

CLASSIFYING MEDICAL METAPHORS: OBSERVATIONS ON CATEGORIZING LEXIS-THRIVING METAPHORS IN *ENGLISH FOR DENTISTS*

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Abstract: While classifying medical metaphors as part of an extensive study, we faced multiple categorization challenges. In the present article, we analyze some of the major challenges in terms of classifying metaphoric instances found in the specialized English textbook *English for Dentists* by E. Belova, M. Gokzaev, and J. German (2022). To extract the metaphoric instances, we relied on the free corpus analysis software AntConc. The theoretical background of the research is grounded in the Conceptual Metaphor Theory, which views thinking itself as a metaphorical process.

While Lakoff and Johnson defined conceptual metaphor as a phenomenon in its own right, we are especially interested in the significance of the realizations of conceptual metaphors at the level of language, in other words, their *metaphoric instances*. Moreover, the scope of our research is limited to metaphors and their metaphoric instances in Medical English, with a further narrowing of our focus on Specialized Medical English textbooks, i.e. textbooks of Specialized English for students in the medical fields.

Thus, the methodology used is tailored to Medical English and is further augmented by a six-field categorization of medical metaphors: “Body parts and substances”, “Scientific fields, specialists, characteristics, and wards”, “Abnormal conditions”, “Drugs and likes”, “Instruments and equipment”, and “Patient and treatment”. In addition, the understanding of there being two major types of medical metaphors, *lexis-thriving* and *discourse based*, is relied on. The former type is further subdivided into *unilemma* and *multilemmata*.

In the article, we examine the distinctive problematics for unilemma and multilemma caused by polysemy, autohyponymy, and synonymy. To do so, we analyze the cases of *neck*, *process*, *canal*, *introspection* and *self-observation*, among others. Furthermore, we demarcate the dividing line between a unilemma with combinatory variants and a unilemma with corresponding multilemmata. The latter concerns a unilemma and one or more multilemmata that have a common main word with the unilemma in question. Such an example can be found in the unilemma *palate* and the two multilemmata *hard palate* and *soft palate*. We demonstrate that this *hard/soft palate* couple is, indeed, a couple of multilemmata by virtue of being separate medical terms (which identify two distinct anatomical structures) and oppose it to instances of a unilemma with combinatory variants as in *right tonsil* and *left tonsil* which both correspond to the unilemma *tonsil*.

Our research on such unilemma and multilemma instances, along with the identifying some main challenges to their classification, has allowed us to reach conclusions about ways to classify lexis-thriving metaphoric instances in Specialized English textbooks that hold true not only for the field of dental medicine, but for Medical English in general.

Keywords: conceptual metaphor, Medical English

1. INTRODUCTION

The analysis of medical metaphors is of a special andragogical significance, “conceptual metaphor awareness on learning medical terminology among non-native students... [is important for] metaphoric competence in language acquisition and understanding” (Dagnev, 2025, p. 645). While classifying medical metaphors as part of an extensive study, we faced multiple categorization challenges. In the present article, we analyze some of the major challenges in terms of classifying metaphoric instances found in the specialized English textbook *English for Dentists* by E. Belova, M. Gokzaev, and J. German (2022).

2. MATERIALS AND METHODS

To extract the metaphoric instances, we relied on the free corpus analysis software AntConc. In this way, we join the current trend of using corpus linguistics methods to carry out metaphor research. This “recent trend [of] using the corpus approach to analyze metaphor... does not necessarily link to any specific theory” (Malik et al, 2022, p. 513); we use it in light of the Conceptual Metaphor Theory, CMT. The theoretical background of our research is grounded in CMT, which views thinking itself as a metaphorical process, “our ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature” (Lakoff and Johnson, 1980, p. 3). Hence, for the cognitive linguist, “the use of metaphors characterizes everyday thinking and pervades language, not only in certain

communicative practices aiming at artistic or rhetoric effects but also in any kind of language from the most neutral to the most specialized” (Navarro i Ferrando, 2021, p. 151).

While for those who espouse the CMT, metaphor is a phenomenon in its own right, we are especially interested in the significance of the realizations of conceptual metaphors at the level of language, in other words, their *metaphoric instances*. Moreover, the scope of our research is limited to metaphors and their metaphoric instances in Medical English, with a further narrowing of our focus on Specialized Medical English textbooks, i.e. textbooks of Specialized English for students in the medical fields.

Thus, the methodology used is tailored to Medical English and is further augmented by a six-field categorization of medical metaphors: “Body parts and substances”, “Scientific fields, specialists, characteristics, and wards”, “Abnormal conditions”, “Drugs and likes”, “Instruments and equipment”, and “Patient and treatment”. In addition, we rely on the understanding of there being two major types of medical metaphors, *lexis-thriving*, i.e. those confined to a word or a phrase, and *discourse based*, i.e. metaphors who are evident in the discourse and are not dependent upon a particular word or phrase. The former type is further subdivided into *unilemma* (forms of a single word) and *multilemma* (forms of two or more words that are joined by meaning).

The initial stage of our research was devoted to locating metaphoric instances in the selected textbook, and we were able to reach a high degree of objectivity and quantitateness regarding both types of lexis-thriving metaphors, unilemmata and multilemmata (Goranova, 2025). However, the next stage of our research, examined the way we had classified the lexis-thriving metaphoric instances found: here we faced several significant challenges, which stem from the very nature of language and metaphor. **The present article presents our insights into the challenges of classifying lexis-thriving metaphoric instances that implicate the lemmata *neck*, *process*, *canal*, *head*, and *introspection*.**

3. RESULTS

Metaphoric instances involving *neck*, *process*, *canal*, *head*, and *introspection* were categorized. *Neck* (of the tooth), identified as a unilemma - 16 instances; *process(es)*, unilemma with 2 forms, *process* and *processes* - 32 instances; *canal(s)* (of the root/tooth), unilemma with 2 forms, *canal* and *canals* – 5 instances; *head* (of a brush), unilemma – 1 instance; *head* (of a condyloid process), unilemma – 1 instance; *introspection* – 1 instance.

What the neck

Neck in dental medicine is a specialized term and a metaphor – it denotes a part of the tooth (*cervix* is also used, but *neck* is a specialized term used by professionals, not a layperson-friendly equivalent).

In contrast, in general medicine, *neck* denotes a large body part (one that connects the head to the torso) and has a corresponding specialized Latin-derived term, *cervix*. *Neck* is used to name a different, much smaller body part in obstetrics and gynecology: here *cervix* refers to part of the uterus (and *neck*, just like in general medicine, is a layperson-friendly equivalent).

This polysemy illustrates terminological shifts across medical disciplines. Not only does the meaning change: *neck* in general medicine, gynecology, and dental medicine denotes different anatomical structures, but the register also differs (ranging from informal or lay usages to highly specialized ones). Furthermore, the metaphoric significance is altered as well. Even though it is most likely a metaphor long dead, *neck* in general medicine does not appear as an obvious metaphor (its uncertain etymology allows us to cautiously trace *neck* to root-words meaning *nape* or *high point* (Harper, 2001). It is quite the reverse with *neck* in gynecology and dental medicine: the metaphoric nature of *neck* is still clearly recognizable. It is a shift of meaning by analogy: the *neck* of the tooth is a narrow part that connects the crown to the roots; similarly, the *neck* of the uterus is a narrow part that connects the uterus to the vagina.

It must be noted that the instances of *neck* in the text are actually 17. Only 16 are reported: one is excluded because it is not *tooth neck*, but rather a person’s neck (*to have pain ... in the neck*). Of course, had it been “to be a pain in the neck”, then it would have been an idiom that is most likely a euphemism (a milder substitute of the vulgar expression *to be a pain in the ass*), and also – a clear instance of metaphor. This goes to support our claim of the need for careful consideration of metaphoric instances and the admission of the subjective nature of metaphor research.

Processing the process

Another special case is the one of *process*. While *process* in its most general senses of an *activity* (noun) and the *carrying out of the activity* (verb) is certainly a dead metaphor, in Dental English it acquires the specialized meaning of a *projection*. For instance, *alveolar process* is defined as “the bony ridge or raised thickened border of the upper or lower jaw that contains the sockets of the teeth” (Merriam-Webster Dictionary, 2025). The instances of non-specialized usage of *process* were excluded from the results of the study: out of 48 instances, only 32 were included. Among the included ones were not only structures such as *alveolar* or *condyloid process(es)*, but also *inflammatory*

and *pathological process(es)*. Omitted were the instances of *process* in its broadest, non-medical meanings like the *process of preparation* or *at this stage, the process is reversible*. Still, such instances of *process* in its generic meaning which were not counted among the lexis-thriving instances (either as a unilemma or a multilemma), could be present in discourse proper instances (as in *Local factors, such as the effect of microorganisms on the periodontium, can only burden the process.*)

Similarly to *neck* and to *process*, the instances of common usage of *head* (i.e. *head* in the most common sense of *that which the neck connects to the torso*) have been excluded. Thus we were left with only two entries of metaphoric instances – *head* of a toothbrush and *head* of the condyloid process. This polysemy is reflected in the pair of separate unilemmata.

Channeling the canal

Another challenge faced was the demarcation of the multilemma category. While some metaphoric instances could clearly be considered unilemma, their inclusion in the multilemma category was questionable. Therefore, we decide to impose a simple criterion: **if the referent of a multi-word metaphoric instance differs in essence from the one of the corresponding unilemma, then it is also a multilemma**. Let us consider the case of *right/left tonsil* as opposed to the one of *hard/soft palate*. In both cases, we are faced with clear unilemmata of architectural metaphoric nature: *tonsil* and *palate*. However, *right tonsil* and *left tonsil* are excluded from the multilemma category, while *hard palate* and *soft palate* are included in it. The former two are not fixed anatomical terms the way *hard palate* and *soft palate* are: *right tonsil* and *left tonsil* are rather locational descriptive variants of the same structure. Hence, even though both *right tonsil* and *left tonsil* are metaphoric instances, they are considered simply as two variants of the unilemma *tonsil*. *Hard palate* and *soft palate* are also variants of the unilemma *palate*, yet they are also multilemmata in their own right (since they denote different anatomical structures).

Our simple criterion is still valid and pertinent when dealing with autohyponymy. When classifying the instances of *canal*, we relied on a single unilemma and two multilemmata. The multilemma *root canal* includes 4 instances of *root + canal* and 2 of *canal* with *root* implied but not stated. It is so because of the autohyponymy present, *canal* serving a hyperonym of *root canal*. *Alimentary canal*, on the other hand, is classified as a separate multilemma since it refers to an anatomic structure different from the dental one, and speaking of *canal* evokes *root canal* but not the structures of the alimentary canal as the mouth, esophagus, etc. There is yet another possible classificatorial twist which is not pertinent to this particular text, but is a common feature of Dental Medical English. The use of metonymy has been acknowledged as “an important issue when it comes to correctly label and logically represent medical entities” (Kreuzthaler & Schulz, 2021, p. 467). The multilemma *root canal* often is used metonymically to denote not the dental structure but the procedure of repairing said structure. Had it been used in such a manner here, a researcher would have faced the necessity of having either 2 sets of homonymous multilemmata: *root canal* as referring to the tooth structure and *root canal* as referring to the endodontic procedure, or 1 polysemic multilemma which unites both the structural and the procedural meanings. Our personal preference is for the latter: without venturing into the convoluted theoretical border between polysemy and homonymy, we admit to basing our preference on the common conceptual metaphor. In other words, we can confidently group together all instances of *root canal* in the structural and procedural senses because they all are all instances of the same metaphor, once removed via metonymy in the case of the procedural sense.

Not all heads are created equal

Suggesting that a single multilemma *root canal* can encompass both the instances of the anatomical structure and the endodontic procedure referred to as *root canal* appears to directly contradict our earlier classification of the instances of *head* of a toothbrush and *head* of the condyloid process into a pair of separate unilemmata. Undoubtedly, both types of *head* are based on the same orientational conceptual metaphor which places the head as the top part of either a tool or a body part. However, there is no mutual interdependence: they are in a relationship analogical to the one of co-hyponyms.

In other words, both *head* of a toothbrush and *head* of the condyloid process share the same common metaphor (anatomical *head*, which could be seen as, in a sense, their metaphorical hyperonym or *parent-metaphor*). It is not so with *root canal*: the meaning of the procedure *root canal* is directly dependent upon the one of the anatomical *root canal*. The two types of *root canal* are united not only by a common *parent-metaphor* but are in a hierarchical relation: the procedural metaphor is incomprehensible without the anatomical one. After all, the former is a metonymical transformation of the latter.

Hence, we can pose an extension of the general criterion that states that if the referent of a multi-word metaphoric instance differs in essence from the one of the corresponding unilemma, then it is also a multilemma: **if two types of metaphoric instances that can be defined as either homonymous or polysemous, are in an obvious hierarchical metaphorical relation, i.e. one stems from the other, then these types are considered to be a single unilemma or multilemma**. A common type of such unilemmata and multilemmata involves a metonymical shift

between body parts and treatment as evidenced in the multilemma *root canal* and the unilemma *crown*. In fact, the commonness of this metonymical shift is a leading motivation for establishing the *Patient and treatment* field as such: both *crown* and *root canal* serve to demonstrate the interconnectedness of what nature has given a person and what he/she is given by a doctor.

To introspect with a fine-tooth comb

It must be admitted that not all interconnectedness could or should be preserved in the present classification of metaphoric instances. In particular, the case of synonymic pairs such as *introspection* and *self-observation* raises the question of why the former was included in the classification while the latter was not. Undoubtedly, both are metaphoric instances of conceptual metaphors – the acts of inspection and observation can both be traced back to THE BODY IS A MACHINE parent-metaphor, which is one of the two “leading or didactic metaphors [that] have shaped Western medicine” (Bleakley, 2017, p. 2). However, as often is the case with synonymic pairs in Medical English which differ in their target audience (specialists or non-specialists), one of the two synonyms, typically the one of Germanic origin, is easily understood by laypeople, while the other one, usually of Greek or Latin origin, is a specialized term, employed by medical professionals only. Such is the case of *womb* and *uterus*, of *neck* and *cervix*, of *liver* and *hepatic*. This synonymy is a major feature of medical language, “The existence of technical, semi-technical and colloquial terms contributes to the existence of various synonyms of different origin. . . used in different medical contexts (myopia x short-sightedness; coagulation x blood clotting; oedema x swelling; initiate x begin; detect x find out)” (Dzukanova, 2019, p. 131-132).

Since the present classification belongs to the field of Medical English, we feel obliged to focus on specialized terms and leave out their everyday counterparts. It is not only the specialization that sets medical terms aside from commonly used words and expressions: terms are more often than not dead metaphors who can easily be awakened by tracing a given term back to its Greek or Latin origin. Furthermore, some words are so commonly used that they are understood as first-level ones, ones that are used to explain other more complex words and cannot be simplified further: they are considered the linguistic equivalent of the lowest common denominator. *Neck* is such a word: we can use it to explain what *cervix* is, but we cannot explain what *neck* is by relying on *cervix*. Other basic words are *head*, *tooth*, *hand*, *stomach*, *heart*. They have all been excluded from the present classification: this exclusion, however, does mean that they do not embody conceptual metaphors, nor does it mean that synonyms of theirs or related words such as *cephalon*, *dental*, *manual*, *gastric*, *cardiac* have also been excluded. Moreover, certain lay designations ought to be included alongside their specialized counterparts because of their obvious metaphoric nature –for instance, not only *trachea*, but *windpipe* as well belongs to a classification of metaphoric instances in Medical English.

The case of the synonymic pair of *introspection* and *self-observation* presents certain complexities. It is not a clear-cut differentiation between words of Latin and Germanic origin: both contain Latin-derived roots (*specere* - to look and *servare* – to preserve) and even prefixes (*intro* - inward and *ob* – toward). Still, the second word appears much closer to a first-level, semantically simple, core word: the compound seems to be a simple amalgamation of the Germanic-origin *self* (a first-level lexeme that functions as a noun and a suffix in the formation of reflexive pronouns) and a nominalization of a common action verb, *observe*. *Introspection*, on the other hand, sounds foreign, semantically opaque to the layperson – not only there is no independent word *specion* as there is *observation*, but the closest word of the same stem, the verb *inspect* is much less frequently used than *observe* (about 10 times less – the frequency of *observe* is 100 occurrences per million words while the verb *inspect* is 9/million (Oxford English Dictionary, 2025)). Additionally, *introspection* is much closer to a specialized medical term than *self-observation*.

Of course, all of these points of comparison all refer to a continuum and not to a precise divide between the nature of *introspection* and *self-observation*. Admittedly, both can be referred to a conceptual metaphor. The only logical explanation for their categorization is **subjectivity**. It is by no accident that in our discussion of them we referred to them as *appearing*, *sounding*, *being closer*. We did not and do not claim that one **is** truly metaphoric while the other one **is not**. The instances of both *introspection* and *self-observation* are metaphoric instances. However, in our classification of metaphoric instances in Medical English, we could not include all metaphoric instances: we had to draw a line and impose a limit. While we have always striven to adhere to objective criteria, we have never lost track of the inherent subjective nature of metaphor research. In fact, the very attribution of a metaphoric instance to a certain conceptual metaphor is subjective: for instance, we have earlier attributed *introspection* to THE BODY IS A MACHINE conceptual metaphor. In actuality, *introspection* could just as easily be traced back to THE BODY IS A CONTAINER metaphor.

Once we have excluded *self-observation* from the classification, our inclusion of *self-medication* might seem unfounded. Still, it is governed by the same reasoning that we have already elucidated in our assessment of *neck*: in our classification, we include metaphoric instances from the medical field and exclude very broad, general ones.

Hence, *medication* and, by extension – *self-medication*, both have reserved seats at our classificatory table in a way *observation* and *self-observation* do not.

4. DISCUSSION

Our analysis of the cases of *neck*, *process*, *canal*, *head*, *introspection* and *self-observation* sheds light on the distinctive problematics for unilemmata and multilemmata caused by polysemy, autohyponymy, and synonymy. Furthermore, we have demarcated the dividing line between a unilemma with combinatory variants and a unilemma with a corresponding multilemma. The latter concerns a unilemma and one or more multilemmata that have a common main word with the unilemma in question.

We have elucidated the need to focus on medical metaphors and dismiss general metaphors that are not inherent to medical discourse. However, it has been demonstrated that such a separation cannot but be arbitrary to a certain extent: medically-tainted meanings often overflow and outpour from an otherwise non-medical metaphor.

Metonymy and its role in medical terminology was also highlighted. Probably most importantly, the subjective interpretative role of the researcher of medical metaphor was clearly pointed out: metaphor identification is interpretive *per se*, hence any attempt at locating and classifying metaphors and their metaphoric instances must admit its own subjective nature.

5. CONCLUSION

Our research on such unilemma and multilemma instances, along with the identifying several main challenges to their classification, has allowed us to reach conclusions about ways to classify lexis-thriving metaphoric instances in Specialized English textbooks that hold true not only for the field of dental medicine, but for Medical English in general.

Analyzing medical metaphors is far from an exact science. It is not by chance that a key characteristic of our analysis is its *meta*-metaphorization, i.e. the fact that we used metaphors to discuss metaphors. That was done in order to further stress our insistence on the interpretive and metaphoric nature of metaphor research. Thus, while we have suggested soundly defined criteria for lexis-thriving metaphor categorization, which can guide us safely through the turbulent waters of classificatory challenges rooted in the nature of language in general and medical discourse in particular such as polysemy, autohyponymy, metonymy, synonymy, it must not be forgotten that there isn't a single safe path, but rather multiple possibilities for safe navigation and crossing.

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