

English summary
MODALITY IN DRUG INFORMATION LEAFLETS:
A CORPUS-BASED ANALYSIS

Introduction

The genre of drug information leaflets is a common way of giving useful pieces of information to patients using the medicine on the amount, way, expected side effects and hoped positive outcome of using a particular medicine. On the other hand, these documents may also serve as a special means of self-defence used by drug manufacturers for preventing legal action taken against them by unsatisfied, disappointed, or even damaged patients. The role of the linguistic phenomenon of modality in these efforts is the main focus of the present study. The identification, interpretation and classification of the manifestations of modality are meant to be a useful contribution between the two traditional partners: patients and drug manufacturers.

Two aspects of modality receive special emphasis in this study. One of them concerns the way it is used in the manipulation of information, which is either intentional or can be due to insufficient linguistic knowledge, by drug manufacturers. The other aspect concerns the reader's point of view: the dissertation also undertakes to investigate the role modality plays in the process of interpretation.

The method of investigation was corpus-based, because it facilitated the compilation and storage of authentic texts which served as an empirical basis for the investigation. The computerised, quantitative analysis was supplemented with manual analysis where it was required for the purposes of the investigation.

The theoretical framework of the study

The concept of genre

Swales (1990) defines genre as a class of communicative events sharing a set of communicative purposes, which are recognised and used by a discourse community. He also provides a detailed description of genre, which constitutes the following features:

1. A genre is a class of communicative events.
2. A group of communicative events are converted into a genre by a shared set of communicative purposes.
3. Exemplars of a genre are prototypical to different degrees.
4. A genre sets up constraints on candidate instances for the given genre in terms of content, arrangement and form.
5. The way members of a discourse community view their own genre provides an important insight into the genre.

Basic concepts of pragmatics related to the study

In Chapter 3, aspects of communication are discussed from both Speaker's and Hearer's point of view. After providing an outline of Speech Act Theory (Austin, 1962, Searle 1969 and 1975), an inferential approach to communication is described, which investigates communication from Hearer's (Reader's) point of view. According to Komlósi (1997), using inferences is imperative in human communication because when we communicate we have a fundamental cognitive drive to search for possible candidates to complete missing elements. According to the inferential model of communication, linguistic communication is successfully achieved if Hearer- on hearing an utterance - recognises Speaker's communicative intention and communication can exist because Speaker and Hearer share a set of inferential strategies which leads from Speaker's uttering of an expression to Hearer's recognition of Speaker's communicative intention.

An outline of Grice's Cooperative Principle (1975) and Gazdar's theory of presuppositions (1979) is also given in this chapter. Furthermore, the concept of *face* (Goffman, 1967), the concept of *facework* (Brown and Levinson, 1987) and politeness strategies (Brown and Levinson) are briefly discussed and it is also shown that the genre of drug information leaflets are characterised by negative politeness strategies.

The concept of modality

Chapter 4 discusses the concept of modality and the various approaches to modality in order to prepare the grounds and provide the theoretical basis for the data analysis. The concept of modality is difficult to grasp because it is a vague notion which gives rise to a number of possible definitions and there have been many proposals to define the term since as far back as the beginning of the 20th century. Three approaches are discussed: Halliday's model (1994), Stubbs' proposal for a modal grammar of English (1996) and Høye's views on modality (1997).

The research corpus

In Chapter 5, after discussing basic concepts of corpus linguistics, the PTE corpus of drug information leaflets is presented, which contains 100 texts, 67,668 tokens, 2548 types and 3717 sentences. With the help of the 4.0 version of Oxford WordSmith Tools (Scott, 2005), which is a commercially available integrated set of computer programmes devised for linguistic corpus analysis, first a frequency list of the lexical items of the corpus was set up. The frequency list was compared to the frequency list of a general corpus (BNC), which showed that the research corpus contains more content words and is more modalised.

Then concordance lines of target lexical items were set up in order to discover more about the way, the linguistic environment and the function authors of drug information leaflets use of modality. In order to keep the number of concordance lines at a manageable range, the original corpus was reduced to 50 texts. The following lexical

items underwent concordancing: CAN, MAY, SHOULD, MUST, WILL, TAKE and its derivatives, CAUSE and its derivatives, USE and its derivatives, POSSIBLE, DOCTOR, MEDICINES and MEDICINE. Lexicogrammatical patterns of target lexical items were set up, described and analysed in an attempt to investigate how authors of drug information leaflets make use of the linguistic phenomenon of modality, with special focus on its effect on the process of constructing and deciphering messages.

Results

Based on the analysis, the two main modal functions detected were possibility and obligation. In the investigated concordances, possibility is expressed by modal auxiliaries (CAN and MAY), frequency adverbs, adjectives (e.g. unlikely) and personal remarks (e.g. "you think"). The function of possibility is most marked in the description of side effects, e.g. *"Acitretin can cause drowsiness and reduced night vision"*. A possible reason for the application of a vague (in the sense that it does not provide accurate information) modal auxiliary is lack of evidence to provide more exact data, although deliberate obscuration of information in order to improve sales rates cannot be excluded, especially those patterns seem to give grounds for suspicion where the VP, besides the modal auxiliary, is further modalised with an adverb with a vague meaning, e.g. *"Acrivastine can occasionally cause a dry mouth."* However, lack of evidence to provide exact data as the purpose of the application of modality in those patterns which describe what the medicine is applied for (e.g. *"Acebutolol can be used to treat high blood pressure..."*) is unlikely, for medicines have to undergo a series of clinical trials prior to their marketing.

The other main function of modality revealed by the lexico-grammatical patterns is obligation. This is primarily realised by the imperative. Although the imperative is not modulated in the Hallidayian sense, some degree of modality can be attributed to it because it involves the attitude of Speaker: it is unmarked (as an instruction or order it does not display how important it is to conform to the instruction), thus it is neutral, creating impersonality and detachment. In a similar way, prohibition is mainly

expressed by the negated imperative. The concordances demonstrated that in many instances a frequency adverb is used to enhance the illocutionary force of the imperative VP as an instruction or prohibition, e.g. *"Never take two doses at the same time..."* The most frequently occurring modal auxiliary to express the function of obligation is SHOULD in the corpus. However, in some instances it is not effective as an instruction, but, instead, a device expressing instruction with a stronger illocutionary force would be required. One of the most salient examples for this among the concordances investigated is *"Because Amoxicillin is a type of penicillin it should not be used by those who are allergic to penicillin."* It is part of patients' background knowledge that if they are allergic to the active ingredient of a medicine, they should avoid that medicine and other medicines containing the same active ingredient. However, not every patient is aware that allergic reactions can even be fatal, therefore an effective modal device would be required to draw attention to the severity of the problem. In rare instances, a proposition is used with the function of indirect instruction, e.g. *"To prevent indigestion, aluminium hydroxide is usually taken between meals and at bedtime."* In this instance, the implied meaning is *take this medicine between meals and at bedtime to prevent indigestion*. The meaning of the utterance can only be deciphered with the application of indirect inferential strategies. In some instances, a semi-modal denoting obligation is modalised with a modal auxiliary expressing possibility, e.g. *"You may have to take this medicine for several weeks or months..."*

Other functions expressed by modal operators in the corpus include prediction, assumption, condition and volition realised by the modal auxiliary WILL, e.g. *"Alcohol will increase any feelings of drowsiness..."*, and strong probability expressed by SHOULD, e.g. *"These should improve as your body adjusts to the new medicine..."* However, some instances of WILL used as a prediction or assumption would require clear instructions, e.g. *"You will probably have been told to use this preparation for 5-10 days."* This instance, as was shown in the analysis of the concordances, calls for an exact determination of the duration of the application. Furthermore, although rarely occurring, modal functions detected were permission expressed by MAY, e.g. *"If you find it more comfortable, you may warm the drops to body temperature..."* and ability

realised by CAN, e.g. *"The body can make vitamin D when the skin is exposed to sunlight."*

The investigation of the concordances also demonstrated that the application of modality has an effect on the process of Writer-Reader communication. In some instances it promotes the process of interpretation. The imperative - although it is impersonal and neutral, thereby suggesting lack of writer-involvement - is often used to give straightforward and clear instructions. Similarly, the application of MUST as an order or SHOULD as a recommendation and not as an ineffective order may not pose problems in the process of interpretation. However, the investigated concordances show that authors of drug information leaflets often misuse modality to distort information. Readers, even with the application of inferential strategies, face difficulties when interpreting drug information leaflets.

Problems in interpretation are brought about by the infringement of Grice's maxims. The Maxim of Quality is observed, since drug manufacturers are obliged by law not to provide information which they believe to be false or for which they do not have evidence. The Maxim of Relation is also observed in most instances, since all the information contained in the drug information leaflet is connected to the medicine, its application, its possible side effects, its beneficial effects and its storage. An example for the violation of the Maxim of Relation can be found when authors of drug information leaflets draw the attention to the possibility of side effects appearing, but conceal information that would be relevant for the patient, e.g. *"...all medicines can cause unwanted side effects..."*.

The Maxim of Quantity, however, is infringed when authors of drug information leaflets are either less informative or more informative than they should be. In the enumeration of side effects they indicate the possibility of occurrence of certain side effects but they are less informative than required by not conveying more accurate information on the likelihood of the appearance of side effects and on the range of people at risk of side effects. Another example when patients receive insufficient information is *"Certain foods may also make you more likely to suffer from gout..."* The

expression "certain" foods" may cover practically any food. A range of foods or at least some examples for food that the patient should avoid need to be laid down. Similarly, in the instance *"If you have diabetes this medicine may affect your blood sugar levels"* the Maxim of Quantity is infringed because the patient receives insufficient information for it is not mentioned how and to what extent the medicine can affect the blood sugar level in a diabetic patient. However, the analysis of the concordances also revealed instances when the Maxim of Quantity is violated by giving more information than required. Examples such as *"...these ear drops once or twice a day, unless otherwise directed by your doctor"* are more informative than necessary, because the dosage of a prescription medicine is determined by a doctor and stipulating an alternative dosage creates fuzziness and ambiguity. The instances of the utterance *"Along with their needed effects, all medicines can cause unwanted side effects..."* conveys redundant information because it is a presupposition that medicines can cause unwanted effects which patients are aware of.

Among Grice's maxims, the Maxim of Manner is the most violated by drug information leaflets. Its violation is realised by vague adverbs and embedded and compound hedges, which obscure information and create fuzziness, thereby hindering the process of interpretation. E.g. *"This condition may unexpectedly occur again and again."* In this instance, the patient does not receive information concerning the time and way of the occurrence of the condition. In the example *"If you experience any other worrying symptoms, which you think may be due to this medicine..."*, the compound hedge consisting of a modal auxiliary (MAY) and a personal remark ("you think") creates fuzziness and hinders the interpretation of the utterance.

As the investigation has demonstrated, drug manufacturers convey all the information they are obliged by law to convey. However, the manner of providing the information gives rise to interpretation problems. Instead of using modality to promote the process of interpretation, they misuse it to hinder the decipheration of the message. A possible reason for this may be the lack of adequate linguistic knowledge, especially concerning modality and pragmatics, however, conscious manipulation of information in order to

improve sales rates and protect themselves should legal action be taken against them by unsatisfied patients cannot be excluded.

Conclusion

The main function of modality in this genre is to change the truth conditions of information provided by instances of this genre by avoiding explicitness and providing vague information, thereby hindering the process of interpretation of drug information leaflets. The study has also revealed that authors of drug information leaflets resort to modality either to change the patients' attitude to the drug he or she is taking: they manipulate information to conceal the dangers of the application of the medicine by providing vague, inaccurate information concerning adverse effects, to create fuzziness and to provide inaccurate information with the aim of calming or confusing the patient. Another possible aim of the application of modality detected in the present corpus is declining responsibility or attempting to prevent legal action taken by unsatisfied or damaged patients by refusing to state explicitly the possible consequences of taking a particular drug.

In this way, modality is a source of ambiguity in drug information leaflets. This may be due to the authors' insufficient linguistic knowledge or conscious manipulation of information by drug companies, but most probably a combination of the two.

Although this study was meant to be descriptive rather than prescriptive, some suggestions can be drawn from the study for authors of drug information leaflets. They should provide less obscure and more accurate information in order to improve patient compliance with the medicine and the drug information leaflet. In order to achieve this, they need to acquire sufficient linguistic knowledge, such as. proper application of modal devices and acquisition of pragmatic knowledge, with special regard to conversational principles. Modality, as one of the most salient linguistic phenomena applied in drug information leaflets, should promote the process of the interpretation of drug information leaflets and not hinder it. Accurate, precise and unambiguous

formulation of information is more essential than in the case of most other medical genres, because drug information leaflets are written for a wide range of audience, with huge varieties in education, literacy, social status, employment status and age.

Implications for further research

Among the implications of the study for further research, of primary importance is the need to compare the results with a corpus of drug information leaflets written in Hungarian. The recent governmental decree that over-the-counter medicines, i.e. those which are available without a doctor's prescription, can be purchased outside the pharmacies (e.g. at petrol stations or in supermarkets) gives special concern for a Hungarian - English comparative-contrastive study of drug information leaflets. In this way, the pharmacist's and the doctor's role in giving information concerning the medicine is relegated to the background and the drug information leaflet becomes the primary provider of information in the case of over-counter-medicines.

Also, the present corpus, which is, to the best of the author's knowledge, the first corpus on instances of the genre of drug information leaflets requires extension, so that larger scale studies could be carried out which investigate other linguistic phenomena besides modality and involve the application of statistical methods.

The multifold phenomenon of modality may be investigated on other biomedical genres with corpus-based methods and the obtained results should be compared and contrasted with the results of this study.

Furthermore, a sociolinguistical investigation with questionnaires involving a carefully selected population of readers of drug information leaflets (with special focus on how they interpret drug information leaflets) could confirm and complement the results of the present study. A survey involving the inquiry of authors of instances of the genre would be more interesting. It could possibly reveal whether the way authors of drug

information leaflets use modality reflects their way of thinking or it is part of conscious manipulation by drug companies.

Although the compilation of a spoken corpus of pharmacist-customer dialogues is technically more difficult to implement, it would provide invaluable insight into the process of creation and interpretation of messages concerning medications and information and instructions concerning their application.

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Az értekezés témakörében megjelent publikációk

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