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COMMUNICATION LINGUO-COGNITIVE MODELING AS A METHOD OF STUDYING AND STRUCTURING PROFESSIONAL COMMUNICATION IN TEACHING MEDICAL ENGLISH WITHIN GLOBALIZED EDUCATION

Israilova Ilona Khalitovna

(PhD)
Tashkent State Medical University
Associate Professor, Department of Uzbek and Foreign Languages
Email: ilona1israilova@gmail.com
ORCID: https://orcid.org/0000-0001-7275-4897

Abstract: Linguo-cognitive modeling is examined as a universal method for studying and organizing professional communication, particularly in the field of medicine. The paper explores how cognitive structures such as frames, metaphors, and categorization systems shape professional reasoning and are verbalized in medical discourse. It is argued that language serves as both a tool and a product of cognition, transforming abstract mental processes into communicative forms. Within medical communication, linguo-cognitive modeling reveals how conceptual systems — for example, *disease–symptom–diagnosis–treatment–outcome* — structure diagnostic reasoning and interaction. The article emphasizes the pedagogical significance of this method in English for Specific Purposes (ESP) teaching, where understanding cognitive mechanisms is essential for forming clinical foreign-language thinking. The study concludes that linguo-cognitive modeling contributes to integrating knowledge, language, and practice, enabling the development of linguistic and cognitive competence necessary for effective professional communication in medical contexts.

Key Words: linguo-cognitive modeling, cognitive linguistics, medical discourse, professional communication, ESP, conceptual metaphor, frame analysis, clinical reasoning, medical education, cognitive competence.

Linguo-cognitive modeling in contemporary science is viewed as a universal method of understanding and describing the deep processes underlying human thinking, language, and professional interaction. Within the cognitive paradigm, modeling functions not merely as a means of depicting reality but as a tool for reconstructing knowledge structures that reflect the cognitive activity of the subject. Language serves as a mediator between thought and action, transforming abstract cognitive schemes into interpretable forms. Modeling thus presents language not only as a means of expressing thought but also as a mechanism of its formation, since every linguistic structure embodies a particular way of conceptualizing the world. From this perspective, linguo-cognitive modeling unites approaches of cognitive, discursive, functional, and pedagogical linguistics, creating a foundation for analyzing professional communication, particularly in medicine.

Cognitive modeling is considered an essential condition for understanding how language organizes knowledge. A linguistic model captures the regularities of verbalizing concepts and frames that reflect professional experience. In medical discourse, concepts such as disease, symptom, diagnosis, treatment, and recovery form a stable cognitive system that underlies medical reasoning. Each unit of medical language represents not an isolated term but an element of a cognitive network linking notions of causes, symptoms, consequences, and methods of intervention. When engaging in communication, a physician activates these structures and transforms them into speech acts. Thus, medical discourse functions as a cognitive model that is formed and reproduced through language.

Studies in cognitive semantics have demonstrated that thought does not exist apart from linguistic form: conceptual schemas are embodied in grammar, lexis, and metaphor. Metaphorical models such as the body as a machine, disease as an enemy, and the immune system as defense are not merely expressive devices but mechanisms of professional understanding. When a physician speaks of “fighting

infection" or "protecting the body," they actualize a cognitive metaphor that structures medical knowledge. Such metaphors are not random; they help interpret the processes of illness and treatment in human experiential terms, making abstract categories accessible for reasoning. Metaphorical modeling is therefore an integral part of cognitive modeling, as it enables the transition from sensory perception to abstract knowledge.

In medical discourse, cognitive modeling also manifests itself in frame structures. A frame is a schema describing a prototypical situation. For example, in clinical reasoning the frame DISEASE with its components CAUSE – SYMPTOM – DIAGNOSIS – TREATMENT – OUTCOME is typical. Each component activates specific linguistic models such as causal constructions, modal statements, and terminology denoting the degree of symptom severity. Physicians think in terms of sequences, prognoses, and alternatives, while language renders these processes visible. Frames not only reflect cognitive operations but also guide them: through frames, information is selected, logical relations established, and conclusions formulated. Cognitive modeling in medicine thus creates a kind of "virtual physician's thinking," transforming real diagnostic reasoning into a linguistic model suitable for analysis, reproduction, and teaching.

Linguo-cognitive modeling is closely linked with categorization processes that underlie professional thinking. Categorization helps to organize medical phenomena and relate them to known schemas. When facing a new case, a physician instantly correlates it with prototypes stored in their cognitive system. This is why medical speech abounds in comparisons, clarifications, and degrees of probability—they reflect the process of correlating a particular clinical case with more general cognitive models. Expressions such as the symptoms are consistent with…, the condition resembles…, this may indicate… show how linguistic form serves as a tool for classification and probabilistic reasoning.

Cognitive models of medical discourse appear not only in oral but also in written professional communication. Genres such as the scientific article, clinical report, case history, and expert opinion differ in abstraction level but share a common cognitive purpose—to transform experience into knowledge. Written medical texts serve as a form of collective professional memory: they codify knowledge, record causal relations, and form discursive templates through which students and young specialists learn.

In pedagogical linguistics, linguo-cognitive modeling acquires special significance, since teaching a professionally oriented foreign language is impossible without understanding the cognitive mechanisms underlying communication. The methodology of ESP should rely not only on lexical-grammatical exercises but also on modeling professional situations. The language of medicine must be taught as a system of cognitive and communicative categories rather than as a list of terms. This means that a student should not merely memorize the word inflammation, but understand how this concept functions within the system of causes, symptoms, and consequences, and what logical and discursive connections it activates.

Linguo-cognitive modeling enables structuring the teaching process so that students assimilate not isolated linguistic forms but cognitive models of professional reasoning. The use of case studies, problem-based learning, clinical simulations, and the analysis of authentic medical texts activates in learners the same cognitive mechanisms that function in professional medical practice. During modeling, the learner does not merely reproduce terms but reconstructs logical relations among observed facts, hypotheses, and conclusions. As a result, both linguistic and cognitive competence are formed—the ability to think and articulate thoughts within the categories of professional discourse.

From the perspective of pedagogical practice, linguo-cognitive modeling opens the way from traditional language instruction to an activity-based cognitive format, in

which the student becomes an active subject of cognition. The use of authentic materials such as case histories, scientific publications, and clinical recommendations immerses the student in real professional contexts. What matters is not only content analysis but also the awareness of utterance structure, argument logic, and the linguistic means of expressing causality and degrees of certainty.

Linguo-cognitive modeling also serves as a diagnostic tool for assessing professional speech competence. Analyzing cognitive schemas verbalized in students' speech helps identify gaps in understanding professional relations and adjust the learning process accordingly. This makes the method valuable both theoretically and practically.

Thus, linguo-cognitive modeling is a powerful instrument for analyzing and organizing professional communication. It explains how cognitive processes are embodied in language and how language, in turn, shapes thought. In medical education, this method paves the way for forming clinical foreign-language thinking—an ability not merely to translate or describe phenomena but to conceptualize them within the framework of international medical discourse. Through modeling, the integration of knowledge, language, and practice takes place, leading to the development of the professional identity of the future physician.

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