language, these are mainly words originating from Greek and Latin. They further allege that the main symbol of scientific texts is a matter-of-factness which makes these texts unambiguous in terms of language and without emotions. (Urbanová and Oakland 2002, 48-49) from the perspective of this thesis, the most important factor is usage of non-finite structures which is likely to be significantly higher than in different, less formal and explicit functional styles such as popular scientific style. This would be mainly due to higher economical demands, which cannot be fulfilled by constant using the full finite clauses.

5.2. Characteristics of Popular Scientific Style

The next type of texts which will be analysed in the practical part of this paper is popular scientific style. Urbanová and Oakland claim that the main difference between these two styles is addition of less formal and more personal language in popular scientific style, since this style is used for people who are not experts in such field. Terminology is thoroughly explained and a writer does not expect people to know it (Urbanová and Okaland 2002, 49). Moreover, texts do not follow this strict unbiased manner and impersonal examples and metaphores are frequently used which result in less compact text with decreased occurrence of non-finite structures.

III. Analysis

This analysis evaluates the distribution of non-finite gerunds and participles in the pieces literature of popular scientific and scientific-prose style text types.

The main target of this research paper is to evaluate the means of condensation in English language, particularly in the popular scientific and the scientific style. The frequency and purpose of these condensed structures in both styles are evaluated. Then potential Czech equivalents, together with the equivalents used by a Czech translator, are proposed.

In the following parts, methods and sources of the research are described first and results of the analysis.

1. Sources and Methods

The practical part of this thesis has two main purposes. The first one is to test the hypothesis that non-finite *-ing* clauses are more frequent in scientific prose texts than in popular scientific texts. The second is to propose the Czech translation which might be used by translators when dealing with non-finite *-ing* clauses. Moreover, the collected non-finite clause occurrences are divided according to their function in the sentence into either gerunds or present participles and their different types of clauses.

In order to calculate the number of non-finite *-ing* clauses in scientific and popular scientific texts, two texts of each functional style are chosen. 24 standard pages (approximately 6000 words) of the text belonging to each category are randomly chosen and the total number of non-finite *-ing* clauses found is calculated. To establish their condensational potentials and possible translations into the Czech language, some of these occurrences are commented on in more detail. All the non-finite *-ing* clauses included in the analysis are listed in the appendix 2

The sources chosen are *Nancy Clark's Sports Nutrition Guidebook* and *Burn the Fat Feed the Muscle* for popular scientific texts. For scientific prose texts these are *Solid Waste Management and Recycling: Actors, Partnerships and Policies in Hyberabad, India and Nairobi, Kenya* and *Are the Effects of Unreal Violent Video Games Pronounced When Playing with a Virtual Reality System?*

2. Results

The analysis supports the hypothesis that non-finite *-ing* clauses are more frequent in scientific texts. In total, there are 217 non-finite *-ing* clauses in 48 standard pages of the text from which 134 (61.75%) are found in scientific prose texts and 83 (38.25%) in the popular scientific texts. These results include present participles in the function of a noun premodifiers since they often function as condensed relative clauses.

Although the total number of gerunds and present participles is almost the same (104 and 113, respectively), it significantly differs in each style. In the popular scientific style, there are 51 gerunds and only 32 present participles whereas in the scientific prose style there are similarly 53 gerunds but 81 present participles. This shows that present participles are a dominant non-finite *-ing* structure in scientific prose texts since they account for 81 (71.68%) from all 113 present participles and are the main mean of sentence condensation, especially supplementary clauses. For more see tables in the appendix 3.

In the following parts of the analysis, different types of non-finite *-ing* clauses will be analysed with commented examples collected from the texts. In this part, possibilities of the Czech translation will be proposed and discussed too.

3. Analysed Gerundive and Participial Clauses

3.1. Participial Clauses

There are 113 occurrences of present participial clauses collected from the texts. These were distinguished into 4 types described in the chapter 4. For more See tables in the appendix 2.

3.1.1. Condensed Relative Clauses

There are 18 condensed relative clauses found in scientific prose texts and 9 in popular scientific texts. In scientific prose texts, they account for 22.22% of all participial *-ing* clauses (13.43% of all non-finite *-ing* clauses) and in popular scientific prose for 28.13% (10.84% of all non-finite *-ing* clauses). They account for 15,93% and 7,96% of all participial clauses and 8,29% and 4,15% of all non-finite *-ing* clauses, respectively. For more see tables 1,2,3,5 and 6 in the appendix 3.

As described in the chapter 4, condensed relative clauses are most easily paraphrasable into the full restrictive relative clauses. All the examples gathered may be paraphrased into the full relative clauses using relative pronouns *who / which* or *that*. There are 14 instances where a relative pronoun refers to an animate noun indicating a person, thus pronouns *who* or *that* must be used. The rest (13 instances) are inanimate nouns taking relative pronouns *which* or *that*. The Czech equivalents are usually introduced with relative pronouns *kteřý* and *jenž* with respect to gender, case and number in the Czech sentence (see chapter 4. In some cases, it is possible to use verbal adjectives instead. However, it is important to consider the meaning of the sentence because it should be as close to the original as possible. In some cases, a verbal adjective may sound rather unnatural. Occurrences are labelled in the way they occur in the corpus in the appendix 2.

(2) You've probably heard stories about people getting lost in the mountains [...]

This condensed relative clause can be paraphrased as *stories about people who / that get lost / are getting lost in the mountains*. The Czech translation would involve pronouns *kteří* and *jež*: *Příběhy o lidech, kteří / jež se ztratili v horách*. The verbal adjective would change the meaning of the sentence, indicating the repeated action. (*příběhy o lidech ztrácejících se v horách*).

(1) A 5 foot 8 inch male bodybuilder weighing 200 pounds would be grossly overweight according to a height-weight chart.

This condensed relative clause may be paraphrased as: *Male bodybuilder who / that weighs / is weighing 200 pounds*. The Czech translation again allows use of two different pronouns *který* and *jenž* (*Kulturista který / jenž váží 200 liber*). In this particular sentence, it is also possible to use the active form of verbal adjective *vážící* i.e. *Kulturista vážící 200 liber*.

(4) [...] Dr. C. Everett Koop, recently published a statement pointing out the shortcomings of BMI.

This clause can be paraphrased using pronouns *which* or *that* (*A statement which / that points out / is pointing out the shortcomings*) The translation again allows both pronouns *který* and *jenž* (*prohlášení, které / jenž poukazuje na nedostatky BMI*) Verbal adjective *poukazující* is also possible (*prohlášení poukazující na nedostatky BMI*).

(5) High body fat levels have been linked to over 30 health problems including diabetes [...]

This reduced relative clause may be paraphrased as: *30 health problems which / that include diabetes / are including diabetes*. The translation can again be *30 zdravotních problémů, které / jež zahrnují cukrovku / zahrnujících cukrovku* or even the preposition *včetně* can be used (*30 zdravotních problémů, včetně cukrovky*).

(9) Calcium is most important in the three years surrounding puberty [...]

In this sentence the possible full clause would use relative pronouns *which* or *that* (*Calcium is most important in the three years which / that surrounds / are surrounding puberty*). The Czech translation may include a relative pronouns *které* or *jež*, however, considering the meaning of the sentence, the best choice would be either a verbal adjective *obklopující* or even prepositions *okolo* or *kolem* (*Vápník je nejdůležitější během tří let, které / jež obklopují pubertu / obklopujících pubertu / tří let okolo / kolem puberty*).

(7) A 2005 survey of 13,621 food samples revealed that pesticide residue exceeding the tolerance was 0.2 percent [...]

This condensed relative clause can be paraphrased into the full clause using relative pronouns *which* or *that* (*A 2005 survey of 13.621 food sample revealed that pesticide residue which / that exceeded / was exceeding the tolerance was 0.2 percent*). The Czech translation is achieved by using relative pronouns *které* and *jež* or a verbal adjective *překračující* i.e. *Průzkum z roku 2005, zahrnující 13.621 vzorků ukázal, že zbytky pesticidů, které / jež překračují / zbytky pesticidů překračující povolený limit byly nalezeny u 0,2 procent vzorků*.

(88) Although there is, in general, some evidence regarding the positive effects of playing video games [...]

The next example of a reduced relative clause can be paraphrased into the full clause as follows: *Although there is, in general, some evidence which / that regards / is regarding the positive effects of playing video games [...]* When translating into the Czech language translators would use relative pronouns *které* or *jež* or a verbal adjective *týkající se* (*Ačkoli celkově vzato existují důkazy, které / jež se týkají / důkazy týkající se pozitivních efektů hraní videoher [...]*).

(93) Therefore, we expect, that participants playing with VR device will report higher immersion [...]

This example of a reduced relative clause might be paraphrased into the full clause in the following way: *Therefore, we expect, that participants who / that play / are playing with VR device will report higher immersion.* The Czech equivalent sentence is created using the relative pronouns *kteří* and *již* (*Tudíž očekáváme, že účastníci, kteří / již hrají se zařízením pro virtuální realitu, budou popisovat větší pohlcení hrou*). This example can also be paraphrased with a verbal adjective *hrající* (*Tudíž očekáváme, že účastníci hrající se zařízením pro virtuální realitu, budou popisovat větší pohlcení hrou*).

(89) [...] playing VGs may activate aggressive-related constructs making them more readily accessible in memory.

This case of condensation of the relative clause can be paraphrased into the full clause in the following way: *Playing VGs may activate aggressive-related constructs which / that make them / are making them more readily accessible in memory.* The Czech translation might be done using the relative pronouns *které* or *jež* i.e. *Hraní videoher může aktivovat schéma agresivního chování, které / jež je pak snadněji dostupné v paměti.* In this case, a verbal adjective *dělající jej* might sound rather perplexing and thus should be avoided (*Hraní videoher může aktivovat schéma agresivního chování dělající jej snadněji dostupné v paměti*).

(91) Studies conducting mediation analysis are also quite scarce.

The next example taken from the corpus can be transformed into the full clause as follows: *Studies which / that conduct / are conducting mediation analysis are also scarce.* When translators are considering the Czech translation, they should use relative pronouns *které* or *jež* (*Studie, které / jež provádějí mediánové analýzy jsou také poměrně vzácné*) This example can

also be paraphrased with a verbal adjective *provádějící* (*Studie provádějící mediánové analýzy jsou také poměrně vzácné*).

(6) In women, this fat also includes sex-related fat deposits including the breast tissue and uterus.

In this sentence, the full clause can be created using relative pronouns *which* or *that* (*Fat deposits which / that include / are including the breast tissue and uterus*). The Czech translation can be achieved again by pronouns *které* and *jež* or by a verbal adjective *zahrnující* (*Zásoby tuku které zahrnují / jež zahrnují / zahrnující tkáň prsou a dělohu*)

(92) however, no a priori hypotheses regarding gender effects will be made [...]

This condensed relative clause might be paraphrased in the following way: *However, no a priori hypotheses which / that regard / are regarding gender effects will be made*. The translators would again use both relative pronouns *které* and *jež* or a verbal adjective *týkající se*. The possible Czech translation then is: *Nicméně žádné hypotézy, které / jež se týkají / týkající se vlivu pohlaví nebudou stanoveny*.

(94) [...] those using the computer screen interface.

The last but one example of condensed relative clause might be paraphrased into the full relative clause as follows: *those who / that use / are using the computer screen interface*. The Czech translation may be done using the relative pronouns used with persons e.g. *kterí* or *jež* (*Ti, kteří / jež používají rozhraní na obrazovce*). A verbal adjective *používající* would feel rather awkward and would not be widely used (*ti, používající rozhraní na obrazovce*).

(97) We do not expect to find any differences between participants playing with different contents [...]

The last example of condensed relative clauses which was picked for the analysis might be paraphrased in the following way: *We do not expect to find any differences between participants who / that play / are playing with different contents*. The translator must then again use relative pronouns *kterí* and *jež*. In this sentence, a verbal adjective *hrajícími* can be used as well with no change of the original meaning (*Neočekáváme, že najdeme jakékoli rozdíly mezi účastníky, kteří / jež / účastníky hrajícími rozdílný obsah*.)

3.1.2. Participles in Function of Noun Premodifier

There are 20 present participles in the function of noun premodifier collected from scientific prose texts and 5 in popular scientific texts. In scientific prose texts, they account for 24.69% of all participial clauses (14.93% of all clauses) and in popular scientific prose for 15.63% (6.02% of all clauses). They account for 17.70% and 4.42% of all participial clauses and 9.22% and 2.30% of all non-finite *-ing* clauses, respectively. For more see tables 1,2,3,5 and 6 in the appendix 2.

Participles in the function of noun premodifiers may be viewed as a type of condensed restrictive relative clauses, thus can be paraphrased using relative pronouns *which*, *who* and *that* (see chapters 4.1.1. and 4.1.2.). From 25 examples collected from texts all are used with inanimate nouns, therefore relative pronouns *which* and *that* must be when paraphrasing into the full clauses. As described in the previous chapter, the Czech translation involves adjectives and verbal adjectives. The use of verbal adjectives may be considered an equivalent of English condensed structures in the Czech language.

(105) In many cities in the developing world [...]

In the first example, a full clause paraphrase of the sentence would be: *In many cities in the world which / that develops / is developing*. In the Czech translation, one would use an adjective *rozvojové* i.e. *Ve spoustě městech v rozvojových zemích*. The verbal adjective (*Rozvíjející se země*) might be also possible but it is not a widely used collocation.

(109) Developing countries have made it abundantly clear that environmental policies should reflect their own priorities [...]

In this example, the premodifier may be seen as condensed relative clause paraphrasable as: *Countries which / that develops / are developing have made it abundantly clear* [...] This example is similar to the previous example (109) i.e. adjective or verbal adjective may be used (*Rozvojové země zcela jasně ukázaly / rozvíjející se země zcela jasně ukázaly*) again, the former construction using the adjective is preferred due to its more natural appearance in the Czech language.

(118) They then tested the effects of playing those matched games on the remaining cognitive–affective variables [...]

The possible paraphrase of the next example of the participle in the function of premodifier may look as follows: *They then tested the effects of playing those matched games on the*

cognitive-affective variables which / that remains / are remaining. When translating into Czech, one should use a verbal adjective *zbývajících*. Relative pronouns *jež* or *které* can be used as well, however, the structure would not be economical. The possible translation would then look similar to this: *Poté otestovali jaký vliv má hraní soutěžních her na zbývající kognitivní a afektivní proměnné / na kognitivní a afektivní proměnné, které / jež zbývají*.

(13) Carefully wash and rinse fruits and vegetables under running water [...]

In this sentence, a participial premodification might be changed into the full relative clause in the following way: *Carefully wash and rinse fruits and vegetables under the water which / that runs / is running*. However, it must be heavily stressed that *running water* is a codified lexeme and such a paraphrase would most likely never happen. The Czech translation directly follows the English equivalent and a verbal adjective *tekoucí* is used (*Pečlivě opláchněte a očistěte ovoce a zeleninu pod tekoucí vodou*).

(112) Furthermore, the IPMA also considers the possibility of an existing relationship among the internal state variables [...]

The participial premodification may be changed into the relative clause as follows: *Furthermore, the IPMA also considers the possibility of a relationship which / that exists among the internal state variables*. The Czech translation again uses either a verbal adjective *existujících* or relative pronouns *které* or *jež* (*Navíc, IPMA zvažuje možnost existujících vztahů / vztahů, které / jež existují mezi vnitřními proměnnými*).

(115) it may be related to pleasurable and rewarding situations [...]

The last example chosen for the analysis may be paraphrased as: *It may be related to situations which / that are pleasurable and rewarding*. The Czech translation is complicated because *rewarding situation* does not have any widely used Czech equivalent. *To může být spojováno se situacemi, které / jež jsou příjemné a vyvolávají pocit odměnění / odměňují hráče*.

3.1.3. Participial Adverbial and Supplementive Clauses

There are 43 present participles functioning as adverbial and supplementive clauses collected from scientific prose texts and 17 from popular scientific texts. In scientific prose texts, they account for 53.09% of all participial clauses (32.09% of all clauses in this style) and in popular scientific texts for 53.13% (20.48% of all clauses in this style). They account for 38.05% and

15.04% of all participial clauses and 19.82% and 7.83% of all non-finite *-ing* clauses, respectively. Participial adverbial and supplementary clauses are the most frequent type of participial clauses in both functional styles and thus may be considered the most potent tool of sentence condensation in English scientific prose and popular scientific functional styles. For more see tables 1,2,3,5 and 6 in the appendix 2

These two types of clauses are treated together because they both communicate the adverbial meaning. The main difference between the two is that adverbial clauses are introduced by a preposition and supplementary clauses are incorporated into the sentence using commas with no preposition (for more see chapter 4.1.3.) From 60 clauses found in the texts, 45 are considered rather supplementary and 18 show more adverbial meaning. Clauses which are considered more adverbial are these where participle is located in the initial position in the sentence (7 instances) and these where a participle is preceded by conjunctions *when*, *while* and *although* (8 instances) Since aspect and tense are often not shown in the adverbial clauses, paraphrasability is sometimes difficult. However, supplementary clauses are paraphrasable into non-restrictive or sentential relative clauses. Czech equivalents consist of relative clauses introduced by relative pronouns *který* and *jež* or more directly verbal adjectives (see chapter 4.1.3.).

(15) [...] AHA's recommended limit of two egg yolks per week, including those used in cooking.

The first example of a supplementary clause can be paraphrased into the non-restrictive relative clause as follows: *AHA's recommended limit of two egg yolks per week, which includes those used in cooking.* The possible translation includes pronouns *který* and *jež* or a verbal adjective *zahrnující* (*Doporučený limit AHA, dva vaječné žloutky týdně, který / jež zahrnuje / zahrnující i žloutky použité při vaření*).

(27 – 28) [...] it covers up the muscles with a thick layer of spongy insulation, obscuring the muscle definition below and adding a round, soft and doughy quality to the entire body.

In this analysis, this sentence is significant for its two condensed participial structures referring to the same phrase i.e. *spongy insulation*. The full clause would then be: *Layer of spongy insulation which / that obscures / is obscuring the muscle definition and (which / that) adds / is adding a round ...* When translating this sentence to the Czech language the best choice would be to use pronouns *která* or *jež* i.e. *Vrstva houbovité izolace, která / jež zakrývá definici svalů a (která / jež) dělá tělo zavalitým.* verbal adjective would not sound natural since there are two

elements in the sentence which must be changed (*zakrývající a dělající*) and moreover a verbal adjective *dělající* has a limited use in the Czech language.

(30) Desirable body fat levels for athletes may be even lower, depending on the nature of the sport.

Another example of a supplementive clause may again be paraphrased by a sentential relative clause (*Desirable body fat levels for athletes may be even lower, which depends on the nature of the sport*). Czech equivalents of the sentence would use a pronoun *což* (*Požadované množství tělesného tuku u sportovců může být dokonce nižší, což záleží na typu sportu*).

(31) Bone density may decrease, putting them at higher risk of osteoporosis as they grow older.

This example of a supplementive clause could be paraphrased by a full non-restrictive relative clause (*Bone density may decrease, which puts them at higher risk of osteoporosis as they grow older*). In this sentence one may simply use a conjunction and (*Bone density may decrease and put them at higher risk of osteoporosis as they grow older*) The Czech translation would involve a pronoun *což* or a preposition *and* (*Hustota kostí se může snížit, což je s přibývajícím věkem vystavuje většímu riziku vzniku osteoporózy / Hustota kostí se s přibývajícím věkem může snížit a vystavit je tak vyššímu riziku vzniku osteoporózy*)

(125) [...] the sustainable use of renewable resources, minimising the use of non-renewable resources [...]

This supplementive clause can be paraphrased by a non-restrictive relative clause using the relative pronoun *which* (*the sustainable use of renewable resources, which minimise the use of non-renewable resources and appropriate physical planning*). The Czech translation would use relative pronouns *které* or *jež* (*dlouhodobé použití obnovitelných zdrojů, které / jež minimalizuje použití neobnovitelných zdrojů*). The use of a verbal adjective *minimalizující* is also possible in this sentence (*dlouhodobé použití obnovitelných zdrojů minimalizující použití neobnovitelných zdrojů*).

(111) This priming effect may, in turn, be used to make behavioural decisions, increasing the likelihood of engaging in aggressive behaviours [...]

This example of supplementive clause could be paraphrased by a non-restrictive relative clause using the relative pronoun *which* (*This priming effect may, in turn, be used to make behavioural decisions, which increase the likelihood of engaging in aggressive behaviours*) The Czech

translation can be achieved by using pronouns *keré* or *jež* (*Tento efekt primingu může být následně využit k rozhodnutím, které / jež zvyšují pravděpodobnost agresivního chování*) In this example, a verbal adjective *zvyšující* can also be used (*Tento efekt primingu může být následně využit k rozhodnutí zvyšující pravděpodobnost agresivního chování*). However, the use of pronouns would most likely be preferred.

(16 – 19) Yet, watchdog groups remind us that small amounts of pesticides can accumulate in the body, potentially increasing cancer risks, disrupting hormones, hindering reproduction, and contributing to birth defects.

This example of a supplementive clause is unique for the fact that it contains four participles which all may be paraphrased by a sentential relative clause. This can again be achieved using a relative pronoun *which* (*Yet, watchdog groups remind us that small amounts of pesticides can accumulate in the body, which potentially increases cancer risks, disrupts hormones, hinders reproduction, and contributes to birth defects*). The possible translation would involve a pronoun *což* (*Přesto nám kontrolní orgány připomínají, že se malé množství pesticidů může hromadit v našem těle, což potenciálně zvyšuje riziko rakoviny, narušuje hormony, reprodukci a přispívá k vrozeným vývojovým vadám*). In this example, verbal adjectives *zvyšující*, *narušující* and *přispívající* would not be used for cohesive purposes.

(140) This could be one of the reasons why action-oriented games, including those without violence, tend to increase physiological arousal [...]

This sentence is an example of widely used supplementive clause introduced by *including*. It can be paraphrased into the non-restrictive relative clause using a relative pronoun *which* (*This could be one of the reasons why action-oriented games, which include those without violence, tend to increase physiological arousal*) When translating such sentence into Czech one would use pronouns *keré* or *jež* (*Toto by mohl být jeden z důvodů proč akční hry, které / jež zahrnují i hry bez násilí mají tendence zvyšovat tělesné funkce*) The translator could also use a verbal adjective *zahrnující* which would be, in this case, even more cohesive (*Toto by mohl být jeden z důvodů proč akční hry zahrnující i hry bez násilí mají tendence zvyšovat fyziologické odezvy*)

(141) Yu [2002] reported opposite results, showing that players displayed a more positive affective state in the VG than in the NVG condition.

Another example of a supplementive clause may be viewed and paraphrased as a non-restrictive relative clause using a relative pronoun *which* (*Yu [2002] reported opposite results, which show*

that players displayed a more positive affective state in the VG than in the NVG condition) The Czech translation would again use pronouns *které* or *jež* (*Yu [2002] prezentoval opačné výsledky, které / jež ukazují, že hráči vykazovali vyšší afektivní stavy při hraní videoher než mimo herní aktivitu*). The use of verbal adjective *ukazující* is also possible in this sentence (*Yu [2002] prezentoval opačné výsledky ukazující, že hráči vykazovali vyšší afektivní stavy při hraní videoher než mimo herní aktivitu*).

(143) Most of the 54 studies included in their analysis were experimental, suggesting a causal relation [...]

This example of a supplementive participial clause can be paraphrased into the sentential relative clause with a relative pronoun *which* (*Most of the 54 studies included in their analysis were experimental, which suggests a causal relation*). The translation into the Czech would be achieved by a pronoun *což* (*Většina z 54 studií, které byly zahrnuty v jejich výzkumu byla experimentální, což naznačuje kauzální vztah*). The verbal adjective *naznačující* might be used (*Většina z 54 studií, které byly zahrnuty v jejich výzkumu byla experimentální naznačující kauzální vztah*).

(90) [...] Anderson [2004] carried out another meta-analysis, setting apart studies with an appropriate methodology from those suffering from numerous limitations [...]

Another example of a supplementive participial clause contains a phrasal verb *setting apart* . This sentence may be paraphrased into the non-restrictive relative clause using the relative pronoun *which* (*Anderson [2004] carried out another meta-analysis, which sets apart studies with an appropriate methodology from those suffering from numerous limitations*) There are two possibilities of translation into Czech. The first one would use relative pronouns *která* or *jež* (*Anderson [2004] zprostředkoval metaanalýzu, která / jež odděluje studie s vhodnou metodologií, od studií vykazujících četná omezení*) The verbal adjective *oddělující* is possible and would even be preferred in this particular sentence (*Anderson [2004] zprostředkoval metaanalýzu oddělující studie s vhodnou metodologií, od studií vykazujících četná omezení*).

(146) [...] the highest effects were established in recent studies, stating that such results could be owing to technological advances in this area.

The next example of supplementive clause to analyse may be paraphrased into the full clause with a pronoun *which* (*The highest effects were established in recent studies, which state that such results could be owing to technological advances in this area*) the Czech translation would

be headed by pronouns *keré* and *jež* (*Největší efekty byly zjištěny v nedávných studiích, které / jež tvrdí, že takové výsledky mohou být z důvodu technologického pokroku v této oblasti*). The verbal adjective *tvrdících* might also be used. (*Největší efekty byly zjištěny v nedávných studiích tvrdících, že takové výsledky mohou být z důvodu technologického pokroku v této oblasti*).

(150) [...] a finer sense of presence, providing higher involvement and immersion [...]

The following example of a supplementive clause can be paraphrased as follows: *A finer sense of presence, which provides higher involvement and immersion*. It is important to use a relative pronoun when paraphrasing such structure. The Czech translators would most likely use either relative pronouns *který* or *jež* (*Silnější pocit přítomnosti, který / jež poskytuje větší zapojení a pohlčení hrou*). Another possibility is to use a verbal adjective *skýtající* (*Silnější pocit přítomnosti, skýtající větší zapojení a pohlčení hrou*).

(151) Considering these results, it is possible that [...]

The next example of a supplementive clause has rather adverbial meaning and is thus paraphrased in a different way than non-restrictive participial clauses. The first example can be paraphrased in many ways. For the present tense, the most appropriate option seems to be *if* and *when* (*If one considers / If we consider / when we consider these results, it is possible that [...]*) The Czech translation would use conjunctions *když* and *pokud* (*Když / pokud zvážíme tyto výsledky, je možné, že [...]*) It is also possible to use a condensed structure *zvážíme-li* (*zvážíme-li tyto výsledky, je možné, že [...]*)

(139) Concerning physiological arousal, studies have mainly analysed heart rate (HR) and blood pressure (systolic and diastolic).

This sentence is similar to the previous one. However, it cannot be directly paraphrased into the full clause (*If studies concern physiological arousal, studies [...]*). The most natural translation would use an adverbial structure *při zaměření* (*Při zaměření na zvýšené tělesné funkce, studie zkoumají především rychlost srdečního tepu a krevní tlak (systolický a diastolický)*).

(22) Rob Faigin, writing in the book “Natural Hormonal Enhancement,” makes a humorous, but true observation about calorie balance and weight loss [...]

In this sentence the condensed non-restrictive relative clause: *Rob Faigin, writing in the book* can be paraphrased into full clause as *Rob Faigin, who / that writes / is writing in the book*. The translation into the Czech language is made using the verbal adjective *píšící* i.e. *Rob Faigin, píšící ve své knize*.

(29) Muscle is your “metabolic furnace,” burning calories even as you sleep and watch TV.

This condensed relative non-restrictive clause may be paraphrased to the full clause as: *Your “metabolic furnace,” which / that burns / Is burning calories*. The Czech translation can again choose between two pronouns *kteřá* or *jež*. *Vaše metabolická pec, která / jež pálí kalorie dokonce i když spíte*. verbal adjective *pálící* can be used as well.

3.1.4. Participles in Function of Object Complement (Nominal Clauses)

There is only 1 present participle functioning as an object complement found in the popular scientific style text. It accounts for 3.13% of participial clauses in the popular scientific text (1.20% of all clauses in this style). It accounts for 0.88% of all participial clauses and 0.46% of all non-finite *-ing* clauses. It is the least frequent type of all non-finite clauses gathered.

Due to their character, present participles in the function of an object complements are very rare in scientific and popular scientific texts. It is probably owing to higher requirements on the matter-of-factness which results in less frequent occurrences of object pronouns. There is only 1 occurrence of participle in the function of an object complement in the texts.

(32) [...] picture yourself sitting in a giant grocery scale [...]

The only example can be paraphrased into the full clause using a conjunction *as* i.e. *picture yourself as you sit in a giant grocery scale*. The Czech translation would use either a verbal adjective *sedícího* or an adverb *jak*. (*představte si sami sebe, jak sedíte / sedícího na velké kuchyňské váze*).

3.2. Gerundive Clauses

There are 104 occurrences of gerundive clauses collected from the texts. These were distinguished into 2 groups described in the chapter 3. Gerunds in the function of a premodifier are also the part of the chapter, however, they are not included in the analysis and are rather presented as a matter of curiosity. See tables in appendix 2.

3.2.1. Gerunds in the Function of Noun Premodifier

As previously mentioned in the theoretical part, not only participles are found in the position of noun premodifiers. Gerunds functioning as a noun premodifiers are not considered sentence condensers since they semantically differ from present participles and thus are not seen as

reduced relative clauses. Gerundive clauses, can be formally paraphrased using the preposition *for* i.e. *water for drinking / drinking water*. Since the Czech language does not contain gerunds at all, the translation usually involves adjectives or even nouns. Sometimes, just one word is used as seen in examples (33 and 35) because it refers to one-word lexeme in the Czech language (see chapter 4.2.1.). There are only 3 occurrences of gerunds in the function of noun premodifier. Remember that these gerundive clauses are used only for the purposes of illustration and are not included in the analysis.

(33) [...] picture yourself sitting in a giant grocery store as you're dunked underwater in a tank or swimming pool.

In this sentence, *swimming pool* might be paraphrased as a *pool for swimming*. However, since the phrase is considered a one codified lexeme (as seen in example 35), the paraphrased structure will most likely never be used. Interestingly, the Czech translation involves an adjective *plavecký* (*plavecký bazén*) or simply *bazén*.

(34) Bonanno sees the term organic, in part, as a marketing ploy.

In the second example, a *marketing ploy* could be again paraphrased as a *ploy (used) for marketing*. However, as in the previous example, the term carries a strong collocation (yet it is not a lexeme) and would probably not be paraphrased in any way. The Czech again involves the adjective *marketingový*. The full phrase *marketingový trik* then carries a collocation of similar strength as it does in English. This example lies between a gerund and participle and might probably be interpreted both ways.

(35) If you are a swimmer or cyclist, you may want to cross-train with some jogging, jumping rope, or other weight-bearing exercise to enhance bone strength.

The last example of a gerund in the function of a noun premodifier is again a codified lexeme carrying a specific meaning, therefore a paraphrase is impossible. It would hypothetically involve a preposition *for* again (*The rope for jumping*). The Czech language uses its own lexeme consisting of one word (*švihadlo*).

3.2.2. Gerundive Adverbial Clauses

There are 11 gerundive clauses functioning as adverbial clauses collected from scientific prose texts and 21 from popular scientific texts. In scientific prose texts, they account for 20.75% of

all gerundive clauses (8.21% of all clauses in this style) and in popular scientific texts for 41.18% (25.30% of all clauses in this style). They account for 50.96% and 49.04% of all gerundive clauses and 24.42% and 23.50% of all non-finite *-ing* clauses, respectively. For more see tables 1,2,4,5 and 7 in the appendix 2.

Adverbial clauses taken from the texts are introduced by prepositions *by, with, for, without, instead of, after* and *before*, whereas the most common preposition is *by* which is used in 19 instances. The remaining conjunctions are used rather evenly. In clauses of manner and means, paraphrasability is usually problematic and should be avoided. On the other hand, gerundive adverbial clauses of time, which are introduced by prepositions *before* and *after* can be paraphrased without any problems (see examples 43 and 44). The Czech translation varies based on the type of the adverbial clause. Usually use of verbal nouns (which may be considered Czech equivalents of gerunds) or various conjunctions and seldom prepositions.

(40) A measurement of body overweight or obesity determined by dividing weight (in kilograms) by height (in meters) squared.

The first structure to analyse is an example of a gerundive adverbial clause of manner introduced by a preposition *by*. In this case, the paraphrase is problematic. One could use the phrase *in the way* (*A measurement of body overweight or obesity determined in the way that we divide weight (in kilograms) by height (in meters) squared*). However, such structure sounds rather awkward and would not be used. When translating into the Czech language, translators would use the Czech verbal noun *dělení* (*Měření tělesné nadváhy nebo obezity určené dělením váhy (v kilogramech) výškou (v metrech)*). The next option is to use a phrase *tím, že* i.e. (*Měření tělesné nadváhy nebo obezity tím, že dělíme váhu (v kilogramech) výškou (v metrech)*).

(180) Different methods of privatisation are suggested for achieving greater service efficiency and effectiveness.

The following example of adverbial clause of purpose is introduced by a preposition *for*. This structure cannot be paraphrased into the full clause in any way. The Czech equivalent of the sentence is straightforward, using the direct translation of the preposition *for* i.e. *pro* (*Různé metody privatizace se navrhují pro dosažení větší servisní účinnosti*). The second option includes a paraphrase by adverbial phrase *za účelem* (*Různé metody privatizace se navrhují za účelem dosažení větší servisní účinnosti*).

(52) By rationing your intake of fried foods and foods obviously high in fat (butter, margarine, mayonnaise, salad dressing, ice cream, cookies, chips), you'll [...]

The next sentence is an example of a gerundive adverbial clause of means which is headed by a preposition *by*. The paraphrase is problematic since *in the way that you ration* would not work in this sentence. The only possibility seems to be using *if / when* clause (*If you ration your intake of fried foods and foods obviously high in fat, (butter, margarine, mayonnaise, salad dressing, ice cream, cookies, chips), you'll [...]*). The possible Czech equivalent would use the Czech verbal noun *omezení / omezování* with a proper inflectional ending i.e. *Omezením příjmu smažených jídel a jídel s jasně vysokým obsahem tuku (másla, margarínu, majonézy, dresingu, zmrzliny, sušenek, brambůrků), dostáhnete [...]* It is also possible to use the equivalent of the paraphrased sentence which uses the conjunctions *pokud* or *když* (*Pokud / když omezíte příjem smažených jídel, dosáhnete [...]*).

(36) And how is it possible for someone with a 2200-calorie maintenance level to eat only 800 to 1000 calories a day without losing any weight?

The following adverbial gerundive clause is introduced by a preposition *without*, making the paraphrasability by the full clause impossible. When considering the translation, it can be achieved by a phrase *bez toho, aniž* (*A jak je možné, že někdo s udržovacím příjmem 2200 kalorií denně jí pouze 800 až 1000 kalorií denně bez toho, aniž by jakkoli zhubl*).

(38 – 39) I could show you how to drop 10 –15 pounds over the weekend just by dehydrating yourself and using natural diuretics.

The next sentence is an example of an adverbial clause of means introduced by a preposition *by*. When considering the possible paraphrase, one might again use the *if* clause (*I could show you how to drop 10-15 pounds over the weekend just if you dehydrate yourself and use natural diuretics*.) However, it should be strongly recommended that the sentence remain in the condensed version using the preposition *by* since it remains cohesive and natural-sounding at the same time. There are more possibilities to translate this sentence into the Czech language. The most natural translation would probably use the phrase *jen tím, že* i.e. *Mohl bych vám ukázat jak shodíte 10-15 liber přes víkend jen tím, že se dehydratujete a použijete přírodní diuretika*.

(41) Instead of looking only at body weight, the body composition test lets you focus on body fat and lean body mass.

This adverbial gerundive clause is unique for its use of a preposition *instead of* which can be paraphrased into the full clause without any problems using a phrase *instead of the fact that* i.e. *Instead of the fact that it looks only at the body weight, the body composition test lets you focus on body fat and lean body mass.* The Czech translation would use the direct equivalent of the preposition *instead of* i.e. *místo / namísto* (*Místo měření celkové tělesné váhy, vám test tělesné kompozice umožní zaměřit se na tělesný tuk a tkáň bez tuku zvlášť*).

(43) After weighing the pros and cons of each method, you'll undoubtedly conclude that [...]

The following example uses a preposition *after* which introduces the adverbial clause of time. Adverbial clauses of time headed by prepositions *after* and *before* are easily paraphrasable into the full clauses adding a generic subject into the clause (*After you weigh the pros and cons of each method, you'll undoubtedly conclude that [...]*) The Czech translation follows the English sentence and is constructed using the adverbial phrase *poté, co* (*Poté, co zvážíte výhody a nevýhody každé z metod, zcela jistě usoudíte, že [...]*). Another possibility is to use the direct translation of a preposition *after* i.e. *po* (*Po zvážení výhod a nevýhod každé z metod, zcela jistě usoudíte, že [...]*)

(47) The test is performed by attaching electrodes to the skin of your right wrist and right foot.

The next example of adverbial gerundive clause is again headed by a preposition *by*. The paraphrase, although not recommended, could be achieved by the phrase *in the way, that*. However, due to the nature of the subject, one should use the passive voice in the paraphrase i.e. (*The test is performed in the way that electrodes are attached to the skin of your right wrist and right foot*). There are many possibilities of translation. Probably the most economical and natural equivalent would go with a verbal noun *přípevnění* (*Test spočívá v přípevnění elektrod ke kůži vašeho pravého zápěstí a levého chodidla*)

(44) Before being lowered into the tank, you have to blow all the air out of your lungs.

The next sentence is another example of adverbial clause of time, in this case headed by a preposition *before*. As explained in the example (43), it is smoothly paraphrasable into the full clause i.e. (*Before you are lowered into the tank, you have to blow all the air out of your lungs.*)

The Czech equivalent would use the phrase *předtím, než* (*Předtím, než vás spustí do nádrže musíte z plic vydechnout veškerý vzduch*) or simply a directly translated preposition *before* i.e. *před* (*Před spuštěním do nádrže musíte z plic vydechnout veškerý vzduch*).

(49) It remains unclear as to how much we can tolerate without being harmed.

The next example of an adverbial gerundive clause is introduced by a preposition *without*, which makes the paraphrasability into the full clause impossible. In terms of translation, this sentence can be translated by a phrase *bez toho, aniž* i.e. (*Zůstává nejasné kolik sneseme bez toho, aniž by nám to ublížilo*).

(50) By choosing organic and “all natural” foods, you are likely eating fewer highly processed foods [...]

The last example taken for the analysis is again an adverbial clause introduced by a preposition *by*. This sentence is very similar to example (52), thus when paraphrasing such structure into the full clause, the best choice would be to use the *if/ when* clause (*If/ when you choose organic and “all natural” foods, you are likely eating fewer highly processed foods*). The Czech translation might use a noun *výběr* or a verbal noun *vybírání* (*Výběrem bio a “plně přírodních” potravin budete pravděpodobně jíst méně průmyslově zpracovaných jídel*). It is also possible to directly translate the paraphrased sentence, using the conjunction *když* (*Když vyberete bio a “plně přírodní” potraviny, budete pravděpodobně jíst méně průmyslově zpracovaných jídel*).

3.2.3. Gerundive Nominal Clauses

There are 42 gerundive clauses functioning as nominal clauses collected from scientific prose texts and 30 from popular scientific texts. In scientific prose texts, they account for 58.82% of all gerundive clauses (36.14% of all clauses in this style) and in popular scientific texts for 79.25% (31.34% of all clauses in this style). They account for 40.38% and 28.85% of all gerundive clauses and 19.35% and 13.82% of all non-finite *-ing* clauses, respectively. For more see tables 1,2,4,5 and 7 in the appendix 2.

As described in chapter 4.2.2., gerundive nominal clauses occur with adjectives, verbs and nouns, usually with a preposition. Gerunds in the text appear either in form of a complement of noun, verb and adjective or subjects. When paraphrasing by a full clause, the phrase *the fact +*

that is used when possible (for illustration see occurrences 214, 80, 65). There are also different attempts to paraphrase the gerundive nominal clauses, however, these are not natural-sounding and/or change the meaning of the sentence. The Czech equivalents of gathered gerundive nominal clauses are mostly verbal nouns, whereas it is often possible to use both verbal nouns and nouns since they both communicate the same or a very similar meaning (for illustration see occurrences 67, 214, 80, 79, 65).

(198) The average effect size of VG playing on aggression was significant [...]

In this example, the gerund *playing* is in the position of a noun complement. In this case, there are no opportunities to paraphrase such a structure by a full clause. When regarding the possible translation, translators would use a verbal noun *hraní* (*vliv hraní videoher na agresivitu byl signifikantní*).

(81) Losing weight is very easy.

In this example, the gerund *losing* is in the position of a subject while the phrase is then followed by a linking verb *is*. The paraphrase is barely possible. Yet, one might use a *when* clause (*When we lose weight, it is very easy*) however, such sentence is awkward and cannot be recommended. The Czech translation would involve a verbal noun *shazování* (*Shazování váhy je velmi jednoduché*) or the phrase *losing weight* may be translated as a single lexeme *hubnutí* (*Hubnutí je jednoduché*) the second example would sound even more natural in the Czech language, however, there may be a slightly different meaning, depending on the situation.

(67) [...] the safety of dropping to very low body fat levels has often been questioned.

This example shows a gerund functioning as a noun complement. It is not possible to paraphrase this sentence into a full clause. Moving to possibilities of translation, one could use a verbal noun *redukce* i.e. (*Bezpečnost redukce tělesného tuku na velmi nízké hodnoty byla často probírána*) or a verbal noun *redukování* (*bezpečnost redukování tělesného tuku na velmi nízké hodnoty byla často probírána.*) however, there is no need to use the verbal noun. Moreover, the noun *redukce* is more frequently used

(211) It is also possible that playing with a VR device may contribute to an increased physiological arousal, compared with playing on the computer screen, regardless of game content (H3e).

In this example of gerundive nominal clause, there is a gerund *playing* in the function of a subject which is in concord with a verb *may*. This sentence is paraphrasable by a full clause

using the phrase *the fact + that* (*It is also possible that the fact that we play with a VR device may contribute to an increased physiological arousal, compared with playing on the computer screen, regardless of game content (H3e)*). The Czech translation would again use a verbal noun *hraní* or a verb *hra* (*Je také možné, že hraní se zařízením pro virtuální realitu může přispívat ke zvýšené tělesné odezvě, v porovnání s počítačovou obrazovkou, nezávisle na herním obsahu*).

(80) Ignoring the scale in favor of body fat is a difficult shift in mindset [...]

This sentence contains a gerund in the function of a subject. It again might be paraphrased with the phrase *the fact + that* (*The fact that we ignore the scale in favour of body fat is a difficult shift in mindset*) The Czech equivalent sentences would best work with a verbal noun *ignorování*. It is also possible to use just a noun *ignorace* (*Ignorování / ignorace čísel na váze z hlediska tělesného tuku je obtížná změna v myšlení*).

(79) One of the most common methods of determining your so-called “ideal weight” is the height and weight chart.

This example of gerundive nominal clause contains a gerund in the function of noun complement. This sentence might be theoretically paraphrased using the relative clause (*One of the most common methods which determine your so-called “ideal weight” is the height and weight chart*) The Czech translation would go with a verbal noun *určování* or a noun *určení* (*Jedna z nejzákladnějších metod určování / určení vaší “ideální váhy” je tabulka výšky a váhy*).

(65) However, trying to maintain extremely low body fat levels for too long a period of time might not be realistic or healthy.

The last example of gerundive nominal clauses contains a gerund in the function of a subject. It might again be paraphrased using the structure *the fact + that* (*However, the fact that we try to maintain extremely low body fat levels for too long a period of time might not be realistic or healthy*) The Czech translation would involve a verbal noun *pokoušení se* or a noun *pokus* (*Nicméně, pokus o udržení extrémně nízké úrovně tuku po příliš dlouhou dobu nemusí být realistický a zdravý*).

IV. Conclusion

To conclude, English language shows an economical tendency which results in frequent use of various devices of sentence condensation. Apart from short passives, ellipses, verbless clauses, processes of nominalisation, adjectivisation and adverbialization, English frequently uses non-finite clauses to condense the sentence structure. The research was focused on non-finite *-ing* clauses (present participles and gerunds) and their frequency in popular scientific and scientific prose functional styles. The attention was paid to their condensational potency when seeking a suitable full-clause paraphrase. The second goal was to propose equivalents of the Czech translation of these non-finite clauses.

The analysis proved that non-finite *-ing* clauses are more frequent in scientific prose texts than in scientific popular texts. From 217 *-ing* clauses, 134 were found in the scientific texts and 83 in the popular scientific texts. This is especially true for present participles which account for 81 instances found in scientific prose texts compared to only 32 in the popular scientific texts. Gerunds are distributed rather equally in both styles and there are 53 instances of gerunds in the scientific prose texts and 51 in the scientific popular texts. The most prominent non-finite *-ing* structure in the scientific prose texts are participial adverbial and supplementive clauses which account for 43 instances (32.09% of all non-finite *-ing* clauses in this style). In contrast, dominant structures in the popular scientific texts are gerundive nominal clauses as they account for 30 instances (36.14% of all non-finite *-ing* clauses in this style). On the other hand, the least frequent clauses in both styles are participles in the function of an object complement. There is no such clause in the scientific style texts and in the popular scientific texts there is only 1 instance (1.20% of all non-finite *-ing* clauses in this style) For further details see tables in appendix 3.

Regarding the possible full clause paraphrases, easily paraphrasable clauses are those functioning as condensed relative clauses and gerundive adverbial clauses of time. In these, it is possible to transform them into the full clause adding a relative pronoun which was omitted and change a non-finite participial into the finite clause or add a corresponding noun / pronoun to the clause in gerundive adverbial clauses of time. Paraphrasing gerundive adverbial clauses (apart from clauses of time) and nominal clauses is usually more difficult and no universal rule can be applied. Often no full clause paraphrase is possible.

The last part of the analysis was to propose possible Czech equivalents and translations of collected gerundive and participial clauses. When considering the closest equivalents of

participles and gerunds in the Czech language, these would be verbal adjectives standing for present participles and verbal nouns for gerunds. However, it must be stressed that in the Czech language, there is a tendency to use a higher number of dependant clauses. This is especially seen in adverbial non-finite clauses which are often translated by Czech subordinate adverbial clauses introduced by adverbial phrases (*After coming home, they started cooking / Poté, co přišli domů, začali vařit.*). To sum it up, usually the best choice is to use the most direct equivalent of the condensed structure (nouns or verbal nouns, adjectives or verbal adjectives) but sometimes there is a need to use a paraphrased sentence (adverbial clauses). However, in some cases, the meaning and frequency of both variations in the Czech language are often the same, therefore it is completely up to the speaker which option will be chosen (*A person living in the Czech Republic / Osoba žijící v České republice / Osoba, která / jež žije v České republice*).

Lastly, it must be stated that this analysis was dealing only with present participles and gerunds. Although expected, further research focused on past participles and infinitives is required to conclude that all types of non-finite clauses are more frequent in a scientific prose style than in a popular scientific style.

V. Resumé

Tato práce se zabývá problematikou kondenzace větné struktury v anglickém jazyce, přičemž největší pozornost byla věnována větné kondenzaci za pomoci jmenných tvarů slovesných, tedy tzv. nefinitních vět. Pozornost je zaměřena zejména na anglická slovesa obsahující příponu *-ing*, což jsou přítomná příčestí (*participia*) a *gerundia*. Ta jsou totiž zkoumanými výskyty ve druhé, výzkumné části. Práce si klade dva hlavní cíle. První náplní je otestování hypotézy, že v odborném funkčním stylu lze očekávat podstatně vyšší výskyt přítomných participií a gerundií než ve stylu populárně naučném. To by mělo reflektovat zvýšené nároky na úsporu vědeckého textu, jeho snahu o přímočarost a objektivitu. Druhým úkolem je pak navrhnout různé možnosti efektivního českého překladu těchto tvarů.

Práce je rozdělena na dvě hlavní části, a to část teoretickou a část výzkumnou. První, tedy teoretická část se mimo popis nefinitních konstrukcí zaměřuje na vytyčení dalších možných způsobů kondensace vět v anglickém jazyce. To vše za použití odborné literatury jak od zahraničních, tak českých jazykovědců. V úvodní části je v rychlosti popsáno vlastní slovo kondenzace a jaký je jeho obecný význam v anglickém a českém jazyce. Posléze je termín popsán z hlediska lingvistiky, přičemž je odhalen fakt, že termín kondensace není hojně používaný mezi světovými lingvisty, nýbrž se se jedná o termín rozšířený spíše mezi českými jazykovědci. Obecně jsou v anglickém jazyce více rozšířené termíny jako komprese nebo redukce, přičemž všechny referují ke stejné operaci, a tedy zkrácení věty vymazáním, či opomenutím některých větných elementů, přičemž význam zůstává plně zachován nebo jen mírně pozměněn v závislosti na kontextu použití. Za zkondenzované lze tedy považovat všechny konstrukce, jež postrádají určité elementy, kterými jsou například podmět, předložky, pomocná i plnovýznamová slovesa atd. Mezi tyto prostředky lingvisté zařazují, mimo nefinitní konstrukce utvářející sekundární predikace, také trpný rod bez vyjádřeného agenta (tzv. *Short passive*) či jazykovou elipsu. Prostředků je ještě více, ovšem z důvodu omezené délky práce jim není věnována pozornost.

První z těchto vedlejších nástrojů větné kondenzace je tedy použití bezagentního trpného rodu. To lze chápat jako zkondenzovanou strukturu proto, že ve větě dochází k nevyjádření agenta (*The window was broken by Peter / The window was broken*). Celkový význam, tedy že okno bylo rozbito, zůstává zachován a dochází pouze k odstranění konatele děje (*by Peter*). Věta je tedy zkrácena a zkondenzována vynecháním informace, která pro autora výroku není v dané situaci důležitá. Dalším probíraným nástrojem kondenzace větné struktury je použití výpustek

neboli eliptických konstrukcí. V zásadě se jedná o vynechání určitých částí věty, které jsou odvoditelné z daného kontextu či přilehlých částí textu a bez kterých je věta stále smysluplná (*She came home late but (she) wasn't tired / Přišla domů pozdě ale (ona) nebyla unavená*). Základní dělení rozlišuje elipsy textové, situační a strukturální. Textové elipsy jsou charakteristické tím, že je možné elidovanou strukturu dohledat v textu, a to buďto v částech předešlých: *Peter was tired but (Peter) continued driving* (anaforická elipsa) nebo naopak v částech následujících: *I don't want to (go home), but unfortunately have to go home* (kataforická elipsa). Situační a strukturální elipsy se od textové liší tím, že elidované části nelze dohledat. Situační elipsa se pak používá zejména v projevu mluveném, kdy je z okolností, které mluvčího obklopují patrný význam věty: *(Are you) having fun?* Tento druh elipsy se vyznačuje často negramatickým, hovorovým druhem jazyka. Strukturální elipsa pak využívá znalosti gramatiky daného jazyka tím, že vynechává některá gramatická slova: *I think (that) you are not right*. Ve všech typech výpustek dochází ke kondenzaci věty vynecháním rozdílných elementů, a tudíž lze elipsu považovat za efektivních jednu z metod kondenzace anglické věty.

Hlavním náplní práce je ovšem zhodnocení kondenzačních potenciálů určitých druhů nefinitních vět, a to přítomných participií a gerundií. Nefinitní konstrukce se od těch finitních odlišují tím, že nerozlišují gramatické kategorie osoby, čísla a způsobu. Celkově se v angličtině rozlišují tři základní druhy slovesných neurčitých tvarů. To jsou infinitivy (mohou být buď holé, anebo s částicí *to*), participia a gerundia, přičemž všechny anglické jmenné tvary rozlišují tvary přítomné a minulé. Kvůli omezenému prostoru tohoto resumé se nyní budu věnovat pouze přítomným participiím a gerundiím. Z hlediska formy jsou gerundia a přítomná participia formálně totožná, avšak zásadně se liší jejich syntaktická funkce. Gerundium se chováním řadí k substantivu a participium k adjektivu, což se zásadně promítá do jejich funkce ve větě. Gerundia, kvůli své substantivní povaze, plní ve větě funkci podmětu, předmětu, vyskytují se po předložkách ve spojení s podstatnými jmény, slovesy a přídavnými jmény či v příslovečných určeních. Specifický je pak případ, kdy gerundium stojí v pozici premodifikátoru podstatného jména a je nutné jej rozlišovat od přítomného participia ve stejné pozici, jelikož jejich významy se zásadně liší. Přítomná participia naopak plní funkci přívlastku a přechodníku. Vzhledem k tomu, že analýza spočívá ve sběru výskytů participií a gerundií ve funkčním stylu odborném a populárně naučeném, je na místě tyto styly představit a popsat jejich odlišnosti. Vědecký styl se vyznačuje snahou o podání co nejpřesnější a zároveň relevantní informace cílové skupině jiných odborníků. Vzhledem k nutnosti úspory textu a kompaktnosti práce, lze tedy očekávat vyšší výskyt přítomných participií a gerundií než ve stylu populárně naučeném. Ten má sice

velmi podobou funkci, a to informovat o určité problematice, ovšem celý bývá psaný méně odbornou formou, cílený na širokou veřejnost, která má pouze minimální znalosti v daném oboru. Takový text je pak zpravidla více citově zabarvený a finitní konstrukce jsou podstatně častější než ty nefinitní.

Analýzou bylo zjištěno, že na 48 náhodně zvolených normostranách textu (24 stran pro každý funkční styl a celkem asi 12 000 slov) se nachází celkem 217 gerundií a přítomných participií. Z toho 134 bylo posbíráno z textů odborných a pouze 83 z textů populárně naučných. Z výsledků analýzy je tedy patrné, že hypotéza týkající se vyššího výskytu gerundií a participií v odborných textech byla naplněna, přičemž lze vidět i trend v distribuci přítomných participií a gerundií napříč styly. Zatímco gerundia se vyskytovala v obou funkčních stylech poněkud totožně (53 výskytů v odborných textech a 51 výskytů v textech populárně naučných) výskyt participií jasně převažuje ve stylu odborném (81 výskytů oproti 32 výskytům). Pro zhodnocení jejich kondenzačních potenciálů a možností překladu bylo zvoleno rozdělení participiálních a gerundiálních vět na různé typy. Přítomná participia byla rozdělena na celkem 4 druhy vět. První dva druhy vět jsou zkondenzované vztažné věty, jejichž kondenzace spočívá ve vynechání vztažného zájmena (to může být ovšem vynecháno pouze v případě, že funguje jako předmět). Participium může být buď v pozici premodifikátoru (*A shouting children at home*) nebo v postpozici (*A children shouting at home*) a ačkoli se v prvním případě nejedná o větnou konstrukci, význam je vnímán jako zkondenzovaná vztažná věta, a tudíž zařazen do analýzy. Ve vztažných větách jsou kondenzační potenciály jasně viditelné a parafráze spočívá pouze v přidání vhodného vztažného zájmena a změny nefinitní věty na větu finitní. Český překlad pak vybírá ze dvou variant. Buďto použijeme přímý ekvivalent přítomného participia, jemuž v češtině odpovídá přídavné jméno slovesné (*brečící dítě*) nebo utvoříme vztažnou větu (*Dítě, které / jež brečí*). Celkem bylo zjištěno 27 participií v postpozici a 25 ve funkci premodifikátoru. Druhým a nejpočetněji zastoupeným druhem jsou participiální věty příslovečné a věty suplementivní (*Most studies were experimental, suggesting a causal relation*). V případě vět suplementivních může být valná většina dekonzenzována na nerestriktivní vztažné věty a také tak přeložena za použití vztažných zájmen *který, jež* a *což*. V některých případech je možné použít i přímo verbální adjektiva, avšak dnes již nikoli přechodníky, kvůli jejich archaické formě. Pokud má participium adverbialní význam, pak se pro překlad používají vedlejší věty příslovečné (*poté, co, předtím, než* atd.). Celkově bylo nalezeno 60 výskytů těchto participií, což je nejvíce ze všech participiálních vět. Posledním druhem participiálních vět jsou participia ve funkci doplňku předmětu jejichž přímá parafráze

je možná použitím vedlejší věty doplňkové, popřípadě vět příslovečných. Český překlad je pak často uvozen spojovacím výrazem *jak* a nejinak tomu je i v jediném nalezeném výskytu. Tato malá frekvence výskytu je s největší pravděpodobností hlavně proto, že odborný i populárně naučný styl je podstatně méně osobní a více formální, tudíž je použití první a druhé osoby zjmen osobních řídké. Ve větách s osobními zájmeny se tato pak funkce participia vyskytuje nejčastěji.

Druhým zkoumaným typem nefinitních konstrukcí jsou věty gerundiální. I ty byly rozděleny na dvě skupiny. První skupinou jsou věty příslovečné, které na rozdíl od příslovečných vět participiálních bývají vždy uvedeny předložkou, nejčastěji *by*, které indikuje větu příslovečnou způsobovou. Český ekvivalent závisí na adverbialním významu věty a může používat instrumentál verbálních substantiv, nicméně častá je parafráze příslušnou příslovečnou větou (*tím, že* atd.). Celkově bylo nalezeno 32 gerundiálních příslovečných vět a z toho 19 je uvedeno předložkou *by*. Posledním typem gerundiálních vět jsou věty nominální. Ty velmi často následují podstatná jména, přídavná jména a slovesa, která se pojí s předložkou. Funkce gerundií je pak podmětná, či doplňková. Občas je možné je nahradit obsahovou větou používající frázi *the fact + that*, přičemž český překlad je sestrojen pravidla za pomoci verbálních podstatných jmen či standartních substantiv.

Přítomná participia a gerundia jsou tedy účinným nástrojem kondenzace anglické větné skladby. Z participií jsou to hlavně suplementivní věty a z gerundií věty nominální, které byly v analýze nejhojněji zastoupeny.

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VII. List of Appendices

Appendix 1: Corpus of Occurrences

1. Popular Scientific Style

1.1. Participial Clauses

1.1.1. Condensed Relative Clauses

(1) A 5 foot 8 inch male bodybuilder weighing 200 pounds would be grossly overweight according to a height-weight chart.

(2 – 3) You can survive for months without food. You’ve probably heard stories about people getting lost in the mountains or wilderness for months with no food at all (only water), or being confined in a prisoner of war camp for years with only tiny amounts of food.

(4) Shape up America, the anti-obesity campaign started by Dr. C. Everett Koop, recently published a statement pointing out the shortcomings of BMI.

(5) High body fat levels have been linked to over 30 health problems including diabetes, high blood pressure, cardiovascular disease, cancer and osteoarthritis.

(6) In women, this fat also includes sex-related fat deposits including the breast tissue and uterus.

(7) A 2005 survey of 13,621 food samples revealed that pesticide residue exceeding the tolerance was 0.2 percent (USDA Pesticide Data Program 2006).

(8) There’s no need to eliminate carbohydrate; even people taking insulin can have 30 to 60 grams (120 to 240 calories) of carbohydrate per meal—or more, depending on how active they are.

(9) Calcium is most important in the three years surrounding puberty and up to about age 30.

1.1.2. Participles in the Function of Noun Premodifier

(10) If daily fruit is not readily available — or if it spoils before you get around to eating it, the following tips will help you better balance your intake.

(11) Make the following fruit choices a top priority in your good nutrition game plan.

(12) Losing excess body fat is a good way to lower your blood cholesterol, and nutrient-dense eggs can be a positive addition to a reducing diet.

(13) Carefully wash and rinse fruits and vegetables under running water; this can remove 99 percent of any pesticide residue (depending on the food and the pesticide).

(14) If not, the resulting high levels of blood glucose increase their risk of heart attacks, strokes, kidney disease, blindness, and limb amputation.

1.1.3. Participial Adverbial Clauses and Supplementive Clauses

(15) People with heart disease or a strong family history of heart disease should continue to follow the AHA’s recommended limit of two egg yolks per week, including those used in cooking.

(16 – 19) Yet, watchdog groups remind us that small amounts of pesticides can accumulate in the body, potentially increasing cancer risks, disrupting hormones, hindering reproduction, and contributing to birth defects. Pesticides may be of particular concern during vulnerable periods of growth, such as early childhood.

(20) There’s no need to eliminate carbohydrate; even people taking insulin can have 30 to 60 grams (120 to 240 calories) of carbohydrate per meal—or more, depending on how active they are.

(21) Using the strictly mathematical model, if you cut out 1000 calories per day from your maintenance level, that will add up to a 7000-calorie deficit in one week

(22) Rob Faigin, writing in the book “Natural Hormonal Enhancement,” makes a humorous, but true observation about calorie balance and weight loss.

(23) During periods of starvation, the body slowly begins to feed off itself, burning fat stores, muscle and even internal organs for energy.

(24) Carefully wash and rinse fruits and vegetables under running water; this can remove 99 percent of any pesticide residue (depending on the food and the pesticide).

(25) To get your fat measured hydrostatically, you are submerged underwater while sitting on a chair that hangs from a scale

(26) In a study of 3,200 people (average age in the 50s) who were overweight and had elevated blood glucose, both when fasting and after eating meals (a risk factor for diabetes), some of the subjects were given medicine (metformin) to lower their blood glucose.

(27 – 28) It covers up the muscles with a thick layer of spongy insulation, obscuring the muscle definition below and adding a round, soft and doughy quality to the entire body.

(29) Muscle is your secret weapon in your war against fat. Muscle is your “metabolic furnace,” burning calories even as you sleep and watch TV.

(30) Desirable body fat levels for athletes may be even lower, depending on the nature of the sport.

(31) With few exceptions, most women who try to maintain their body fat levels at or below 10-13% can have problems with estrogen production, their menstrual cycles and reproductive systems become disrupted and bone density may decrease, putting them at higher risk of osteoporosis as they grow older.

1.1.4. Present Participles in Function of Object Complement (Nominal Clauses)

(32) To get your fat measured hydrostatically, you are submerged underwater while sitting on a chair that hangs from a scale (picture yourself sitting in a giant grocery scale as you’re dunked underwater in a tank or swimming pool.)

1.2. Gerundive Clauses

1.2.1. Gerunds in the Function of Noun Premodifier

(33) To get your fat measured hydrostatically, you are submerged underwater while sitting on a chair that hangs from a scale (picture yourself sitting in a giant grocery scale as you’re dunked underwater in a tank or swimming pool.)

(34) Bonanno sees the term organic, in part, as a marketing ploy; organic foods are portrayed as safer and better.

(35) If you are a swimmer or cyclist, you may want to cross-train with some jogging, jumping rope, or other weight-bearing exercise to enhance bone strength.

1.2.2. Gerundive Adverbial Clauses

(36) And how is it possible for someone with a 2200-calorie maintenance level to eat only 800 to 1000 calories a day without losing any weight?

(37) Losing fat – and keeping it off – without losing muscle, is a much bigger challenge.

(38 – 39) If you simply wanted to lose weight, I could show you how to drop 10 –15 pounds over the weekend just by dehydrating yourself and using natural diuretics.

(40) According to the textbook, Physiology of Sport and Exercise by Wilmore and Costill, BMI is defined as, “A measurement of body overweight or obesity determined by dividing weight (in kilograms) by height (in meters) squared.”

(41) Instead of looking only at body weight, the body composition test lets you focus on body fat and lean body mass.

(42) With advancing age, most people gain fat even when body weight doesn't change much; the muscle shrinks as the fat accumulates.

(43) After weighing the pros and cons of each method, you'll undoubtedly conclude that for your purposes – tracking personal weekly progress skinfold testing is the easiest and most practical method.

(44) Before being lowered into the tank, you have to blow all the air out of your lungs.

(45) If you can't blow every bit of air out of your lungs before being submerged, you will appear to have a higher body fat percentage than you really do.

(46) Bioelectric impedance analysis (BIA) measures body fat by testing the electrical conductivity of your body's tissues.

(47) The test is performed by attaching electrodes to the skin of your right wrist and right foot.

(48) You could adjust for the difference by eating a larger portion of the conventionally grown product.

(49) It remains unclear as to how much we can tolerate without being harmed.

(50) By choosing organic and “all natural” foods, you are likely eating fewer highly processed foods that may contain “obesogens.”

(51) Until more is known, this is another reason to keep choosing foods in their natural state, with less packaging.

(52) By rationing your intake of fried foods and foods obviously high in fat (butter, margarine, mayonnaise, salad dressing, ice cream, cookies, chips), you'll end up with a diet that's about 25 percent fat.

(53) In a study of 3,200 people (average age in the 50s) who were overweight and had elevated blood glucose, both when fasting and after eating meals (a risk factor for diabetes), some of the subjects were given medicine (metformin) to lower their blood glucose.

(54 – 55) By getting active and staying active throughout your life, you'll greatly reduce your risk of developing adult-onset diabetes (as well as other diseases of aging) (Knowler et al. 2002)

(56) A lifelong calcium-rich diet will help you build strong bones as well as maintain bone density by reducing the rate of calcium loss thereafter.

1.2.3. Gerundive Nominal Clauses

(59) That's why you need an objective, accurate and scientific method of measuring your progress.

(60) This can be frustrating and discouraging – kind of like watching the grass grow.

(61 – 62) Training and dieting in cycles so that body fat level varies between in-season and offseason is healthier and more sensible.

(63) Trying to keep it there for a prolonged period is when the problems may occur.

(64) Reaching these extremes of body fat during a competitive season is par for the course.

(65) However, trying to maintain extremely low body fat levels for too long a period of time might not be realistic or healthy.

(66) Being extremely lean is undoubtedly healthier than being overfat.

(67) With today's obsession for leanness, the safety of dropping to very low body fat levels has often been questioned.

(68 – 69) Effective as it may be, hydrostatic testing it is not without its drawbacks; the primary one is the inconvenience of getting dunked in water.

(70) Being categorized as “clinically obese” means that body fat is at such a level that these health problems become more of a concern.

(71) You might be busy, busy, busy, but without the constant feedback that body composition testing provides, you have no way of knowing if all that activity is moving you closer to your target.

(72) As you learned in chapter one on goal setting, it’s critical to have a way to objectively measure your progress.

(73) Forget about BMI and height-weight charts; the answer is body fat testing.

(74 – 75) Losing weight is not the same thing as losing fat.

(76 – 78) Likewise, gaining weight is not the same thing as gaining fat (gaining lean body weight is *always* good)

(79) One of the most common methods of determining your so-called “ideal weight” is the height and weight chart.

(80) Ignoring the scale in favor of body fat is a difficult shift in mindset to make, but it’s essential to your long-term success.

(81) Losing weight is very easy.

(81 – 82) Losing fat – and keeping it off – without losing muscle, is a much bigger challenge.

(82 – 83) What makes surviving under these conditions possible is your body’s remarkable ability to slow down its rate of calorie burning.

(84 – 85) When your body senses calorie deprivation it says to itself, “It looks like this is all the food we’re going to be getting for a while, so we’d better stop burning so many calories and start saving our energy.”

(86) There are 3500 calories in a pound of stored body fat, so cutting out 1000 calories a day should – in theory – produce a weight loss of two pounds per week.

2. Scientific Prose Style

2.1. Participial Clauses

2.1.1. Condensed Relative Clauses

(87) As a matter of fact, although the activities leading up to the 1992 Earth Summit in Rio de Janeiro have helped to elevate environmental problems to decision-making circles in the South, this has hardly led to a ‘greening’ of their policies.

(88) Although there is, in general, some evidence regarding the positive effects of playing video games (e.g., learning, rehearsing, developing, and practicing skills such as problem-solving, perseverance, hypothesis testing, constructive thinking, hand–eye motor coordination, and creativity) [Rauterberg, 2004], we must not dismiss the possibility that they may also have harmful effects on players.

(89) Relying directly on associative network models of memory [e.g., Anderson, 1983], the IPMA suggests that playing VGs may activate aggressive-related constructs making them more readily accessible in memory.

(90) More recently, Anderson [2004] carried out another meta-analysis, setting apart studies with an appropriate methodology from those suffering from numerous limitations, concluding that the effect size was clearly higher in this meta-analysis.

(91) Studies conducting mediation analysis are also quite scarce.

(92) Assessing sex as a moderating variable may help to clarify its relevance in the relationship among the variables under scrutiny; however, no a priori hypotheses regarding gender effects will be made given the mixed results obtained in previous study.

(93 – 94) First, we predict that VR will provide higher perceptions of immersion and identification with the avatar: therefore, we expect that participants playing with VR device will report higher immersion (H1a) and higher identification with the game character (H1b) than those using the computer screen interface.

(95 – 96) From the assumption that VGs affect the outcome variables, various hypotheses are drawn: we expect that participants playing a VG, compared with those playing an NVG, will display higher accessibility of aggression constructs (H2a), and/or higher accessibility of fear

constructs (H2b); report higher state hostility (H2c); and display more aggressive behavior (H2d).

(97) Regarding physiological arousal, as both games were chosen to require action, we do not expect to find any differences between participants playing with different contents (violent and nonviolent).

(98 – 101) The moderation hypotheses of virtual environment predicts that the effects of playing a VG on aggression- and/or fear-related constructs, on state hostility, and on displays of aggressive behaviour will be greater for participants playing with VR device than for those playing on the computer screen; thus, we expect that participants playing a 524 Arriaga et al. Aggr. Behav.VG with VR device, compared with those playing the same VG without VR device, will show higher accessibility of aggressive constructs (H3a) and/or to fear-related constructs (H3b), will report higher state hostility (H3c), and will display more aggressive behavior (H3d).

(102) In order to collect information about participant's earlier experience with electronic games, they were asked to estimate, on a scale ranging from 1 (never) to 5 (more than 10 hr per week), the amount of time they usually spend playing electronic games at arcades, on the computer, or using consoles, regardless of game content.

(103) Information regarding their experience with the games used in this study and with VR device was also collected by simple yes/no responses.

(104) Those waveforms falling outside the recommended amplitudes (below 40 bpm or higher than 170 bpm) were deleted and 10 participants had to be excluded from the physiological analysis, yielding a total of 138 participants for all HR analyses.

2.1.2. Participles in the Function of Noun Premodifier

(105) In many cities in the developing world – and Hyderabad and in Nairobi are no exception – the major change that can be observed in the collection, transportation and disposal of solid waste is the increased involvement of the private sector either ‘spontaneously’ in a free market setting or encouraged through local authorities, NGOs or CBOs.

(106) Although this chapter will start from the general debate on urban (environmental) management and urban sustainable development in the context of the developing world, it will

focus on the consequences for policies and interventions with regard to the collection (partly including transportation and disposal) of urban solid waste, while disregarding implications for the other domains within the solid waste management system (see chapters 6 and 9)

(107) The re-awakening of the neo-liberal paradigm in response to global economic crisis in the late 1970s and early 1980s also evoked a reorientation of ideas on urban development in the developing world.

(108) Although governments in the developing world have not always committed themselves formally to the new convention, most of them did accept the neo-liberal reform policies that constitute the basis of the urban management approach.

(109) Developing countries have made it abundantly clear that environmental policies should reflect their own priorities, and, more in particular, that they should not frustrate their legitimate desire to expand their economies (Elliot, 1998).

(110) For the purposes of the current analysis it is not necessary to dwell upon the meaning and the attributes of urban management or critically examine its ideological roots (for this see Stren, 1993; Werna, 1995; Burgess et al., 1997, Post, 1997). Suffice it to say something on the evolving new role of (local) government and, subsequently, to zoom in on the privatisation debate.

(111) This priming effect may, in turn, be used to make behavioural decisions, increasing the likelihood of engaging in aggressive behaviors [Berkowitz, 1993, 1998].

(112) Furthermore, the IPMA also considers the possibility of an existing relationship among the internal state variables [e.g., Anderson et al., 1996; Carnagey and Anderson, 2003; Huesmann, 1998].

(113) However, to our knowledge, only Anderson and Dill's [2000, Study 2] study showed that this priming effect was a mediator between playing a VG and subsequent aggression.

(114) because of the players' background and characteristics, it is conceivable that the strength of these priming effects may differ [Berkowitz, 1998]. For instance, Peck's [1999, in Valkenburg et al., 2000] meta-analysis showed that the effect size of fear, induced by the media, was higher for women than for men.

(115) For instance, it may increase because negative emotions were evoked (e.g., anger and fear) or it may be related to pleasurable and rewarding situations [Fowles et al., 1982].

(116) In the meta-analysis conducted by Anderson and Bushman [2001], a positive association was found between playing VGs and the following variables: aggressive affect (r5.18), physiological arousal (r5.22), aggressive cognitions (r5.27), and display of aggressive behavior (r5.19).

(117) The meta-analysis of Anderson and Bushman [2001] also reported no evidence for sex as a moderating variable.

(118) They then tested the effects of playing those matched games on the remaining cognitive–affective variables and on the players' aggressive behavior.

(119) Assessing sex as a moderating variable may help to clarify its relevance in the relationship among the variables under scrutiny; however, no a priori hypotheses regarding gender effects will be made given the mixed results obtained in previous study.

(120) Specifically, we will address the following hypotheses:

(121) Therefore, we predict that the effect of playing a VG on higher aggressive behavior will be explained by higher state hostility (H4a) and/ or by the priming effect of aggression-related constructs (H4b).

(122) They were randomly assigned to one of the following four experimental conditions.

(123) The results of the research are mixed as to whether or not the use of VR technologies during the playing activity enhances its impact.

(124) For instance, Persky and Blascovich [2005, in Persky and Blascovich, 2006] found that aggressive feelings and aggression, both during and postgame, were higher after the use of immersive virtual environments during a VG, compared with the playing activity of the same game on a traditional desktop interface.

2.1.3. Participial Adverbial Clauses and Supplementive Clauses

(125) Drakakis-Smith has further refined the conceptualisation of sustainable development in the urban setting and distinguishes between the economic component (the productive role of cities and its ability to provide employment and to reduce poverty), the environmental aspect (notably the sustainable use of renewable resources, minimising the use of non-renewable resources and appropriate physical planning)

(126) Garbage heaps in residential areas can contribute to the spread of infectious and parasitic diseases among residents, thereby lowering their labour productivity or their chances to become or remain employed.

(127) Regarding the individual factors, IPMA underlines variables such as genetic predispositions, sex, aggressiveness, attitudes, scripts, beliefs, values, and long-term goals.

(128) These situational and individual factors may influence, directly or indirectly, the aggressive behavior, operating via one, two, or all the three processes of the individual's internal state, conceptualized as cognitive, affective, and physiological paths.

(129) Although this chapter will start from the general debate on urban (environmental) management and urban sustainable development in the context of the developing world, it will focus on the consequences for policies and interventions with regard to the collection (partly including transportation and disposal) of urban solid waste, while disregarding implications for the other domains within the solid waste management system (see chapters 6 and 9).

(130) However, critical remarks will be made about the preoccupation, both in the literature and in policy practice, with the most dominant arrangements, while forgetting about the existence and the potentials of others, usually because of their informal nature.

(131) Most studies on the subject start by enlarging on the failures in public servicing, including excessive numbers of workers, low labour productivity, few incentives for better performance, poor cost recovery, and low levels of investment and poor maintenance of vehicles and service equipment.

(132) What is important for our discussion, however, is the realisation that urban sustainable development, including sustainable modes of collection and disposal of urban solid waste, requires a multi-disciplinary perspective and frameworks of governance and institutional design that enable a constructive merging of these perspectives.

(133) Interactivity, for instance, allows players a more active participation in the environment, also requiring higher attention and concentration.

(134) Relying directly on associative network models of memory [e.g., Anderson, 1983], the IPMA suggests that playing VGs may activate aggressive-related constructs making them more readily accessible in memory.

(135) Priming effect may, in turn, be used to make behavioral decisions, increasing the likelihood of engaging in aggressive behaviors [Berkowitz, 1993, 1998].

(136) Furthermore, according to the cognitive-neo-associationist theory [Berkowitz, 1993, 1998], feelings of fear usually predispose individuals to flight responses, thereby reducing aggressive tendencies.

(137) Although this chapter will start from the general debate on urban (environmental) management and urban sustainable development in the context of the developing world, it will focus on the consequences for policies and interventions with regard to the collection (partly including transportation and disposal) of urban solid waste, while disregarding implications for the other domains within the solid waste management system (see chapters 6 and 9).

(138) Assuming that fear- and aggression-related constructs are both elicited by playing a VG, which may, in turn, increase opposite behavior tendencies that could override their effects on subsequent behavior, it will be important to consider which type of constructs is more activated by VGs, and their relationships with aggressive behavior.

(139) Concerning physiological arousal, studies have mainly analyzed heart rate (HR) and blood pressure (systolic and diastolic).

(140) This could be one of the reasons why action-oriented games, including those without violence, tend to increase physiological arousal, in such a way that the values recorded postgame are 522 Arriaga et al. Aggr. Behav. both larger than baseline levels [Anderson et al., 2004, Study 1; Ballard and Wiest, 1996; Calvert and Tan, 1994; Griffiths and Dancaster, 1995].

(141) Yu [2002] reported opposite results, showing that players displayed a more positive affective state in the VG than in the NVG condition.

(142) This type of research presents a quantitative aggregation of the results obtained in individual studies, using statistical techniques to estimate the magnitude of the effect of the independent variable on the outcomes.

(143) Most of the 54 studies included in their analysis were experimental, suggesting a causal relation between VG playing and those dependent variables.

(144 – 145) More recently, Anderson [2004] carried out another meta-analysis, setting apart studies with an appropriate methodology from those suffering from numerous limitations, concluding that the effect size was clearly higher in this meta-analysis.

(146) Nevertheless, the author points out that the highest effects were established in recent studies, stating that such results could be owing to technological advances in this area.

(147 – 149) Drakakis-Smith has further refined the conceptualisation of sustainable development in the urban setting and distinguishes between the economic component (the productive role of cities and its ability to provide employment and to reduce poverty), the environmental aspect (notably the sustainable use of renewable resources, minimising the use of non-renewable resources and appropriate physical planning), the social dimension (satisfying basic human needs and respecting human rights), the demographic backdrop (urban growth dynamics), and the political sphere (including the role of the state, democratic control and participatory planning).

(150) In addition to these improvements, playing with a virtual reality (VR) interface may enhance its realism and grant players a finer sense of presence, providing higher involvement and immersion [Persky and Blascovich, 2006; Stanney et al., 1998; Tamborini et al., 2001].

(151) Considering these results, it is possible that the use of immersive VR technology applied to VGs may enhance its impact on the internal state variables and on the aggressive behavior of players [Persky and Blascovich, 2006; Tamborini et al., 2001], provided that such enhanced experience (i.e., immersion) does in fact occur.

(152) Findings such as these led us to analyze whether the VR might really enhance the VG effects, shedding some light on the possible consequences that immersive entertainment may have on feelings, cognitions, and behaviors of players.

(153) Most experimental studies conducted so far usually manipulated the video games' violence by comparing playing VGs with playing NVGs, although not always controlling for some relevant factors that are likely to affect such variables.

(154) In this study we found it relevant to conduct a pilot study in order to pretest the selected games on several variables, including excitement.

(155) Regarding physiological arousal, as both games were chosen to require action, we do not expect to find any differences between participants playing with different contents (violent and nonviolent).

(156) The participants' goal consisted in annihilating as many adversaries as possible while minimizing the number of times their character died.

(157) Responses were expressed using a 5-point scale, ranging from 1 (strongly disagree) to 5 (strongly agree). To perform the overall state hostility index, 12 items were reverse-scored and the sum of the 35 items was computed.

(158) Those waveforms falling outside the recommended amplitudes (below 40 bpm or higher than 170 bpm) were deleted and 10 participants had to be excluded from the physiological analysis, yielding a total of 138 participants for all HR analyses.

(159) In this task, participants were required to identify the color of a written word while ignoring its semantic content.

(160) Therefore, slower RTs when identifying the color of the words related to aggression, or to fear, compared with the RTs to the color of the control stimuli will correspond, respectively, to higher accessibility of aggressive and to fear-related constructs [Anderson et al., 1996]. In our study, this task was programmed using software developed by the Centre of Visual Cognition and Neuropsychology (Nu'cleo de Cogniça'õ Visual e Neuropsicologia, Lisbon University).

(161) Therefore, 10 participants were excluded from these analyses, yielding a total of 138 participants.

(162) The levels of noise duration and intensity were distributed on a continuum, ranging from 0 to 10.

(163 – 164) The task was designed so that every participant always ended as victorious, winning 13 and losing 12 trials.

(165) In order to collect information about participant's earlier experience with electronic games, they were asked to estimate, on a scale ranging from 1 (never) to 5 (more than 10 hr per week), the amount of time they usually spend playing electronic games at arcades, on the computer, or using consoles, regardless of game content.

(166 – 167) Responses were expressed using a 5-point scale, ranging from 1 (strongly disagree) to 5 (strongly agree). To perform the overall state hostility index, 12 items were reverse-scored and the sum of the 35 items was computed.

2.2. Gerundive Clauses

2.2.1. Gerundive Adverbial Clauses

(168) Most studies on the subject start by enlarging on the failures in public servicing, including excessive numbers of workers, low labour productivity, few incentives for better performance, poor cost recovery, and low levels of investment and poor maintenance of vehicles and service equipment.

(169) By embarking on policies of decentralisation, democratisation and participation governments have tried to regain part of this legitimacy.

(170 – 171) The majority of studies have reported a higher accessibility of aggressive cognitions after playing VGs compared with playing non-violent games (NVGs).

(172) Assuming that fear- and aggression-related constructs are both elicited by playing a VG, which may, in turn, increase opposite behavior tendencies that could override their effects on subsequent behavior, it will be important to consider which type of constructs is more activated by VGs, and their relationships with aggressive behavior.

(173) Most experimental studies conducted so far usually manipulated the video games' violence by comparing playing VGs with playing NVGs, although not always controlling for some relevant factors that are likely to affect such variables.

(174) First, a control index was computed by averaging the RTs of constructs with positive and neutral valences: RTs to these control stimuli did not differ significantly between game conditions (Ps4.10) and were highly correlated, (138) 5 .94, Po.001.

(175) Second, the accessibility of aggression related constructs index was obtained by subtracting the mean RT for the control categories from the mean RT for aggression-related stimuli.

(176) These indices simplify data interpretation and minimize possible biases caused by confounding variables that interfere with RTs (e.g., fatigue, loss of motivation, individual differences).

(177 – 178) Thus, the possibility of not punishing the opponent was given to the participant (by choosing the level zero of noise intensity or duration) in order to ensure that all would act of their own free will, instead of being forced to administer some level of noise to the opponent [Tedeschi and Quigley, 2000].

2.2.2. Gerundive Nominal Clauses

(179) It seeks to combine goals of environmental aspects of sustainable development with the concern for meeting human needs (Satterthwaite, 1997; see chapter 1).

(180) Subsequently, different methods of privatisation are suggested for achieving greater service efficiency and effectiveness.

(181 – 187) Although there is, in general, some evidence regarding the positive effects of playing video games (e.g., learning, rehearsing, developing, and practicing skills such as problem-solving, perseverance, hypothesis testing, constructive thinking, hand–eye motor coordination, and creativity) [Rauterberg, 2004], we must not dismiss the possibility that they may also have harmful effects on players.

(188) Research on the negative effects of playing violent games (VGs) has been based on the same theoretical frameworks used to test the impact of exposure to television and movie violence.

(189) The IPMA emphasizes the relevancy of various situational input variables to the instigation of aggression: offence, provocation, frustration, pain or discomfort, exposure to movie violence, and playing VGs, among others.

(190) Relying directly on associative network models of memory [e.g., Anderson, 1983], the IPMA suggests that playing VGs may activate aggressive-related constructs making them more readily accessible in memory.

(191) Priming effect may, in turn, be used to make behavioral decisions, increasing the likelihood of engaging in aggressive behaviors [Berkowitz, 1993, 1998].

(192) Most of the time, players are in danger: to win they are forced to attack the opponents and at the same time they must protect themselves from the dangers of being virtually harmed and killed.

(193) Because players are constantly on guard, it would be possible that playing a VG activates fearrelated emotional constructs on players' memory.

(194) Research has shown that playing VGs usually has a more activating effect on the autonomic nervous system.

(195) Research has also shown that playing VGs contributes to an increase in the player's anger or state hostility [Anderson and Ford, 1986; Arriaga et al., 2006; Ballard and Wiest, 1996; Fleming and Rickwood, 2001].

(196) However, other studies suggested no effects of VG playing on the participants' state hostility or on their perception of a general negative state [Anderson and Dill, 2000; Austin, 1987, and Nelson and Carlson, 2001, in Bensley and Van Eenwyk, 2001; Calvert and Tan, 1994].

(197) On the other hand, Sherry's [2001] meta-analysis dealt solely with the effects of VG playing on aggressive behavior.

(198) The average effect size of VG playing on aggression was significant, albeit lower ($r=0.15$) than the effect sizes usually found on exposure to television and movie violence.

(199) In addition to these improvements, playing with a virtual reality (VR) interface may enhance its realism and grant players a finer sense of presence, providing higher involvement and immersion [Persky and Blascovich, 2006; Stanney et al., 1998; Tamborini et al., 2001].

(200) The studies conducted by Calvert and Tan [1994], Tamborini et al. [2000, 2001], and Arriaga et al. [2006] emphasized that current technologies still fall short of providing the desired amount of immersion.

(201 – 202) Cooper and Mackie [1986] showed the effects of playing a VG to be more pronounced in girls' than in boys' aggressive playing.

(203) Bartholow and Anderson [2002] showed the effect of playing VG on aggressive behavior to be higher in men than in women.

(204) Most experimental studies conducted so far usually manipulated the video games' violence by comparing playing VGs with playing NVGs, although not always controlling for some relevant factors that are likely to affect such variables.

(205) They then tested the effects of playing those matched games on the remaining cognitive-affective variables and on the players' aggressive behavior.

(206) In the light of these potential moderators and mediators, the main purpose of the present research will be to experimentally test the hypotheses that virtual game environment moderates the effects of playing a VG on the internal state variables (i.e., physiological arousal, state

hostility, and accessibility of aggression- or to fear-related constructs) and on the aggressive behavior.

(207) Most experimental studies conducted so far usually manipulated the video games' violence by comparing playing VGs with playing NVGs, although not always controlling for some relevant factors that are likely to affect such variables.

(208) In an attempt to identify the processes by which playing a VG exerts effects on aggressive behavior, we will examine whether this violent entertainment has a direct effect on the aggressive behavior, or whether such behavior results from indirect effects of the internal state variables postulated by the IPMA framework.

(209) Assessing sex as a moderating variable may help to clarify its relevance in the relationship among the variables under scrutiny; however, no a priori hypotheses regarding gender effects will be made given the mixed results obtained in previous study.

(210) The moderation hypotheses of virtual environment predicts that the effects of playing a VG on aggression- and/or fear-related constructs, on state hostility, and on displays of aggressive behaviour will be greater for participants playing with VR device than for those playing on the computer screen; thus, we expect that participants playing a 524 Arriaga et al. Aggr. Behav.VG with VR device, compared with those playing the same VG without VR device, will show higher accessibility of aggressive constructs (H3a) and/or to fear-related constructs (H3b), will report higher state hostility (H3c), and will display more aggressive behavior (H3d). No differences are expected between VR conditions, for those who play the NVG, on these outcomes.

(211) It is also possible that playing with a VR device may contribute to an increased physiological arousal, compared with playing on the computer screen, regardless of game content (H3e)

(212) It is also possible that playing with a VR device may contribute to an increased physiological arousal, compared with playing on the computer screen, regardless of game content (H3e)

(213) Therefore, we predict that the effect of playing a VG on higher aggressive behavior will be explained by higher state hostility (H4a) and/ or by the priming effect of aggression-related constructs (H4b).

(214) The participants' goal consisted in annihilating as many adversaries as possible while minimizing the number of times their character died.

(215) Thus, the possibility of not punishing the opponent was given to the participant (by choosing the level zero of noise intensity or duration) in order to ensure that all would act of their own free will, instead of being forced to administer some level of noise to the opponent [Tedeschi and Quigley, 2000].

(216) To provide more reliable and valid estimates of the VG effects on the outcomes, at least three metaanalyses were conducted. In the meta-analysis conducted by Anderson and Bushman [2001], a positive association was found between playing VGs and the following variables: aggressive affect ($r = .18$), physiological arousal ($r = .22$), aggressive cognitions ($r = .27$), and display of aggressive behavior ($r = .19$).

(217) Most of the 54 studies included in their analysis were experimental, suggesting a causal relation between VG playing and those dependent variables.

(218) In face of these difficulties, it would not be prudent to conclude that playing a VG entails no effects on the accessibility of aggression constructs.

(219) If applied to a sample of children, an identical experimental design could possibly reveal the expected effects of VG playing on the accessibility of fear-related constructs.

(220) The main questions examined in the present research were the short-term effects of VG playing, moderated by VR device, on the participant's internal states (hostility, accessibility of aggression-and fear-related constructs, and physiological arousal) and aggression, and the hypothetical mediation played by these internal variables on the aggressive behavior.

Appendix 2: Table of Contents

Table 1: Total number of non-finite *-ing* clauses in the analysis

Total number of clauses	Occurrences
Participial clauses	113
Gerundive clauses	104
Total	217

Table 2: Total number of clauses in the scientific prose texts

Total number of clauses	Occurrences
Participial clauses	81
Gerundive clauses	53
Total	134

Table 3: Participial clauses in scientific prose texts

Participial clauses	Occurrences
Condensed relative clause	18
Noun premodifier	20
Adverbial / supplementive clause	43
Participle as o. complement	0
Total	81

Table 4: Gerundive clauses in scientific prose texts

Gerundive clauses	Occurrences
Adverbial clauses	11
Nominal Clauses	42
Total	53

Table 5: Total number of clauses in the popular scientific texts

Total number of clauses	Occurrences
Participial clauses	32
Gerundive clauses	51
Total	83

Table 6: Participial clauses in popular scientific texts

Participial clauses	Occurrences
Condensed relative clause	9
Noun premodifier	5
Adverbial / supplementive clause	17
Participle as o. complement	1
Total	32

Table 7: Gerundive clauses in popular scientific texts

Gerundive clauses	Occurrences
Adverbial clauses	21
Nominal clauses	30
Total	51