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МЕТАФОРИЗАЦИЯ ФАУНЫ В ТЕРМИНОЛОГИИ ДЕНТАЛЬНОЙ МЕДИЦИНЫ И ЧЕРЕПНО–ЧЕЛЮСТНО–ЛИЦЕВОЙ ХИРУРГИИ

Танева Светлана Йорданова [ABCD]
Доктор филологии, главный ассистент, Факультет общественного здоровья. Медицинский университет, София, Болгария.
E-mail:svetlanataneva@abv.bg
ORCID: https://orcid.org/0000-0002-1348-0029.

Fauna Metaphorization in Dental Medicine and Cranio–Maxillofacial Surgery Terminology

Taneva Svetlana Yordanova [ABCD]
PhD, chief assistant, Faculty of Public Health.,Medical University,
Sofia, Bulgaria.
E-mail: svetlanataneva@abv.bg
ORCID: https://orcid.org/0000-0002-1348-0029.

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Аннотация. Цели работы: идентифицировать и выделить английские зооморфно-метафорические терминоединицы из научной области ДМ и ЧЧЛХ; очертить компоненты семантического поля каждого концепта; проследить соотношение исходного домена и целевого домена при мепинге, переход к генерическому пространству и бленду; проиллюстрировать общий алгоритм бленда; повысить терминологическое метафорическое осознание студентов-медиков. Материалы и методы исследования. Материалом для исследования послужили 72 однословные и сложные английские зооморфно-метафорические терминоединицы из научной области ДМ и ЧЧЛХ. Применены методы семантического словарного анализа, анализа дефиниций, концептуальной интеграции (когнитивного анализа), компонентного анализа, статистический метод. Обсуждение и результаты исследования. Дано краткое описание Теории смешения/бленда Фоконье и Тернера, указано значение зооморфных метафор для лучшего понимания клинических явлений. Прослежены этапы формирования трех примерных зооморфных метафор (Птичье лицо, Клык, Рашпиль „крысиный хвост“): установление ассоциативных связей между терминами и объектами реального мира, осмысление и извлечение информации, картирование, смешение/бленд и порождение новой терминоединицы. Сделаны следующие выводы: 1. Взаимодействие между обоими входными ментальными пространствами (пространство источник – вход 1, пространство цель – вход 2) и обмен общей информации в генерическом пространстве. 2. Избирательность в смешении/бленде с акцентом на номина-

тивные признаки: форма, размер, функция, положение, ощущение и поведение. 3. Терминологизация лексем в процессе смешения/бленда и образование нового зооморфного метафорического термина. 4. Зооморфная терминологическая метафора обозначает патологии или деформации, затрагивающие личность и психику человека; анатомические объекты; дентальный инструментарий. 5. Ассоциативные связи между фауной и человеком оказываются неизбежными и достаточно прочными, чтобы служить предпосылкой для уточнения клинической картины заболевания, выдвижения новой клинической симптоматики или диагноза.

Ключевые слова: английские зооморфно-метафорические терминоединицы, ментальное пространство, смешанное пространство/бленд, метафоризация, научная область ДМ и ЧЧЛХ.

Annotation. Objectives: to identify and excerpt English zoomorphic metaphorical terminological units from DM and CMS scientific field.; to outline the constituents of each concept's semantic field; to follow up the correlation of source domain and target domain in mapping, the transition to generic and blending space; to illustrate the overall algorithm of blending; to increase the terminological metaphorical awareness of medical students. Materials and research methods. Seventy-two one-word and compound English zoomorphic metaphorical terminological units from DM and CMS scientific field served as material for the study. Methods of semantic dictionary analysis, definition analysis, conceptual integration (cognitive analysis), component analysis, statistical method have been applied. Discussion and results of the study. A brief description of Fauconnier and Turner's Theory of Blending has been made and the significance of zoomorphic metaphors for a better understanding of clinical phenomena has been pointed out. The stages of formation of three exemplary zoomorphic metaphors (Bird face, Canine tooth, Rat tail rasp) have been followed up: making associative links between terms and real-world objects, rationalizing and extracting information, mapping, blending and generating a new terminological unit. Conclusions. The following conclusions have been made: 1. Interaction between both input mental spaces (source-input space 1, target-input space 2) and sharing common information in generic space. 2. Selectivity in blending with an emphasis on nominative features: shape, size, function, position, sensation and behaviour. 3. Terminologization of lexemes in blending and formation of a new zoomorphic metaphorical term. 4. Zoomorphic terminological metaphor denominates pathologies or deformities affecting human's identity and psyche; anatomical objects; dental instrumentarium. 5. Associative links between fauna and human beings prove to be inevitable and strong enough to serve as prerequisite for clarifying the clinical picture of a disease, nominating a novel clinical finding or diagnosis.

Keywords: English zoomorphic metaphorical terminological units, mental space, blending, metaphorization, scientific field of DM and CMS.

Introduction

Conceptual metaphor is a powerful tool in the process acquiring foreign language terminology. Its function is much more than purely linguistic, as it reflects the mechanisms of how the cognitive process of conceptualization of new knowledge proceeds, how the information about the given concept is stored and retrieved, what is the cultural conditioning of the concepts and categories involved in the conceptualization process.

Conceptual metaphor creates a world parallel to the objective one, builds upon it and always moves from the familiar and concrete to the unknown and abstract. Linguists have long been united around the opinion that one of the main mechanisms for understanding and assimilating the world, the new and the unfamiliar, is by the means of metaphorical transfer. A specific field of reality is understood in terms referring to concepts that are initially based on the experience gained in other fields (Kobozeva, 2002, 3). In the book "Metaphors We Live By", George Lakoff and Mark Johnson consider metaphor as one of the basic forms of conceptualizing knowledge through the means of language and emphasize the role of experience in the conceptualization of knowledge about the

world in language (Lakoff, & Johnson, 1980). Creating the **Theory of Conceptual Metaphor**, they set out several basic propositions:

- Structuring function of metaphor: it structures thinking (metaphor is a cognitive, not a purely linguistic phenomenon); structures knowledge;
- Abstract language includes the use of metaphors;
- Human experience and the structure and organization of the human body, the same for everyone, give rise to metaphors;
- Ideological function of metaphor: it models ideas and beliefs, elucidates and suppresses aspects of human experience.

In the process of metaphorization, mappings are realized according to **the Invariance Principle**, namely, the cognitive topology of the source domain is preserved as corresponding to the internal structure of the target domain (Lakoff , 1993, 215). Aspects of the target domain that are involved in the mapping are defined as highlighted, and the process itself as **highlighting**. Respectively, aspects that do not participate are hidden, and the process is called – **hiding** (Lakoff & Johnson, 1999, 10-13). Such a type of transfer of signs of one concept onto another is called cognitive metaphor in cognitive linguistics. It relates to the human ability to perceive and create similarity between very different individuals and classes of objects.

The current study will follow up how concept signs from the target domain Dental Medicine (DM) and Cranio-Maxillofacial Surgery (CMS) are represented metaphorically by means of concept signs from the source domain Fauna. Tracing the metaphorization of the zoomorphic terminology under consideration is based on the **Theory of Blending** developed by Gilles Fauconnier and Mark Turner (1994, 2003). A theory that complements Lakoff and Turner's Theory of Conceptual Metaphor. In the Theory of Blending, four mental spaces are available, two of which are defined as input spaces with features from the source domain and the target domain. The third mental space is the generic space, where the information shared by the two input spaces, common to both, is located. The last mental space is called blending and it contains the new metaphorical structure as a result of the spaces interaction and structure projection of the input spaces into the blending. However, this projection is selective, only the information relevant to understanding the metaphor is involved. Moreover, projections are not unidirectional and mental spaces are temporary and context-dependent.

Purpose and objectives of the study

Therefore, the objectives we have set ourselves in the current research are as follows:

1. To identify and excerpt zoomorphic metaphorical terminological units from English educational discourse of DM and CMS.

2. To outline the constituents in the semantic field of each of the concepts involved in the structure of the zoomorphic metaphorical term considered.

3. To follow up the correlation of the different conceptual input domains, respectively, of the constituents in them, by mapping/projecting of the source domain and target domain.

4. To follow up the transition of the common constituents through the common coordinating space - the generic one and their entry into the blending space - a stable cognitive model, where the resulting metaphorical structure is formed.

5. To illustrate the overall algorithm of producing exemplary resulting metaphorical structures from the excerpted zoomorphic terminological material from DM and CMS by means of figures.

4. Practical aspect – A. To apply the Theory of Blending, as well as its application in practice, in the process of teaching and learning English and Bulgarian in the dental faculties of medical universities, in any educational events related to general linguistics and applied terminology; B. to increase the terminological metaphorical awareness and linguistic medical competence of medical students and doctors, dentists, nurses.

Materials and Methods

Seventy-two one-word and compound English zoomorphic metaphorical terminological units from the scientific field of DM and CMS served as material for the study. The terms belong to the non-anthropogenic metaphorical model **"Fauna"**. The terms are excerpted from specialized dictionaries, reference books, official documents, international classifications, medical reports, case studies as well as from textbooks and articles, part of the training of students in the specialty "Dental Medicine" and post-graduate students in the spe-

cialty "Cranio-Maxillofacial Surgery". When selecting the zoomorphic metaphorical terms, the scope of the representative sample (the terms considered are excerpted from all directions of Fundamental DM, Special DM, CMS and Dental Instrumentarium), the required level of knowledge and expertise, frequency in the specialized literature, significance for the professional training, metaphoricality and non-anthropogenicity have been taken into account.

The following methods are applied for analyzing the representative zoomorphic sample: 1. Method of semantic dictionary analysis; 2. Method of definition analysis; 3. Method of conceptual integration (cognitive analysis); 5. Method of component analysis; 6. Statistical method.

Discussion and results

The emergence of a large number of new terminological units in DM and CMS is due to primarily to metaphorical nomination. Acting as one of the most effective mechanisms for filling the terminological fund of medicine as a whole, metaphorical nomination contributes to linguistic fixation of new realities, processes, concepts in DM and CMS, reinterprets previously accepted terms.

Being engaged in patient care involves communicating ideas, recognizing clinical signs so that to clarify and make the clinical picture, establishing the diagnosis of a health condition. This is a broad spectrum of activities which necessitates generating a language unit capable of acting as a "bridge" between medical specialist and patient and as a "messenger" conveying exact diagnosis. Hence, high productivity of the zoomorphic metaphorical units in the considered domains of knowledge DM and CMS which drew our attention. Such metaphors denominate pathologies or deformities affecting human's identity and psyche. They are involved mainly in clinical medicine as well as in fields of internal medicine (Hematology, Rheumatology, Pediatrics, Endocrinology, Neurology, Infectious diseases, etc.) and other fields of medicine (Dermatology, Ophthalmology, Psychiatry, Urology, etc.). We limited the analysis to zoomorphic terms from DM and CMS, including terms - diseases with non-dental genesis, but with the manifestation of symptoms in the oral cavity, nose, skin, skull, face, neck, etc. Their treatment requires the intervention of CMS specialists.

The corpus of zoomorphic metaphorical terms is studied on the basis of Fauconnier and Turner's Theory of Blending. The reasons for this are as follows: 1. Projections in conceptual blending are not unidirectional; 2. The theory implies more spaces of representation; 3. Dynamic interpretation of meaning units; 4. Emerging structure in the blended space.

The implementation of the study from a nominative-cognitive perspective and the application of the four-frame model of Fauconnier and Turner showed that the considered zoomorphic units from the scientific field of DM and CMS follow the algorithm typical of the Theory of Blending. The processes of making associative links between terms and real-world objects, making sense and extracting information, mapping/projecting, blending and generating a new terminological unit can be followed up. The stages of formation of **3 of the zoomorphic metaphors** will be followed up.

Bird face/Bird-face deformity/Hallermann-Streiff syndrome (Птиче лице) is a rare genetic syndrome characterized by craniofacial abnormalities: beak-shaped nose; convex nasal ridge; high narrow palate; sloping forehead; markedly short mandible. Dentition abnormality (neonatal teeth, enamel hypoplasia, delayed tooth eruption, hypodontia, improper tooth alignment), visual impairment (glaucoma, cataract, retinal detachment), sparse hair, skin changes are common, as well. The treatment involves procedures related to correcting the facial asymmetry due to the underdeveloped mandible. Surgical procedures are performed by a specialist from CMS.

From a linguistic point of view, in the formation of the zoomorphic metaphorical term "bird face"excerpted from CMS scientific field, there is a transfer of information from one conceptual field - "source" to the other - "target". The conceptual content of the source domain with constituents – curve, beak, prominent, forehead, small, concave, jaw, head, upper/lower, feathers – is projected onto the target domain sharing largely the same constituents. In parallel, in the process of metaphorization, the source domain retains almost all elements of its conceptual dimension to appear as shared with the target domain in the generic mental space. The metaphorical transfer in this case is based on: shape – curve, prominent, beak-shaped;

size – small; position: upper/lower. No mapping of the constituents: sparse hair, asymmetry, abnormality, disorder from the target domain is performed. The shared information about shape, size and position in the generic space leads to conceptual blending, where the new metaphorical structure is realized. In fig.1 the processes of forming a unified mental space based on two concepts and hence the metaphorical term "bird face" can be followed up.

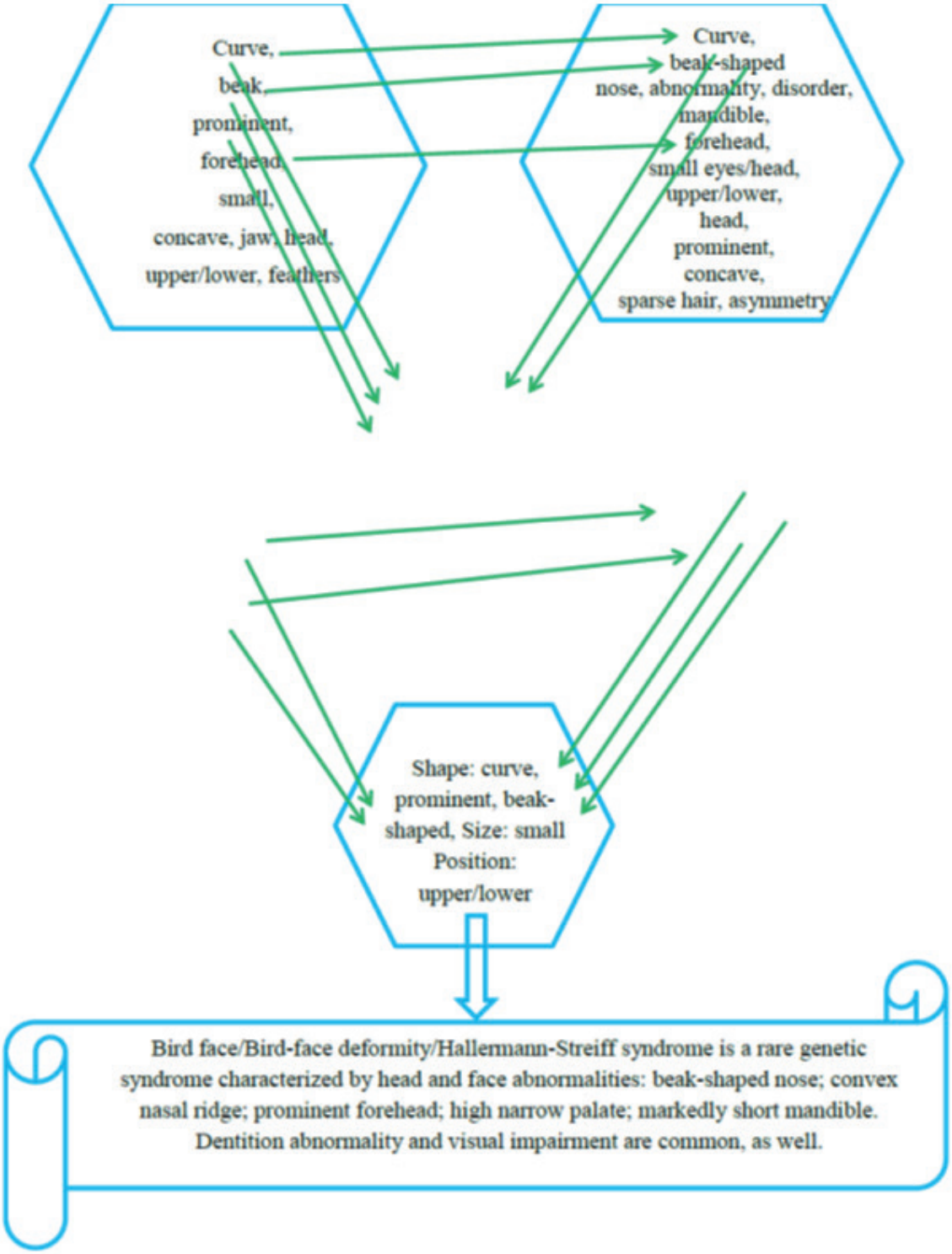

Fig. 1. Framework model of English zoomorphic metaphorical unit "Bird face"

Canine tooth (канин, кучешки зъб) named after the fang-like appearance associated with dogs is the longest and sharpest tooth in oral cavity. Adults have four canine teeth: two in the maxillary arch and two in the mandibular arch. They are behind and adjacent to the lateral incisors. As for functions canines perform they tear and pierce the food by a sharp single pointed cusp. Besides canine teeth account for eating, speaking, maintaining the lip shape, guiding the other teeth into the best biting position.

In creating a four-frame model of "canine tooth", an English zoomorphic metaphorical term excerpted from the scientific field of DM, constituents were derived in the source domain, and the information encoded in them overlapped almost completely in mapping onto the conceptual content of the target domain (tear, pierce, chew, pointed, long, food, sharp, cusp, edge, strong, resistant, support, guide, erupt, prominent, jaw, oral cavity). The link between the two input mental spaces is explicated in the generic space by means of information common to both spaces. The constituents related to form, function, sensation and position shape the conceptual content of generic space. Terminologizing shared lexemes and emergence of the new metaphorical term occur. Only the information related to the functional level and represented by the constituents: defense, survival, support, guide remain unassimilated by the blending. This is necessitated by the specificity of one of the functions performed by canine teeth in animals and in humans, respectively. In animals canines are essential to their defense and survival, while in humans – they account for upper lip supporting and teeth guiding into the proper position. Fig. 2 shows the processes of integration of mental spaces, leading to conceptual enrichment and emergence of the metaphorical term "canine tooth".

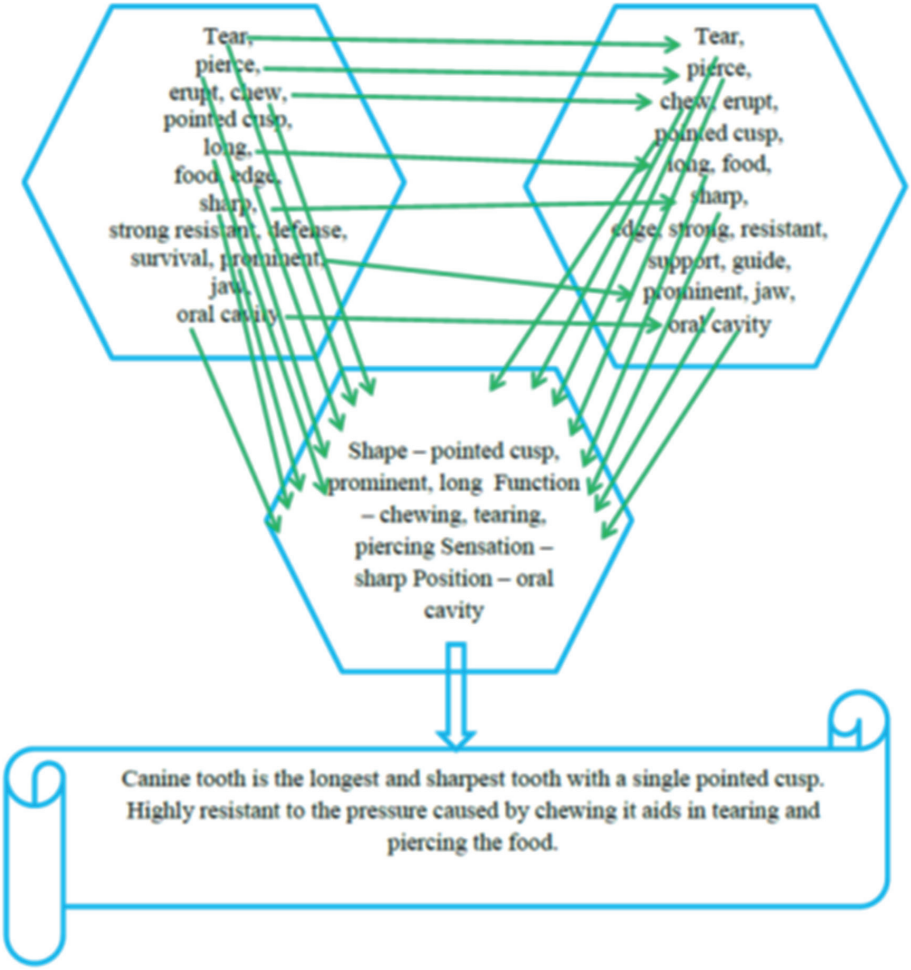

Fig. 2. Framework model of English zoomorphic metaphorical unit "Canine tooth"

Rat tail rasp (Пила тип „миша опашка“) is a manual endodontic instrument made of stainless steel or titanium. Its working part is a conical rod with fine or coarse grooves/teeth arranged spirally along the entire length of the tool. The working end is commonly straight or curved. Rat tail rasp is designed to loosen the root canal walls, thus facilitating the subsequent use of canal expanders - drills and other rasps. Cutting movements, slight rotation of the instrument are allowed while processing dentin.

When studying the semantic fields of the two concepts of Rat tail rasp, an English zoomorphic metaphor excerpted from the scientific field of Dental Instrumentarium, it was found out that the semantic field of the concept “rat tail” is more restricted compared to that of “rat tail rasp”. Nevertheless, the mapping process is realized and the vivid metaphorical imagery of the constituents of “rat tail” concept is a sufficient reason for this (curved end, long tail, straight, smooth, scrape, surface, fine/coarse, spiral cone-shaped). The basic lexemes in the generic space have provoked various associations: shape (curved, straight, cone-shaped), sensation (fine/coarse/smooth) and behaviour (curved). One of the lexemes -“curved”- has a conceptual dimension in two semantic fields - form and behaviour. In pain or fear, mouse commonly curls the tip of its tail or curls up entirely into a ball. This behavioral aspect served as the basis for the metaphorical transfer because of the similarity to the shape of the endodontic file tip. The generic space opens the door to blending, which in turn inherits the shared information from both input spaces, terminologizes it and transforms it into the newly emerged zoomorphic metaphorical unit. In fig. 3 the link between the four mental spaces with the subsequent formation of the new term “rat tail rasp” is explicated visually.

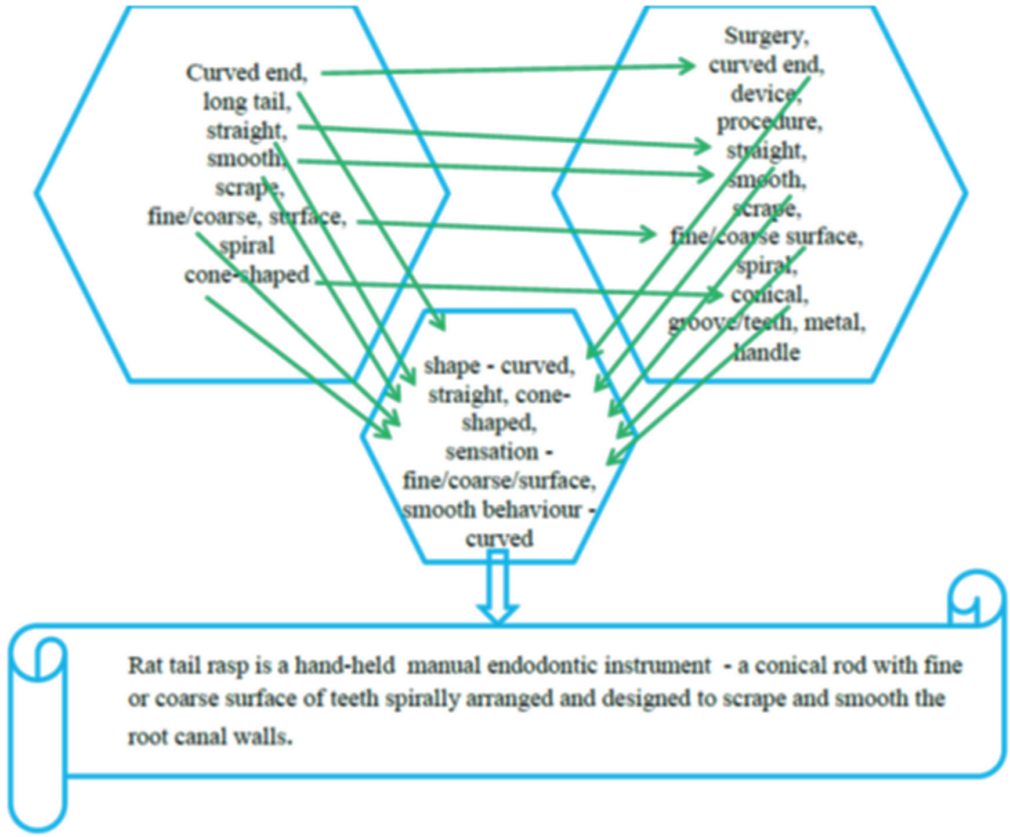

Fig. 3. Framework model of English zoomorphic metaphorical unit “Rat tail rasp”

Conclusions

Based on the observations made, the analytical part of the current study and the results obtained, the following conclusions can be generated regarding the studied English zoomorphic metaphorical terminological units (72) excepted from

DM and CMS scientific field and belonging to the non-anthropogenic metaphorical model "Fauna":

- Interaction between the two input mental spaces (source-input space 1, target-input space 2) and sharing common information in the coordinating space - the generic one.
- Selectivity in blending with an emphasis on nominative features: shape, size, function, position, sensation and behaviour.
- Terminologization of lexemes in blending and formation of a new zoomorphic terminological unit.
- Zoomorphic terminological metaphor denominates pathologies or deformities affecting human's identity and psyche; anatomical objects; dental instrumentarium.
- Associative links between fauna and human beings prove to be inevitable and strong enough to serve as prerequisite for clarifying the clinical picture of a disease, nominating a novel clinical finding or diagnosis.

We dare to hope that the knowledge of Fauconnier and Turner's Blending algorithm would be a good motivation for students in learning foreign language medical terminology. The creation of associative links between the object and its nomination would assist in better understanding systematicity in terminology, respectively would increase specialized and linguistic knowledge. Additionaly, drawing parallel between human appearance and behavior has coined specific metaphorical terms which are at play in everyday clinical practice and further exploration of cross-domain insights is supposed to be initiated.

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