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The role of metonymy and polysemy in academic and popular science literature

Abstract. Metonymy and polysemy in academic and popular science texts are useful linguistic phenomena that aid in interpreting complex specialised terms by capturing various meanings in scientific terminology. The relevance of the study is determined by the necessity to clarify the functions and contextual motivation behind the use of metonymy and polysemy in conveying scientific information. The research aims to analyse theories related to metonymy and polysemy, different types of these stylistic figures, and determine which ones are most productive for scientific style. The results of the study revealed that metonymic expressions can be used to condense

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narratives and convey precise terms and definitions. On the other hand, polysemy assists in selecting the most appropriate among multiple meanings of the same term. The findings of this paper can be beneficial to linguists, teachers, and researchers from various scientific fields who seek to enhance the accuracy and comprehensibility of their scientific work.

Keywords: transmission of information, function, variant meanings, association, term

1. Introduction

The study of metonymy in academic texts and polysemy in popular science is necessary for the effective dissemination of scientific ideas, improving communication between scientific and non-scientific communities, and enhancing the quality of popular science materials. Polysemy in popular science texts manifests itself by a multiplicity of different meanings in different contexts of scientific terms, which helps select the most appropriate variant. The role of various types of metonymies (spatial, temporal, material) in scientific discourse is primarily to convey the meanings of terms more accurately while making the text more concise. Therefore, there is a need to further investigate the contexts of usage, as well as the functions and appropriateness of these linguistic phenomena in texts from different scientific disciplines, which will help avoid misunderstandings of concepts or notions.

Metonymy and polysemy have been studied by numerous linguists. Initially, these linguistic figures were used in literary style. Later, they started being employed by media professionals and scientists. Brdar and Brdar-Szabó (2022) in their work described the semantic content of the concept of "metonymy." The authors examined various approaches to defining the concept of metonymy and its classification and provided examples of metonymy in different languages. The researchers also highlight various problems related to the use of metonymy in linguistics, such as theoretical inaccuracies in its definition and description. The need to improve theoretical approaches to the study of metonymy and carefully consider examples from different languages to understand this phenomenon is emphasised. In turn, Jankowiak and Korpal (2018) discussed polysemy in cognitive linguistics from various perspectives. The authors explored polysemy as a component of linguistic signs, its functions, mechanisms, and features of representation in language usage. They argued that polysemy is an important phenomenon in language and requires careful investigation, particularly from a cognitive and linguistic perspective. The researchers also demonstrate that polysemy can be studied in different contexts and from different approaches, allowing for a more comprehensive understanding of its functioning in language.

Gillmann (2021) investigated the phenomenon of metonymy by using examples from texts of various genres, such as research papers, newspaper articles, and interviews. The study aims to determine how metonymy is reflected in different discourse contexts. As a result of the research, the author identified several types of metonymies that differ in their functional purpose and usage context. An important conclusion of the study is that metonymic expressions can play a significant role in structuring discourse and expressing ideas in texts of different styles.

Different approaches to the definition of polysemy and its classification are presented by Lenci (2018). Furthermore, the researcher examined the impact of polysemy on text comprehension. The examples of polysemous words in texts of various genres, demonstrating different possibilities of interpretation, are provided. According to the researcher's conclusions, polysemy can have both positive and negative effects on text perception. The presence of polysemous words adds complexity and depth to the text but, when misunderstood, can shift meaning and distort the author's intended idea.

Ortega-Andrés and Vicente (2019) analysed the structural aspect of polysemy. The researchers highlighted various approaches to defining polysemy and its manifestation in morphological forms. They examined examples of polysemous words in morphology across different languages and analysed their structure and meanings. The researchers conclude that polysemy is a significant phenomenon in the morphology of language. However, the polysemy of morphological forms can pose challenges in understanding and usage, especially in scientific style. Nonetheless, it can also be beneficial for enhancing communication efficiency and enriching speech. Roque et al. (2018) explored metonymy from a linguistic analysis perspective. The researchers examined various aspects of metonymy in language, particularly the role of metonymy in grammatical structure. They also emphasised that analysis of the metonymic aspect of language will lead to a better understanding of its functioning and make linguistic analysis of texts more effective.

The study used a comprehensive set of scientific methods characteristic of linguistic research. Specifically, the following methods were utilised: analytical (linguistic analysis, stylistic analysis, cognitive analysis), comparative, descriptive, structural, and generalisation methods. The analytical method proved to be the most productive. It facilitated the examination of the features of usage of metonymy and polysemy in scientific discourse, including their linguistic features, semantic characteristics, and frequency of occurrence. The study also elucidated the significance of expressions formed based on metonymy and their contextual usage by analysing the relationships between the real name of an object and its substitute in language.

Other methods also yielded significant results. For instance, the descriptive method assisted in thoroughly examining the mentioned linguistic phenomena and their characteristics in texts and describing their impact on the reader's text perception. The comparative method was employed to compare similar and distinct features of these styles. The generalisation was utilised to summarise the knowledge obtained through the previous methods. It involved consolidating and systematising all the findings on metonymy and polysemy in scientific discourse and popular science texts. Therefore, based on the aforementioned data, the research aims to explore linguistic theories regarding metonymy and polysemy and to consider various types of these stylistic figures to determine which ones are most appropriate for use in academic and popular science texts.

2. Metonymy in scientific discourse: types, functions, and features of usage

Metonymy is a linguistic figure of speech that involves the substitution of one word with another that is contextually or associatively related to it (Britannica, 2024). Some researchers consider metonymy as a subtype of metaphor (Genette, 1970). This theory has its grounds: both stylistic figures help expand the conventional boundaries of speech and comprehend concepts at a new level; both are used to create figurative, metaphorical meaning; both metonymy and metaphor require context and associations for their effectiveness. However, there are significant differences as well. For example, in metonymic expressions, the substitution occurs based not on similarity or comparison, as in the case of metaphor, but on the relationships between objects or concepts. One key type of relationship is associative, where connections are made based on common attributes or contextual associations. For example, the term "the White House" is often used to refer to the U.S. government because of the association between the building and its role as the seat of power. Another important relationship is causal, where one concept causes or results in another. A common example is the phrase "he hit the bottle," where "bottle" is substituted for alcohol, indicating a direct relationship between the action of drinking and the object involved. Furthermore, metonymy employs specific elements that are connected to what needs to be conveyed, which can be physical, spatial, or causally related, whereas metaphor sometimes relies on unexpected analogies and comparisons to convey new meaning (Gillmann, 2021).

Metonymy has been used in literature and speech since ancient times, but it is believed to have gained popularity during the Renaissance era. Since then, metonymy has become one of the most widespread literary and rhetorical figures used in various styles of discourse, including scientific, literary, and media. For example, in literary texts, it can be used to create imagery or stylistic sophistication, in journalistic texts to enhance impressions, and in scientific texts to achieve the economy of speech and precise expression of ideas. However, it is important to use metonymy cautiously in scientific texts, as it can cause misunderstandings or confusion. For instance, using "Washington" to refer to the US government can be ambiguous since "Washington" can also refer to the city of Washington rather than the government (Carston, 2020).

The grammatical features of metonymy contribute to the creation of contextual associations and the conveyance of specific meanings or ideas through the substitution of words directly related to them (Littlemore, 2015). The most common substitution involves nouns. Metonymic expressions often employ the replacement of one noun with another that is connected to it in terms of place, time, cause, and material. Metonymy may be realised in language through verb substitution. Metonymy may involve the replacement of one verb with another that has a close meaning or contextual association. In some cases, metonymic expressions may also employ the substitution of one adjective with another related to a similar characteristic.

There are several approaches to the classification of metonymy. Different linguists have proposed their classifications. For example, V. Bambini et al. (2021) regarded metonymy as a partially figurative use of words. The researchers aimed to study the characteristics and functions of

metonymy in Czech and English based on corpus analysis. They investigated the most frequent types of metonymies in figurative speech and the functions they perform in specific texts. Furthermore, the researchers concluded that the proper use of metonymy depends on context and linguistic environment. Through the analysis of texts in different styles, the authors identified the following types of metonymies:

1. Metonymy based on spatial relations: one entity is substituted by another that is located nearby in the same space. For example, "The White House" is a metonymy where the name of the building has become synonymous with the presidency of the United States, which is located in that building.
2. Metonymy based on causal relations: one concept is substituted by another, which is the result or consequence of an action. For example, "to hit the bottle" is a metonymy where "bottle" is used as a substitute for alcohol, the consumption of which leads to drunkenness.
3. Metonymy based on contextual relations: one concept is substituted by another that is related to the context of use. For example, "the press" is a metonymy where the word "press" is used as a substitute for journalists and publishers who create materials for publications.

This approach is representative, although its effectiveness may depend on the quantity and quality of the analysed texts, as well as the methods used to identify types of metonymies. A sufficient number of texts in different styles that were representative of the studied language and employed text analysis methods, including stylistic analysis, was provided to identify types of metonymies. Regarding the functions of metonymy, the researchers note that it can be used to activate associative networks in speech, create imagery, represent sociocultural stereotypes and identity, ensure linguistic economy, and enhance speech efficiency, among others.

Based on the information in Littlemore (2015), it is possible to identify several types of metonymies based on their structure and semantic role (Table 1).

Table 1. Types of metonymies

Type of metonymy	**Description/characteristic**	**Example**
Organisational	Replacement of the name of an organisation with the name of its specific division or representative.	"The White House announced a new initiative" (instead of "The US Government announced…").
Contextual	Replacement of the name of an object or phenomenon with another one that is directly related to the context.	"I have a new iPhone in my hand" (instead of "I bought a new iPhone").
Instrumental	Replacement of the name of an object with the name of the instrument used to create or perform a specific action with it.	"I ordered new tires for the car" (instead of "I ordered a new set of tires for the car").

Type of metonymy	Description/characteristic	Example
Functional	Replacement of the name of an object with the name of its function.	"I drink coffee in the morning" (instead of "I drink coffee from a cup in the morning").
Container	Replacement of the name of an object with the name of the container/ vessel in which it is located.	"I bought myself a new kettle" (instead of "I bought myself a new device for brewing tea").
Metonymic	The use of the name of one object to denote a concept related to it.	"He reads Shakespeare" (instead of "He reads the works of Shakespeare").

Among other approaches, substitution of object names based on associative links can be distinguished. For example:

1. Based on the method of establishing a connection between metonymic objects: substituting the name of one object with the name of another object associated with it. For instance, "she took the handle in her hand" – here, "handle" is a metonymy for the handle of a knife or a glass.
2. Substituting the name of an object with the name of the material it is made of. For example, "he went to the store for leather boots" – here, "leather" is a metonymy for boots made of leather.
3. Substituting the name of an object with the name of the place where it was produced or its origin. For example, "I'd like a glass of Chardonnay"– here, "Chardonnay" is a metonymy for the geographical origin of the grapes used to make it.
4. Based on the type of connection between metonymic objects: physical connection. For example, "he emptied the glass to the bottom" – here, "to the bottom" is a metonymy for the contents of the glass. Another type is based on semantic connection. For example, "he loves reading Bulgakov" – here, "Bulgakov" is a metonymy for the works of Bulgakov.

Metonymy can also be classified based on the level of abstraction. Specifically, a definite metonymy, such as "he ordered tea" – here, "tea" is a metonymy for a cup of tea. Additionally, abstract metonymy can be identified. For example, "to crown" – here, "crown" is a metonymy representing power or monarchy. Brdar and Brdar-Szabó (2022) classify metonymy based on a different principle, specifically:

1. Object-based metonymy involves substituting the name of an object with the name of a closely related object or objects associated with it. For example, "Ask him to pour a glass" – in this sentence, the word "glass" is used as a metonymy for the drink usually poured into a glass.
2. Material-based metonymy involves substituting the name of an object with the name of the material it is made of. For example, "She wore gold on her wrists" – in this sentence, the word "gold" is used as a metonymy for the ornaments made of gold.

3. Place- or origin-based metonymy involves substituting the name of an object with the name of the place where it was made or its origin. For example, “I bought Spanish wine” – here, the word “Spanish” is used as a metonymy for wine produced in Spain.
4. Action- or result-based metonymy involves substituting the name of an object with the name of the action it performs or the result of that action. For example, “She writes for a living” – here, the word “writes” is used as a metonymy for the profession or activity associated with writing texts.

Metonymy is used in texts of various styles with different purposes and functions. For instance, Rakhilina et al. (2022) identified four main functions of metonymy. The representational function involves the use of metonymy to present or introduce a concept through another concept that is related to it but not identical. The spatial function entails the use of metonymy to express the location, direction of movement, or the site of an event. The function of discourse marking refers to the use of metonymy to indicate certain discourse features such as explicitness, expressiveness, or irony. Lastly, the structural function involves the use of metonymy to create the structure of a text, particularly to avoid the repetition of specific words or phrases.

In academic texts, metonymy is used for text condensation as a means of replacing long scientific terms that may be difficult to comprehend. Such metonymic substitutions can relate to concepts considered widely known among experts in the specific scientific field. However, the use of stylistic figures in academic texts differs from literary style (Gibbs Jr., 2022). The primary requirements for stylistic figures in the scientific text are accuracy and clarity in expressing ideas and concepts, the use of the most precise terms, and the exclusion of multiple-word meanings. Some stylistic figures widely used in literary literature, such as metaphor or allegory, may be less common in academic texts, where precision and clarity are emphasised. However, metonymy is a commonly used figure in scientific style as it allows for the precise and comprehensible conveyance of complex concepts. It is also important to note that stylistic figures in scientific text should be used with an understanding of the purpose of the text and the audience it addresses. For example, the use of humour or irony may be inappropriate in academic texts if they do not support the main objective of the research.

Wen and Taylor (2021) examine metonymy as a phenomenon in cognitive linguistics. They analysed the role of metonymy in speech and thought and described its functions in scientific texts. The descriptive method, based on the analysis of specific examples, is one of the most effective approaches to studying linguistic figures. Some of these functions include the term abbreviation: metonymic expressions can be used to abbreviate lengthy terms in scientific texts. For example, the term “brain” can be replaced with “mind” in a text related to psychology. Another function is the substitution of abstract concepts with concrete ones. Metonymic expressions can be used to replace abstract concepts with concrete ones to make them more accessible to readers. For instance, the term “individual freedom” can be substituted with “right to liberty” (in legal studies). An important function is the highlighting of details in the text. For example, in “The White House said...” the expression “White House” is used instead of “the U.S. government”

(in political studies). Additionally, metonymic expressions can be used to enhance emotional colouration in the text. For instance, “he knows his heart” can be replaced with “he knows his desires,” providing a more emotionally charged expression (in literary studies). Metonymy can also be applied to create analogies and comparisons between different concepts. For example, “a mountain of money” can be used to describe a large amount of money, drawing an analogy between “mountain” and “money.” Similarly, the phrase “raise a glass” can be used to describe a toast, whereas metonymically “glass” is used to denote the beverage typically served in a glass (in literary studies). Such analogies can help clarify complex or abstract concepts that may be difficult to grasp without the use of metonymy.

Metonymy is widely employed in scientific texts across various fields of study. For example, in psychology, “affective lability” – metonymic use of the term “lability” instead of the longer term “affective lability,” which describes the incongruity between emotional reaction and the situation. In philology, “metonymic shift” – metonymic use of the term “shift” instead of the longer term “metonymic shift,” which describes the use of metonymy to change the meaning of a word. In medicine, “insulin” – metonymic use of the term “insulin” instead of the longer term “insulin hormone,” which describes the hormone produced by the pancreas that regulates blood sugar levels. In engineering, “machine” – a metonymic use of the term “machine” instead of the longer term “computer-controlled machine,” which describes a device that can be programmed to perform specific tasks (Stevanovic, 2021).

In summary, based on the analysed theories, it can be concluded that functional metonymy and metonymic generalisation are the most prevalent types of metonymies. However, different types of metonymies can be identified in various studies, depending on the criteria applied by researchers, the field of knowledge, and the nature of the specific texts under investigation. These types may include geographic metonymy (using the name of a place to denote an object or phenomenon associated with that place), social metonymy (using social status or profession to denote a person), and container metonymy (using a container to denote its contents).

3. Polysemy in popular science texts: types, functions, features of usage

Polysemy is a linguistic phenomenon in which a single word has multiple related meanings. This means that the same word can be used to refer to different objects, ideas, or concepts depending on the context in which it is used. Polysemy is also one of the main mechanisms for expanding the vocabulary of a language, as it allows words to be used to convey various nuances of the speaker’s thoughts (Giulianelli et al., 2020). From a grammatical perspective, polysemy is associated with semantic changes that occur within one or several grammatical categories. Thus, polysemy can exist at different levels of grammatical structure, such as the word, phrase, or sentence level. Polysemy in grammar can be used to express different meanings and can also create ambiguity in the sentence. Context and other linguistic cues usually help determine which specific meaning is being used in a particular case.

Polysemous expressions can be used in any style of speech with varying degrees of frequency, as polysemy is a type of lexical semantics. In literary style, it is used to create artistic effects and richness of content variants. In a conversational style, polysemy can be used to create jokes, humour, and informal expressions of thoughts. For example, the expression "butterflies in the stomach" can refer to a physiological reaction to excitement, but it is also used to describe feelings of love, fear, or any other emotional experiences in literary or conversational styles. In scientific style, the use of polysemy is not widespread, as this style of speech aims to convey information as clearly as possible. The use of implicit meanings of words can lead to an incorrect understanding of terms and concepts, which can affect the reliability of research and make it less convincing (Jankowiak and Korpal, 2018).

In contrast, in popular science texts, polysemy is a frequently used phenomenon that can be employed to explain complex scientific concepts to a wide audience. Authors of these texts often utilise familiar terms that have multiple meanings but select the one that most accurately conveys the content of the text. For example, the term "mass" in physics refers to the amount of substance in an object, but in everyday speech, it may have a broader meaning, such as being used in the context of a person's or an object's weight. In a popular science text about health, the following sentence could be used: "It is important to maintain an optimal body mass for the preservation of health." Here, the term "mass" is used in the sense of "weight of a person."

The semantic richness and types of polysemy have been investigated by various scholars. Lenci (2018) studied the impact of polysemy on text comprehension. The researcher noted that polysemy can lead to different interpretations of a text depending on the context and the relationship between the different meanings of the word. Furthermore, the researcher examined the role of context in understanding polysemous words and the relationship between polysemous and text structure. Exploring these aspects can help better understand the functioning of polysemy in language and texts of different styles. It is particularly important to consider the aspect of text structure, as it can influence how a polysemous word is perceived by the reader. Scholars identify several types of polysemy. For example, Glynn (2014) identifies six primary types (Table 2).

Table 2. Types of polysemy according to Glynn

Type of polysemy	Description/characteristic	Example
Grammatical	Different meanings of a word are reflected in its grammatical forms.	The word "to run" can be a form of the verb in the participle tense when combined with a preposition and a pronoun – "the one who is running," a form of the past participle – "run," or an infinitive form – "to go for a run." In this example, grammatical polysemy arises from the fact that the same word has different grammatical forms that serve different functions in the language.

Type of polysemy	Description/characteristic	Example
Lexical	Different meanings of a word represent different concepts.	The word “bank” can have the meaning of “financial institution” or “object for storing money.”
Contextual	Different meanings of a word represent different concepts depending on the context.	The word “book” can have the meaning of “physical object” or “written work.”
Phraseological	Different meanings of a phrase cannot be understood by considering individual words.	The phrase “to chase flies” can have the meaning of “speaking empty words” or “attacking someone.”
Derivational	Different meanings of a word are reflected in its etymology.	The Ukrainian word “дим” (smoke) derives from a Slavic root, which means “vapour” and can also be used to refer to fire.
Syntactic	A phenomenon where a phrase has multiple possible interpretations depending on the syntactic structure.	“Visiting relatives can be annoying.” As a gerund phrase, “visiting relatives” functions as the subject of the sentence, meaning that the act of visiting one’s relatives is what can be annoying. As a noun phrase, “visiting relatives” refers to relatives who are visiting. Thus, the phrase means that the relatives who are visiting can be annoying.

Such an approach is representational; however, in some cases, it may be too general and not reflect all meanings. Instead, some scholars employ a more specific grammatical and associative approach to the classification of polysemy. For instance, J.R. Taylor (2018) investigated the evolution of word meanings using the English word “so” as an example, which begins with a conjunctive meaning and then develops into other grammatical categories such as pronouns, adverbs, and so on. As words undergo grammaticalization, their meanings change, giving rise to new meanings that may differ from the word’s primary meaning, thus leading to diachronic polysemy. Consequently, the researcher distinguishes two types of polysemy: diachronic polysemy and grammatical polysemy. One example of diachronic polysemy is the word “book.” In medieval times, this word had a broad meaning and referred to any collection of texts, regardless of whether they were compiled in paper form. In contemporary language, the word “book” has a more restricted meaning, indicating a collection of texts assembled in a paper format. However, this word can also have other meanings in different contexts, such as “registers,” “records,” and “catalogues.” Thus, the word “book” serves as an example of diachronic polysemy, where the word’s meaning changes over time. An example of grammatical polysemy can be found in the word “although.” Initially, it was used as a conjunction indicating contrast or concession, for example: “Although it was very late, he was still working.” However, over time, this word came to

be used as a negation or limitation, for example: “I don’t know, although I might be mistaken.” Thus, the word “although” acquired a grammaticalized meaning of negation (Kovács, 2012).

Regarding the functions of polysemy in different texts, Ortega-Andrés and Vicente (2019) identified the following: expanding the information capacity of a word; reducing the number of lexical units required to express certain concepts (linguistic economy) and avoiding repetitions; enhancing language flexibility by allowing the use of a single word in different contexts; improving the efficiency of speech interaction through shared understanding of words in different contexts; creating linguistic playfulness, which can have artistic or humorous value; enriching the reader’s vocabulary with terminology and scientific concepts; enhancing precision and expressiveness of speech through the use of more appropriate words; expanding the possibilities of linguistic flexibility and creating new associations in the reader.

In popular science texts, polysemy has its own usage patterns and functions. Ramsey (2022) studied the use of polysemy in popular science discourse. The author examines how polysemous words and phrases are employed in texts on various scientific topics to enhance their comprehensibility and accessibility to readers. The research findings demonstrate that polysemy is an important tool in popular science style as it allows for the conveyance of complex concepts in understandable and accessible terms for a wide audience. The researcher also emphasised that the use of polysemy should be limited, as excessive use of polysemous words can lead to confusion and misinterpretation of the text. There may also be situations where the use of polysemous words can be inappropriate or inadequate. For example, a word used with a specific meaning in a technical context in a scientific text may be interpreted with a more common meaning in everyday speech in a popular science text. This can result in readers misunderstanding the text, especially those without specialised knowledge. One example could be the word “resonance,” which in a technical context signifies a response to specific stimulation, while in everyday speech it may refer to popularity or a reaction to a certain event. Therefore, the author recommends writing popular science texts that employ polysemy with caution and consideration for the target audience, a recommendation that is hard to disagree with. The article provides the following examples:

1. The word “battery” can mean “a series of connected elements that provide electrical power” or “a group of identical elements or devices.”
2. The word “synthesis” can have different meanings: “the process of creating a complex chemical compound” or “the process of combining different ideas or concepts into a new product.”
3. The word “system” can mean “a grouping of elements working together to perform a specific function” or “a particular set of relationships existing among various elements.”
4. The word “neuron” can refer to “a cell of the nervous system that transmits information” or “artificial intelligence that emulates the workings of the human brain.”

Among the functions of polysemy in popular science style, Diessel (2019) considers the following to be the most important. Firstly, it enriches speech by adding diversity and variability

to the text. This ensures a deeper understanding of the text and increases readers' interest in it. Secondly, in popular science texts, polysemy can serve as a term that has specialised meanings in specific scientific fields. For example, the term "photon" has a specific meaning in physics but may mean "light" in other domains. Thirdly, polysemy can be used in popular science texts to create intrigue and enhance the emotional component of the text. This can sharpen the reader's attention and increase their desire to continue reading. Fourthly, in popular science texts, polysemy can be used to explain complex concepts and notions by employing familiar and more understandable terms and concepts. For example, in an article about neurobiology, terms such as "synapse," "dendrite," and "axon" may be used, which can be understood by a larger number of readers who are superficially familiar with the topic. Thus, polysemy serves an important function in popular science texts by ensuring their comprehensibility, interest, and accessibility.

Based on the aforementioned, it can be concluded that the most commonly used types of polysemy in popular science texts are lexical and phraseological. Lexical polysemy is encountered in terms and scientific concepts; for example, the word "cell" can have different meanings depending on the context. Phraseological polysemy is used to create humour and grotesque effects. For instance, the idiom "to knock someone off their perch" can be used both figuratively and literally, depending on the context and the author's intention.

4. Conclusions

The research results have shown that metonymy and polysemy are important linguistic phenomena used in various styles of speech, such as colloquial, literary, journalistic, and scientific. These stylistic figures are integral parts of scientific discourse, scientific style, and popular science language style, as they allow for concise expression and conveyance of word or phrase meanings more efficiently and understandably. In scientific style, their usage is regulated by specific requirements for stylistic figures, which are not typically inherent to this style. Therefore, context and text structure play a crucial role in understanding metonymic expressions and polysemous words. Specifically, the text should be constructed in a way that accurately conveys information and avoids unmotivated ambiguity.

During the research, it was found that the use of metonymy and polysemy in scientific discourse and popular science texts can vary depending on the field of science and the type of text. For instance, the functional use of metonymy and polysemy in medical-themed texts may have its specifics compared to research papers in technical or humanities disciplines. This is due to the unique terminology, concepts, and contexts within each field of science. The main types of metonymies include organisational, contextual, instrumental, functional, container metonymy, and metonymic generalisation. The main types of polysemy identified are grammatical, lexical, contextual, phraseological, derivational, and syntactic polysemy. The most productive types of metonymies in academic texts are recognised as functional metonymy and metonymic generalisation, while lexical and phraseological polysemy are prominent in popular science texts. The main functions of the investigated linguistic phenomena include avoiding excessive

detail, conveying the meanings of scientific terms more precisely, increasing the interest and comprehensibility of the text, as well as saving linguistic resources. However, it is important to consider the specific features of metonymy and polysemy usage in different scientific fields, especially those that employ the same terms with different meanings, to avoid ambiguity and misinterpretation of information.

Based on the above conclusions, it can be stated that the deliberate use of metonymy and polysemy in scientific discourse ensures clear and comprehensible utilisation of terminology. Exploring various aspects of metonymy and polysemy usage in academic and popular science texts can contribute to reducing disparities in the understanding of ideas across different scientific domains. A prospective area for further research could involve a detailed examination of the role of these phenomena in language and communication from the perspective of related humanities disciplines such as sociolinguistics, psychology, and media linguistics. This would enable the study of how metonymy and polysemy influence the perception of texts by diverse audiences with different levels of education and what linguistic strategies can be employed to avoid misunderstandings. Additionally, the study could consider metonymy and polysemy in the context of intercultural communication and translation. Investigation of these phenomena in different languages and cultures could assist in improving intercultural scientific collaboration and translation practices.

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