THE NEURO-COGNITIVE ARCHITECTURE OF PROFESSIONAL COMMUNICATION

Guest Editor: Dr. Olga K. Iriskhanova

The convergence of linguistics, cognitive science, physiology, and technology marks a critical evolution in how we understand professional discourse. For decades, the study of professional communication focused primarily on the textual and rhetorical features of verbal exchange, or, in other words, the lexical choices, genre conventions, structural compositions, and stylistic registers that define verbal interaction in the workplace. However, this special issue of *"Professional Discourse & Communication,"* dedicated to the *"Neurolinguistic and cognitive aspects of professional communication,"* argues that the surface-level features are merely the visible output of complex underlying biological mechanisms.

The articles collected here demonstrate that professional discourse, whether in educational process, cross-cultural fieldwork, expository discourse, or digital marketing, is not merely a linguistic exchange but rather a measurable physiological event. It involves specific allocations of visual attention, memory retention, neural processing, fluctuations in emotional arousal, and quantifiable expenditures of working memory. By integrating objective instrumentation, which includes eye-tracking, electroencephalography (EEG), and galvanic skin response (GSR), alongside rigorous theoretical modeling, this issue aims to move the field from descriptive analysis to empirical verification. The authors investigate how the human brain encodes and decodes professional oral and written messages, revealing the hidden cognitive costs of digital interfaces, the gestural grammar of expository speech, the neural impact of instructional design, and the physiological signatures of communicative expertise.

We have arranged the contributions to guide the reader from fundamental methodological considerations toward specific applications in production, reception, processing, and media consumption.

The issue opens with *"Cross-cultural research: Methodological challenges in translating meanings and cultural codes"* by Valentina N. Burkova, Marina L. Butovskaya, and Nikolay Y. Simakov. Before one can accurately measure neural responses to professional stimuli, one must ensure the stimuli possess cultural validity. The authors address the foundational problem of equivalence, both linguistic and conceptual, in cross-cultural studies. By analyzing the translation of verbal and non-verbal elements in evolutionary psychology and ethology, they establish necessary protocols for avoiding ethnocentric bias. This article serves as the methodological anchor for the issue, positing that neuro-cognitive data is only as robust as the cultural context in which it is gathered. Without this calibration, physiological data risks misinterpretation.

Following this foundation, the focus shifts to the production of discourse. Maria I. Kiose investigates the cognitive mechanisms of speech in *"Multimodal Construction Grammar of Transitivity in Russian Expository Discourse: The Case of First-Person Perspective."* Professor Kiose examines how professional expository discourse is constructed through the alignment of speech and gesture. By analyzing 20 recorded monologues, the study shows that "transitivity" is not solely a grammatical category. It is a multimodal phenomenon. Speakers physically enact their cognitive state. High-transitivity clauses co-occur with specific rep-

resentational gestures. At the same time intransitive clauses align with deictic pointing. This research brings light to the so-called "grammar" of professional presence, demonstrating that the professional speaker recruits the entire body to construct meaning.

The subsequent articles transition into the reception of professional discourse, specifically regarding the cognitive processing of instructions. In *"Propositional Integration and Strategy Building While Performing Complex Language Tasks: An Eye-Tracking Study,"* Tatyana B. Sidorova, Elena M. Pozdnyakova, and Oleg E. Klepikov operationalize the concept of the "educational directive." Using eye-tracking technology, they prove that the propositional completeness of an instruction directly dictates the learner's gaze strategy. Their findings indicate that incomplete directives fracture the learner's attention, leading to what the authors call "pragmatic searching" and erratic visual patterns. This study provides important empirical evidence for instructional design by linking linguistic precision directly to the efficiency of visual processing and task execution.

Expanding on the physiological cost of reception, Olga Nagel, Irina Temnikova, and Valeria Nesterenko present their article *"How Pre-Reading Tasks Shape L2 Reading Strategies in Digital Environments: Evidence from Eye-Tracking, EEG, and GSR with Advanced L2 Learners."* This study integrates three distinct physiological measures to construct a transactional model of digital reading. Their data proves the existence of a critical trade-off: metacognitive guidance improves strategic processing but significantly increases cognitive load and reduces emotional valence. By quantifying the specific "neural cost" of different task designs, the authors offer a data-driven critique of digital platforms, suggesting that interface usability is a biological precondition for effective learning.

Concluding the issue with a focus on high-velocity consumption, Tatiana E. Alekseeva-Nilova, Ksenia M. Miropolskaya, and Olga N. Neganova examine the processing of commercial media in *"Processing of Multimodal Advertising Text by Social Media Users: The Role of Playback Speed of the Audio and Video Sequence.*" In the times when digital marketing is subjected to extremely fast-paced evolution, the speed of information delivery becomes a central variable. The authors test how parallel vs. asynchronous acceleration of audio and video affects memory and attractiveness. Their findings challenge the assumption that faster is always more efficient, highlighting specific formats where cognitive overload degrades the retention of messages in advertising discourse. As a result, we get immediate, practical applications for professionals creating multimodal content.

Two dominant themes unify this collection, strengthening the connection between linguistics and cognitive science.

The first is Multimodality. Across the articles, professional communication is treated as a composite signal. Maria Kiose shows that gestures are integral to the basics of explanation; Alekseeva-Nilova et al. demonstrate that video speed alters the reception of text; and Nagel et al. illustrate how interface design acts as a communicative agent. Words alone are not the only defining feature of professional discourse, we also need to consider the synchronization of visual, auditory, and kinesthetic channels. The analysis of these channels requires linguistic studies that look beyond the sentence to the physical environment of the utterance.

The second theme is cognitive economics. Several authors in the special issue explore the finite nature of mental resources. Sidorova et al. and Nagel et al. utilize eye-tracking and EEG to measure "cognitive load", i.e., the mental energy required to process professional instructions. Their work suggests that effective professional communication is that which minimizes

extraneous load, thus allowing the recipient to allocate resources to the core message. This theme reframes "clarity" and "conciseness" as mechanisms for conserving the audience's metabolic and neural energy.

This issue covers a distinct range of discourse types, illustrating the breadth of the field: scientific and methodological, expository, instructional and pedagogical, marketing and media communication. Specific attention is given to a number of important problems: addressing the protocols of research validity and translation, analyzing how professionals explain concepts through the synchronization of speech and body language, examining the neural mechanics of reading directives and task completion, and, finally, investigating the cognitive processing of social media advertising and multimodal texts.

Collectively, these contributions assert that the linguistics of professional communication must account for the biological reality of the communicator. By measuring where the eye looks, how the skin reacts, and how the brain organizes information, and how the body moves in synchrony with speech and text, we gain a concrete understanding of how professional discourse functions. We trust this issue will serve as a foundational reference for scholars seeking to integrate neurophysiological methods into the study of professional language and institutional communication.

We extend our sincere gratitude to the anonymous reviewers for their constructive critique and rigorous evaluation, which were essential in maintaining the high scholarly standards of this issue. We are also deeply obliged to the Center for Neurolinguistic Research at MGIMO University and its director, Professor Elena Pozdnyakova. We express our appreciation for her initiative in proposing the concept of this special issue and her active support in assembling this collective of authors.

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