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RECEIVED 05 June 2023

ACCEPTED 12 June 2023

PUBLISHED 11 July 2023

CITATION

Libben G, Jarema G, Järvi­kivi J and Kehayia E
(2023) Editorial: Words in the world.
Front. Commun. 8:1234942.
doi: 10.3389/fcomm.2023.1234942

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Editorial: Words in the world

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KEYWORDS

mental lexicon, lexical processing, dynamicity, individual differences, psycholinguistics

Editorial on the Research Topic

Words in the world

New ways to think about words

Words are at the core of our language and our lives. They constitute the means by which we share thoughts, understandings and feelings. They unite people and separate them. They are at once unique to each individual and the shared possession of a group. This Frontiers in Communication Research Topic addresses this complexity through research that is grounded in psycholinguistic experimentation and modeling. It presents evidence and insights concerning the nature of words across languages, their representations in the minds and brains of individuals, and their relations to people's environments and behaviors. This experimental psycholinguistic research, conducted across languages and across populations, suggests that the nature of words can only be understood as developing from language experience. Words are in the world—and so are our minds and brains.

This perspective is at the source of this Research Topic. It reflects the exciting developments that are taking place in the psycholinguistic study of language processing and in the cognitive sciences more generally. In many ways, these developments are entirely new. In other ways, they have their roots in foundational psycholinguistic research. It is noteworthy that it is now exactly 50 years since the publication of Derwing (1973) call for a behaviorally based approach to the study of language structure and language development. In that 1973 book, Derwing states that “a linguistic unit at any ‘level’ exists as a unit only because the language user treats it as a unit . . . as part of the language process of speech production and comprehension” (p. 305). This perspective highlights the fact that people's word knowledge is obligatorily linked to their language behavior in the world—their experience in understanding words, in producing them, and in relating them to each other and to ideas, entities, and emotions.

The inter-relationship of research on words in the world

Spanning languages

The comments above highlight the extent to which words are part of a highly integrated system that we typically call an individual's vocabulary. The characteristics of that system will differ considerably from language to language. It is not surprising, therefore, that in this Research Topic, a variety of languages are studied. These include Arabic, Chinese, Czech, Dutch, English, French, Greek, Italian, Norwegian, Spanish, and Swedish.

Words across the lifespan

Thinking about words as part of a highly integrated and dynamic vocabulary system brings us to the distinction between the vocabulary of a language and the vocabulary of an individual. The vocabulary of a language can change very dramatically over time. The vocabulary of an individual who speaks that language can also change very dramatically over their lifespan. The nature of age-related effects among people is investigated in four articles in this Research Topic. [Garmann et al.](#) examine the speech sounds produced by very young children and the extent to which those sound patterns are common across languages or conditioned by language-specific characteristics (in this case, Norwegian). The articles by [Royle et al.](#) and [Montemurro et al.](#) probe later stages in the lifespan. [Royle et al.](#) compared younger and older adults in terms of the extent to which they show links among French words that share features of spelling, semantics, and word structure. [Montemurro et al.](#) examined the naming ability of Italian-speaking older adults to uncover the role that cognitive reserve may play in the manifestation of age-related language processing phenomena. Finally, [Sprenger et al.](#) studied how aging may affect the ability of an individual to process idiomatic expressions.

Differences in the semantic and structural properties of words

The [Sprenger et al.](#) study offers an important link to another key issue in the Research Topic. This is the extent to which differences in the mental representation and processing of words are related to their semantic and structural properties. This matter is addressed in the article by [Kulkova and Fischer](#) who note that figurative expressions constitute a very significant part of language. The semantic differences among words are also addressed in the report of [Wei and Gillon-Dowens](#), who investigated the extent to which differences between concrete and abstract words correspond to electrophysiological brain signals. They claim that different neural mechanisms may underlie non-attentive processing of abstract and concrete words.

As is evident in the articles in this Research Topic, the examination of semantic and structural differences among word types offers a way to advance research methodology and data analysis, enabling us to better understand how language is related to other aspects of cognitive function and moving us closer to a comprehensive psycholinguistics of word meaning and structure. The article by [Baayen and Smolka](#) presents a new means by which to model experimental findings that have distinguished the processing of German words from those of other languages. The study by [de Almeida et al.](#) uses an eye-tracking technique to understand how the processing of different verb types can help us better understand the relation between visual cognition and language processing. [Marzi et al.](#) offer a computational framework within which to understand how structural differences in words across languages can be modeled with a relatively small set of language independent principles.

The study by [Spalding et al.](#) brings our attention from semantic relations among words to the semantic relations within words. They

concentrate on compound words such as *blackbird*, which can be seen as words that themselves contain words. These compound structures are also central to the study reported by [Libben et al.](#), which extends traditional single word experiments to the domain of multi-sentence texts by investigating the links among elements within compound words to other words in a text. The [Libben et al.](#) experiments involved the use of data from word and sentence typing. The typing technique is also central to the report of [Feldman et al.](#) who used it to uncover relations among word structure and variables such as word frequency and then linked those relations to models of cognitive and motor processing during typed production.

Words, health, and personal experience

Our use of words may be linked to our health both directly and indirectly. There are medical events such as stroke that can have direct and immediate effects on language processing ability. Often, however, as is the case in Alzheimer's disease, dementia, and other aspects of mental health, changes in language ability accompany other changes. This creates an opportunity to use language changes as an assessment tool and for symptom monitoring.

In the report by [Havigerová et al.](#), the written Czech production of persons experiencing depression was investigated across types of writing and in terms of orthographic variables and the structural characteristics of words. The authors report that their findings offer a technique that could be suitable for screening individuals at risk of depression. [Manouilidou et al.](#) investigated the processing of words among speakers of Greek with Mild Cognitive Impairment and with Alzheimer's Disease. They linked participants' cognitive abilities to their ability to process grammatical aspects of Greek words. In their meta-analytic review article, [Kuzmina et al.](#) surveyed patterns of language performance among bilingual persons who had experienced language difficulties as a result of damage to the brain. This study of bilingual aphasia revealed the important role played by patterns of language use in childhood.

Individuals' vocabularies that cross individual languages

The study of bilingual aphasia reported by [Kuzmina et al.](#) is related to a final matter addressed in this Research Topic. This is the simple but often overlooked fact that most people in the world speak more than one language. Thus, their mental store for words spans language vocabularies. The fact that this is the norm rather than the exception has enormous psycholinguistic consequences. The article by [Cerni et al.](#) reports on orthographic and phonological effects among native speakers of Italian who are learning English as a second language. In the study by [Stephanich et al.](#), the authors probe the theoretical challenges and potential solutions in the characterization of how bilingual individuals may switch languages within a single word. The study demonstrates how linking linguistic theory and language processing research can lead to important new insights.

Word research and the Frontiers in Communication

Psycholinguistic research on the representation and processing of words has progressed a great deal in recent years. New methodologies and approaches to experimentation and modeling have made it possible to study lexical processing across many more languages and within many more populations and contexts. In this way, we are moving to a more comprehensive understanding of *Words in the world*.

This greater understanding gives precedence to the highly integrated and relational nature of vocabulary knowledge. Our vocabularies are not simply storehouses of lexical knowledge. They are the dynamic systems that constitute our ability to understand and shape the world in which we live. Our lexical knowledge system grows and changes with us, so that it reflects many lifespan characteristics. Lexical knowledge systems may differ across groups and across social and cultural conditions. They are the leading edge of our language and, as such, define our cognitive reach and our ability to share our understandings with others. In this way, it may be that, as individuals, as groups, and as generations, word knowledge actually constitutes our *Frontiers in Communication*.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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Funding

This research was supported by the Social Sciences and Humanities Research Council of Canada Partnership Grant 895-2016-1008 (“*Words in the world*”).

Acknowledgments

We wish to thank Laura Teddiman for her important contributions to this project and this Editorial Article.

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