## Reseña

Biolinguistics at the cutting edge: Promises, achievements, and challenges

Benítez-Burraco, Antonio; Fernández López, Isabel; Fernández-Pérez, Milagros and Ivanova, Olga (Eds.). (2025). Berlin, Boston: De Gruyter Mouton, 385 pages.
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Biolinguistics is a pioneering field of study that, despite its complexity, continues to attract increasing attention in contemporary research. This volume illustrates this trend, bringing together leading specialists and offering a rigorous and up-to-date overview of the field. The result of genuine interdisciplinary work, the book under review stands as a reference work and an indispensable resource for those seeking new avenues of theoretical and applied exploration.

Taken as a whole, this book stands out for its clarity, rigor, and structural balance. Organized into an introduction and four sections comprising twelve chapters, the volume guides the reader from the theoretical foundations of biolinguistics to its most recent applications. The combination of historical, conceptual, and empirical approaches provides a comprehensive view of the field's evolution, current challenges, and the diversity of perspectives that
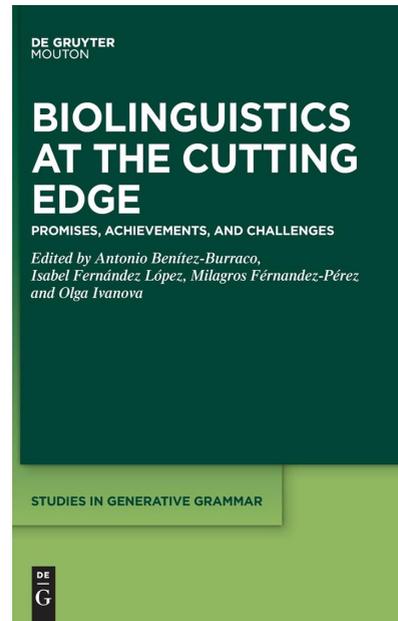
enrich the discipline. What follows is a concise review of the contents of the chapters.

The introduction, written by Antonio Benítez-Burraco and Milagros Fernández-Pérez, situates the volume within the broader process of scientific renewal that has transformed linguistics in recent decades. The authors emphasize interdisciplinarity, methodological innovation, and empirical grounding as key pillars of current research, highlighting the shift from static conceptions of language to a cognitive, communicative, and usage-based model. They also identify the two major challenges that structure the volume—multidisciplinarity and technologization—placing biolinguistics in the intersection of linguistics, biology, and cognition.

Section I, titled *The biolinguistic enterprise*, lays the theoretical foundations of the discipline. In Chapter 1, José Luis Mendívil-Giró offers a brief history of biolinguistics, tracing its evolution from the works of Chomsky (1957, 1986) and Lenneberg (1967), which established linguistics as a natural science, to contemporary approaches such as Minimalism, evolutionary developmental biology (Evo-Devo), and epigenetics. The author distinguishes between biolinguistics in the strict sense—focused on the biological structure of language—and a broader, interdisciplinary conception, drawing on the *Biolinguistics manifesto* by Boeckx and Grohmann (2007). In Chapter 2, Milagros Fernández-Pérez and Miguel González-Pereira situate biolinguistics within the broader set of language sciences, highlighting its institutional maturity and the consolidation of new empirical methods—such as neuroimaging, eye-tracking, and corpus documentation—that have strengthened the experimental and multidisciplinary character of the field.

Section II, *The quest for interdisciplinarity and the challenges of technification*, broadens the scope by exploring the methodological interconnections between biolinguistics and other branches of the cognitive sciences. In Chapter 3, Eliseo Díez-Itza reviews the naturalist tradition linking language and biology from Aristotle to modern linguistics, highlighting the historical continuity between ancient conceptions of speech as a symbol of thought and contemporary studies on language acquisition and child phonology, showing how language development reflects universal biological principles. In Chapter 4, José Manuel Igoa examines the relationship between psycholinguistics and biolinguistics, revisiting the three levels of analysis proposed by David Marr (1982)—computational, algorithmic,

and implementational—integrating experimental data on language comprehension and production, and demonstrating how empirical research helps clarify the biological mechanisms underlying language. Chapter 5, by Silvia Martínez-Ferreiro, offers a comprehensive review of new techniques in neurolinguistics, from computed tomography and functional magnetic resonance imaging to magnetoencephalography and non-invasive brain stimulation, analyzing how these advances, together with new experimental designs and computational modeling, have transformed the study of language and made it possible to observe with greater precision the brain processes involved in communication and its disorders. Finally, Chapter 6, by Ron Nudel, addresses the genetic basis of language through studies on developmental language disorder (DLD/SLI), explaining the principles of genetic variation and heritability, reviewing findings such as those concerning the FOXP2 gene and other related ones (CNTNAP2, NFXL1), and emphasizing the need for collaboration among genetics, linguistics, and neuroscience to understand the biological architecture of language.

Section III, *Theorizing biolinguistics*, delves into the more conceptual and speculative aspects of the discipline. In Chapter 7, Elliot Murphy explores the relationship between linguistic structure, meaning, and cognition, arguing that language constitutes a hierarchical computational system generated by the operation *MERGE*. In contrast to semantic externalism, he proposes a cognitive internalism, according to which meaning is constructed within the human mind and reflects the biological constraints of our cerebral architecture. In Chapter 8, Víctor Manuel Longa Martínez reviews the debate on the evolution of language and symbolism in hominins (Bickerton, 1990). He questions the equivalence between symbolic behavior and language, suggesting a computational approach that analyzes archaeological remains according to the level of mental complexity required for their production, in line with generative biolinguistics.

Finally, Section IV, *Going practical: The applicability of biolinguistic findings*, brings theory into the applied domain. In Chapter 9, Antonio Benítez-Burraco analyzes language disorders from a biolinguistic perspective, proposing a model that connects genes, brain, and behavior, and highlighting the role of brain oscillations in cases such as autism (ASD) and mutations of the *GRIN2A* gene. In Chapter 10, Olga Ivanova addresses aging as a framework for studying language resilience, showing how linguistic functions maintain remarkable stability thanks

to the brain's functional reorganization. Chapter 11, by Pablo Cano López and Isabel Fernández López, examines the relationship between biolinguistics and language teaching (Hall, 2016; Reinders et al., 2022), pointing to the need to integrate findings on acquisition, learning, and critical periods into pedagogical practice. The volume concludes with Chapter 12, by Chris Sinha, who proposes a biocultural view of language evolution—understood as the outcome of interaction among biology, culture, and environment—and warns of the risk of a "biocultural catastrophe" should that fundamental balance be disrupted.

Bringing together so many areas of study in a single volume is a difficult and ambitious task, yet this book accomplishes it with admirable coherence and assurance. The complexity of the work results in a text of remarkable conceptual and methodological richness, where linguistics, biology, psychology, genetics, neuroscience, and language education converge. The outcome is a volume that stands as a reference work not only for its theoretical scope but also for its empirical depth, reflecting the true contemporaneity of linguistic studies and the new ways of understanding human language. Ultimately, this volume consolidates biolinguistics as a mature and expanding field, offering readers a rigorous, up-to-date, and genuinely interdisciplinary overview that anticipates the future direction of linguistic research in the twenty-first century.

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