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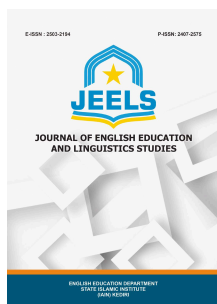
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Home / Archives / Vol. 13 No. 1 (2026): JEELS May 2026

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Articles

Learning English through local wisdom-based Toba boat race edu game

Ika Agustina, Gunawan, Andrian, Reniwati Lubis, Rommel Sinaga

1-22

[PDF](#)

Exploring students testimonials on Speecha pronunciation assessment: A qualitative investigation using narrative inquiry

R Muhammad Satria Gyas Mustagis, Muljanto

23-51

[PDF](#)

Managing English for frontliners (EFF) in "Darussalam" community-based job training center

Naeli Rosyidah, Enjang Burhanudin Yusuf, Yasinta Wulandari

53-84

[PDF](#)

Podcast videos-based language learning materials integrated with metacognitive skills in improving EFL learners' speaking skills and intercultural pragmatic competences

Mahyun Ismail, Haerazi Haerazi, Lalu Ari Irawan

85-106

[PDF](#)

Exploring the link between lecturer writing assessment literacy and student learning experiences

Nia Pujjawati, Januarius Mujiyanto, Rudi Hartono, Issy Yuliasri

107-132

[PDF](#)

The effect of using Powtoon animated videos assisted by teacher explanation on seventh-grade students' vocabulary achievement

Davita Putri Agustina, Mutiara Bilqis, David Imamyartha

133-154

[PDF](#)

AI literacy of pre-service English teachers: Proficiency, strategies, and barriers

Febriyanti, Eva Nurchurifiani, Tommy Hastomo, Andri Wicaksono, Sukma Septian Nasution

155-186

[PDF](#)

Assessing communicative performance through a multimodal video project in English for tourism and hospitality

Alan Jaelani, Ninuk Lustyantie, Fathiaty Murtadho

187-212

[PDF](#)

Local voices, global languages: Teachers' perspectives on local-based digital narratives and multilingual practices in early EFL learners

Tri Pujiani, Hasan Zainuri, Ida Dian Sukmawati
213-238



IT-BISA on English proficiency and digital literacy skills: Delving into students' views and teacher's reflections

Didit Kurniadi, Issy Yuliasri, Sri Wahyuni, Zulfa Sakhiyya
239-266



A critical multi-case study of generative AI in GELT: Representing diverse Englishes and ethical-psychological challenges

Abdul Halim
267-294



Gamified English learning and students' spiritual learning behavior: Roles of Wayground use, enjoyment, and interest

Rahmadana, Harmita Sari, Edi Wahyono, Chen Ching Yang
295-315



Enhancing learners' grammar competence through teacher's oral and written corrective feedback

Karenia Jannah Dewi Prayogo, Suharyadi Suharyadi, Raihana Binti Romly
317-339



Philippine English in education and workplace: An integrative review of its roles

Junar Marquez
341-362



EFL students' beliefs about AI-assisted writing and its perceived impact on their English writing development

Rika Riwayatningsih, Raveenthiran Vivekanantharasa, Entika Fani Prastikawati
363-398



Mapping the morphology of complex words: A scientometric and pedagogical perspective

Danang Satria Nugraha, Suhailee Sohni
389-429



Challenges and strategies in feeding AI-powered translation machine with religious texts: English department students' experiences

Adaninggar Septi Subekti, Lemmuella Alvita Kurniawati, Mega Wati
431-453



The struggle of EFL students in thesis writing: Investigating language challenges and the role AI in academic writing assistance

Ninuk Indrayani, Febrina Rizky Agustina
455-484



Bridging the digital divide: A narrative inquiry of EFL teachers' Tech-PD Experiences in rural schools

Nanik Sri Rahayu, Uzlifatul Masruroh Isnawati, Ali Abdullah Ahmad Albayyan, Arcenia Maria Martins
485-509



Intercultural sensitivity and linguistic adaptation among Indonesian students in Cairo: A narrative inquiry

Afanin Rushafah, Ulil Fitriyah
511-541



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MAPPING THE MORPHOLOGY OF COMPLEX WORDS: A SCIENTOMETRIC AND PEDAGOGICAL PERSPECTIVE

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Abstract: Complex word formation, a central process in morphology, has recently garnered increasing attention in linguistic research within the last decade. This study employs a scientometric approach to map the current landscape of this domain, aiming to reveal the field's structure, trends, and thematic foci, with a focus on extracting pedagogical implications. Using VOSviewer software, we analyzed 488 documents retrieved from the Scopus database, spanning the years 2014 to 2024. The analysis revealed a dynamic field with an overall upward trend in publications, with a mean annual publication frequency of 48 documents across the 11-year period. A steady increase was observed from 2016 onwards, culminating in a peak in 2020. This peak signifies a growth of approximately 132% from the nadir of 2015. Leading researchers included Booij, G. and Plag, I., while mental lexicon and *Morphology* emerged as the most prominent publishers. Specifically, keyword analysis identified six distinct clusters: (1) fundamental concepts

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(25.5%); (2) language processing and acquisition (23.4%); (3) cognitive mechanisms (21.3%); (4) experimental perspectives (14.9%); (5) language development (9.6%); and (6) theoretical linguistics (5.3%). To some extent, these findings provide insights into the current state and future directions of complex word formation research, with implications for both linguistic theory and pedagogical practice.

Keywords: *complex words, morphology, scientometrics, pedagogical implication*

INTRODUCTION

Complex word formation, the process by which multiple morphemes combine to create new words, lies at the heart of linguistic inquiries. It encompasses a rich array of phenomena, including derivation (Fradin, 2020; Kotowski & Plag, 2023), compounding (Hüning & Booij, 2014; Körtvélyessy & Štekauer, 2020; Olsen, 2015), inflection (Baerman et al., 2017; Stump, 2020), and other morphological processes that contribute to the vastness and dynamism of human lexicons (cf. Baerman et al., 2017; Boyé, 2018; Dressler, 2015; Nugraha, 2024a, 2024c; Rolle, 2023; ten Hacken, 2019). These processes allow for the creation of an immense variety of words from a limited set of morphemes, enabling language to adapt to new concepts and express nuanced meanings. For instance, derivation allows for the creation of new words by adding affixes to existing words, such as “happiness” from “happy.” Compounding combines two or more words to form a new word, as in “sun-dried” from “sun” and “dried.” Inflection modifies existing words to expressed grammatical information, such as tense (e.g., “walked”) or number (e.g., “cats”). By understanding these processes, we gain insights into the creative potential of language and the cognitive mechanisms that underpin word formation. Therefore, understanding the mechanisms underlying complex word formation is crucial for unraveling the intricacies of language structure, acquisition, and processing, as highlighted by Booij (2014) and Plag (2019). Correspondingly, this knowledge has implications for diverse fields,

ranging from theoretical linguistics and cognitive science to language education and natural language processing (cf. Nugraha, 2024e, 2025).

This study adopts a scientometric approach to map the current landscape of complex word formation research, aiming to identify key themes, prominent researchers, and leading institutions amongst other relevant aspects within this domain. Scientometrics, as defined by Hood & Wilson (2001), is the quantitative analysis of discipline, communiqué in science, and discipline policy. It employs statistical and bibliometric methods to analyze scientific publications and citations, providing insights into the structure and dynamic of research fields (van Eck & Waltman, 2010). Aria and Cuccurullo (2017) further emphasizes its role in “science mapping analysis,” allowing for the visualization of research trends and the identification of influential works and researchers. By analyzing bibliographic data and keyword co-occurrence networks, we seek to provide an overview of the research field’s structure and advancement. This approach allows us to discover hidden arrangements and connections within the immense body of literature, shedding light on the contemporary tendencies and forthcoming guidelines of complex word formation investigation. Furthermore, we aim to extract pedagogical implications from these findings, highlighting the importance of incorporating morphological awareness into language teaching and learning.

The theoretical foundations of this study draw upon key concepts from morphology and cognitive sciences in the light of theoretical linguistics. We adopt a morpheme-based model of word formation (Booij, 2015), recognizing the morphemes as the fundamental unit of meaning and structure in complex words (Beard & Volpe, 2005; Blevins, 2006). This perspective emphasizes the role of morphemes as the building blocks of complex words, carrying semantic and grammatical information that contributes to the overall meaning of word (Audring, 2022; Lieber, 2017). Notable work by Baayen et al., (2000) further supports the importance of morpheme-based analysis in understanding the mental lexicon and the cognitive processes involved in word recognition. Furthermore, we acknowledge the cognitive processes involved in word recognition and comprehension, drawing

upon models of lexical access and retrieval (e.g., Casalis et al., 2015; Deutsch & Kuperman, 2019; Schmidtke et al., 2021). These models propose that word recognition involves a complex interplay between orthographic, phonological, and semantic processing, with morphological decomposition playing a crucial role in accessing and integrating morphemic information, as also reported in the notable previous-studies (e.g., Engemann & Plag, 2021; Gahl & Plag, 2019; Plag, 2014). By integrating these theoretical perspectives, we aim to provide a compulsory foundation of complex word formation, comprehending both its structural and cognitive dimensions.

Previous research on complex word formation, particularly from a pedagogical perspective, has explored a diverse range of topics, including the acquisition of morphological rules in children (Goldin et al., 2023), the processing of morphologically complex words in adults (Kotzer et al., 2021), the role of morphology in reading comprehension (Levesque et al., 2021), and the impact of language disorders on morphological processing (Vender et al., 2017, 2021). For instance, Goldin et al. (2023) investigated the developmental trajectory of morphological awareness in children, examining how children's ability to analyze and manipulate morphemes develops over time and how this awareness relates to other language skills like reading and spelling. This line of research has provided valuable insights into the cognitive processes underlying morphological acquisition and its implications for language development. Kotzer et al. (2021) used empirical-controlled methodology to scrutinize in what way adults process morphologically complex words during reading, revealing the dynamic interplay between visual attention, lexical access, and morphological decomposition as the predictors of morphological awareness. These findings contribute to our understanding of the cognitive mechanisms involved in real-time word recognition and comprehension. Levesque et al. (2021) explored the relationship between morphological awareness and reading comprehension, demonstrating that children with greater awareness of morphemes tend to perform better on reading comprehension tasks. This research highlights the importance of morphological knowledge for successful

reading and learning. Vender et al. (2017, 2021) investigated the impact of language disorders, such as dyslexia, on morphological processing, revealing specific difficulties in recognizing and manipulating morphemes in individuals with these disorders. This research sheds light on the clinical relevance of morphological awareness and its potential role in language assessment and intervention. However, despite the wealth of research in this area, there remains a need for a data-driven overview of the field's current state and future directions. The present study addresses this gap by employing scientometric approach to map the key themes and trends within complex word formation research in respect to the basis of morphological framework.

Therefore, based on the several aforementioned considerations, two overreaching research questions guide this investigation: (1) What are the dominant themes and trends within complex word formation research in the light of morphological framework, as reflected in bibliographic data and keyword co-occurrence networks; and (2) How can morphological awareness be effectively integrated into language teaching and learning to enhance vocabulary acquisition, reading comprehension, and overall language proficiency?

METHOD

This study employed a scientometric approach to map the current trends and thematic foci within complex word formation research. Scientometrics, as a quantitative method for analyzing scientific literature, allows for the identification of prominent research themes, influential authors, and leading institutions within a specific field, amongst other important bibliographic aspects (Sooryamoorthy, 2020; Waltman & van Eck, 2019). In this study, VOSviewer (1.6.20) (van Eck & Waltman, 2023) software was utilized to visualize and analyze bibliometric networks, providing insights into the relationships between keywords, authors, and publications. This software facilitates the creation of co-occurrence networks, which graphically represent the connections between terms based on their co-occurrence within the documents. By analyzing these networks, we can identify clusters of related terms, revealing the thematic structure of the research field.

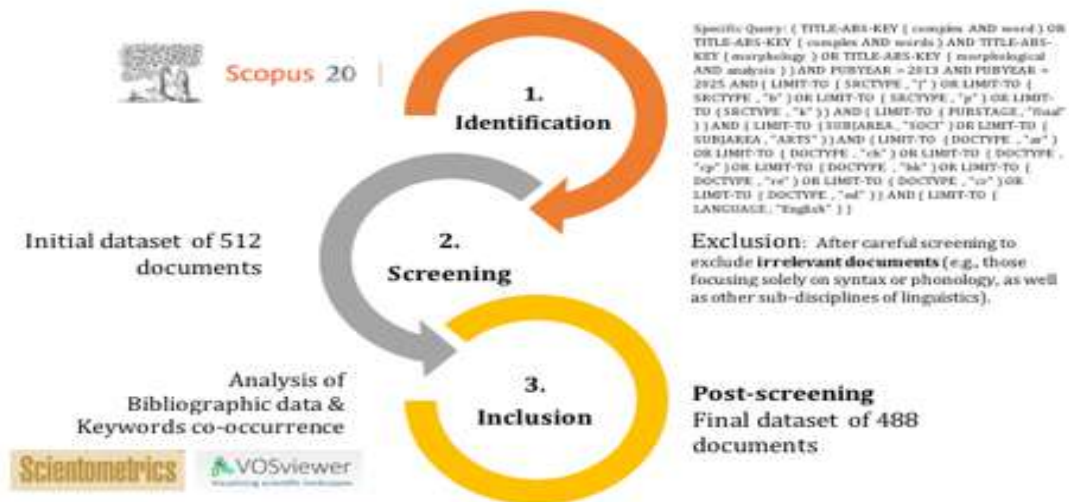


Figure 1. Stages in the present scientometric-based exploration

The data for this study was collected from the Scopus database, a comprehensive abstract and citation database of peer-reviewed literature. Scopus was chosen for its extensive coverage of scientific journals and its robust search functionalities, allowing for the retrieval of a comprehensive dataset on complex word formation research. The initial search query included a combination of keywords related to morphology and complex words, as listed in (1) Excerpt 1, resulting in a dataset of 512 documents published between 2014 and 2024. After careful screening to exclude irrelevant documents (e.g., those focusing solely on syntax or phonology, as well as other sub-disciplines of linguistics), the final dataset consisted of 488 documents. This dataset provided a representative sample of the current research landscape in complex word formation within a morphological framework.

(1) Excerpt 1

Specific Query: (TITLE-ABS-KEY (complex AND word) OR TITLE-ABS-KEY (complex AND words) AND TITLE-ABS-KEY (morphology) OR TITLE-ABS-KEY (morphological AND analysis)) AND PUBYEAR > 2013 AND PUBYEAR < 2025 AND (LIMIT-TO (SRCTYPE , "j") OR LIMIT-TO (SRCTYPE , "b") OR LIMIT-TO (SRCTYPE , "p") OR LIMIT-TO (SRCTYPE , "k")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "ARTS")) AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "ch") OR LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "bk") OR LIMIT-TO (DOCTYPE , "re") OR LIMIT-TO (DOCTYPE , "cr") OR LIMIT-TO (DOCTYPE , "ed")) AND (LIMIT-TO (LANGUAGE , "English"))

The collected data was analyzed using VOSviewer to generate bibliometric map and identify key themes within the research field. First, bibliographic data analysis was performed to examine annual publication frequency, notable publisher, prominent authors, leading institutions, geographic distribution, funding of the research, and document-topic classifications. Second, a keyword co-occurrence analysis was conducted to identify clusters of related terms and reveal the thematic structure of the field. To create this map, the following parameters were employed: type of analysis: co-occurrence; unit of analysis: all keywords; counting method: full counting. A minimum number of occurrences of a keyword was set to 5 to ensure the inclusion of only the most relevant terms. Of the initial 2,104 keywords extracted from the dataset, 108 met this threshold.

After a second refinement process to remove duplicate and irrelevant terms, the final list comprised 94 keywords. For each of these keywords, the total strength of co-occurrence links with other keywords was calculated, and the keywords with the greatest total link strength were algorithmically selected for visualization in the co-occurrence map. The two types of analysis results were then validated using in-depth validation techniques by checking the conformity of the numerical and verbal results with the substance of the data and its patterns.

FINDINGS

Annual Publication Frequency

The annual publication frequency of morphological research concerning complex word formation between 2014 and 2024 exhibits an overall upward trend, albeit with some fluctuations as depicted in Figure 2. The period commenced with 32 documents in 2014, followed by a notable dip to 25 documents in 2015. However, a steady increase was observed from 2016 onwards, culminating in a peak of 58 documents in 2020. This peak signifies a growth of approximately 132% from the nadir of 2015, highlighting a burgeoning interest in the research topic. While a slight decline followed in 2021 and 2022, the upward trajectory resumed with a second peak of 56 documents in

2023. This fluctuating yet generally increasing pattern suggests a dynamic field with periodic surges in research activity.

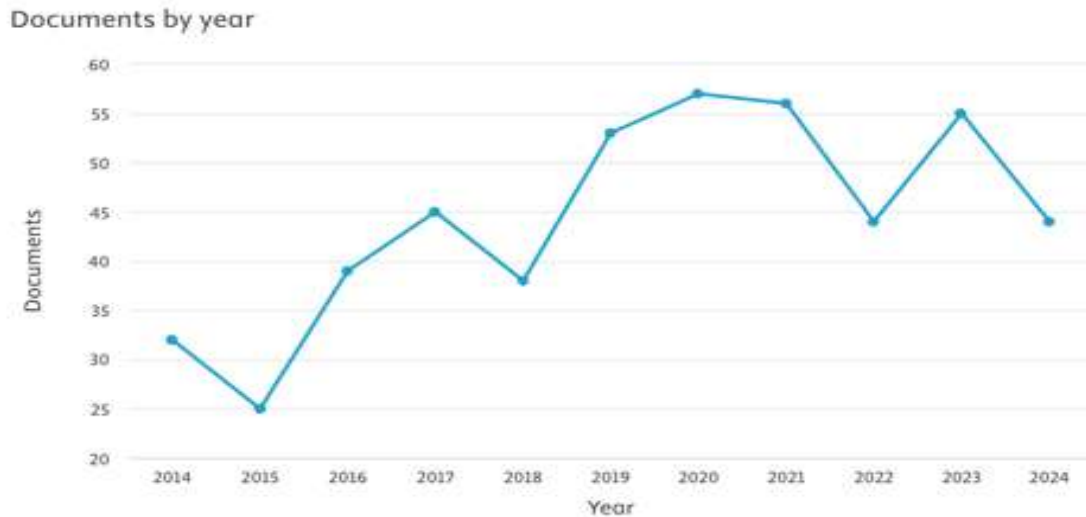


Figure 2. Annual Publication Frequency

Quantitative analysis reveals a mean annual publication frequency of 48.18 (rounded to the nearest: 48) documents across the 11-year period. The standard deviation of 9.94 reflects the aforementioned fluctuations, indicating degree of variability around the mean. Notably, the period from 2019 to 2023 displays a particularly concentrated cluster of high publication counts, suggesting a recent intensification of research efforts in this area. This observation is further supported by the fact that 5 out of the 11 years with above-average publication counts fall within this 5-year span. These findings underscore a growing scholarly interest in the morphology of complex words, potentially driven by factors such as increased computational resources for linguistic analysis and a heightened awareness of the role of morphology in language acquisition and processing.

Reputable Journal Publisher

Analysis of the leading sources for publications on complex word formation between 2014 and 2024 reveals a diverse landscape with no single dominant journal (see Figure 3). “Mental Lexicon” (Q1 | SJR 0.4) demonstrates a consistent presence throughout the period, with a peak of 4 publications in 2020 and a total of 14 articles across the

11 years. This sustained contribution highlights its role as a key venue for disseminating research on the topic. “Morphology” (Q1 | SJR 1.04) exhibits a similar trend, albeit with a later surge in publications, reaching its peak of 3 articles in 2021. This suggests an increasing focus on the morphological underpinnings of complex word processing.

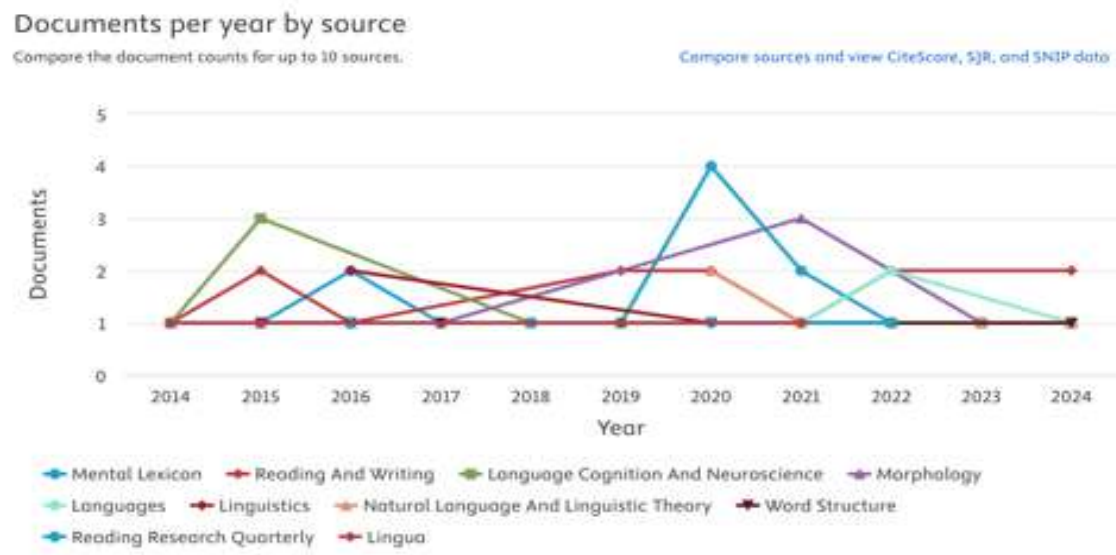


Figure 3. Reputable Journal Publisher

While “Mental Lexicon” and “Morphology” maintain a steady output, other journals demonstrate more sporadic contributions. “Word Structure” (Q1 | SJR 0.5) and “Languages” (Q1 | SJR 0.4) each contribute notable publication in specific years, indicating their relevance to particular subtopics within complex word formation. Interestingly, journals like “Linguistics” (Q1 | SJR 0.56), “Lingua” (Q1 | SJR 0.6), “Natural Language and Linguistic Theory” (Q1 | SJR 1.22) and “Reading and Writing” (Q1 | SJR 1.14) show a more evenly distributed publication pattern, suggesting their broader scope encompasses morphological research among other linguistic domains. This varied distribution of publications across journals underscores the nature of complex word research, drawing upon insights from several branches of linguistics with emphasize on theoretical linguistics. The lack of a single dominant journal further emphasizes the dynamism of this research topic, with contributions emerging from a notable range of scholarly linguistic perspectives.

Eminent Scholars

In addition to the analysis of reputable journal publisher, Figure 4 illustrates the prominent scholars who have significantly contributed to the field of complex word formation research between 2014 and 2024. Booij, G. emerges as the most prolific author, with an impressive output of 8 documents within this period. This substantial contribution suggests a sustained research focus and leadership within this domain. Following closely are Plag, I. and Clahsen, H., each with 7 and 6 documents respectively, indicating their influential roles in shaping the field's discourse. This distribution then reveals a cluster of authors with 4 or 5 publications, demonstrating a broader network of scholars actively engaged in investigating the complexities of word formation.

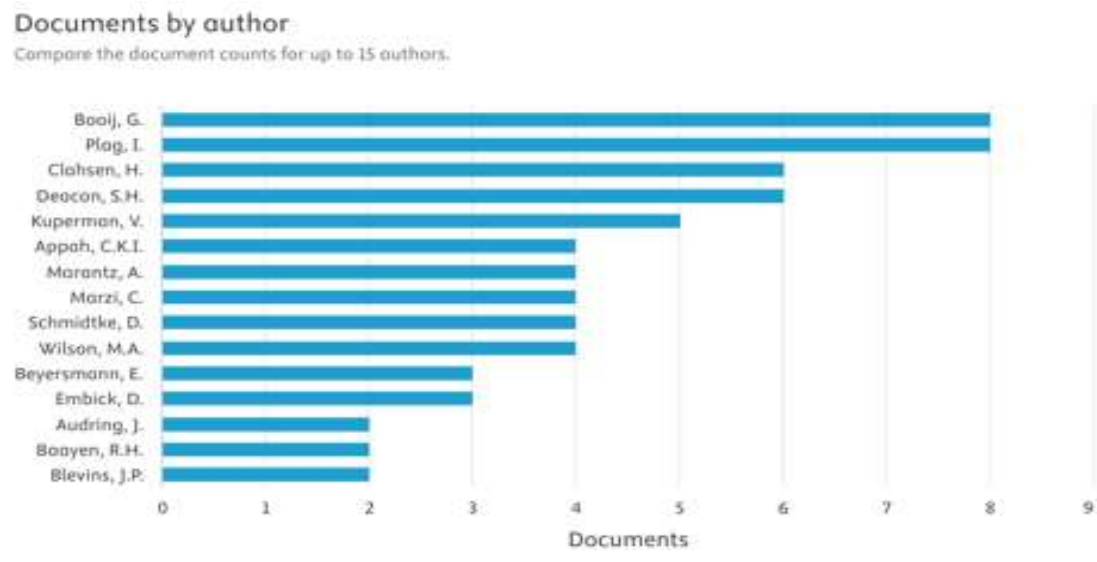


Figure 4. *Eminent Scholars of the Complex Word Formation*

Moreover, quantitative analysis reveals that the top 15 authors collectively contributed 68 documents, representing a significant portion of the total research output in this area. Interestingly, the distribution exhibits a gradual decline in productivity, with a steep drop-off observed after the top 3 authors. This suggests a core group of highly productive scholars, followed by a wider community of researchers making valuable contributions. Furthermore, the presence of authors like Appah, C.K.I, Marantz, A., Marzi, C., Schmidtke, D., and Wilson, M.A., with 4 publications each, highlights the diversity of

research perspective within the field, encompassing theoretical, experimental, and cross-linguistic approaches. At least, this authorship landscape underscores the nature of complex word research within a morphological framework.

Organization-Sorted Works

An examination of institutional contributions to complex word formation research between 2014 and 2024, as depicted in the Figure 5, reveals a geographically diverse landscape with notable concentrations of morphological research activity. Universität Potsdam emerges as the leading institution, boasting a remarkable output of 12 documents within this period. This prolific contribution underscores its position as a prominent hub for morphological research, particularly concerning complex words. Following closely are CNRS Centre National de la Recherche and Heinrich-Heine-Universität Düsseldorf, with 10 and 9 documents respectively, indicating their strong research presence in this domain.

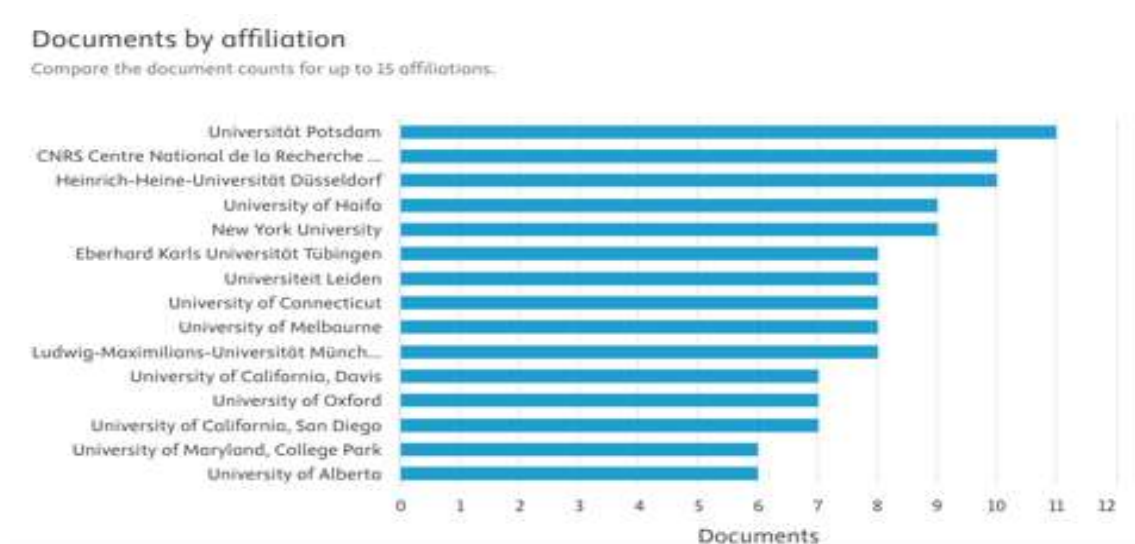


Figure 5. Organization-Sorted Works

Further analysis reveals a cluster of universities with 7 or 8 publications each, including University of Haifa, New York University, Eberhard Karls Universität Tübingen, and Univesiteit Leiden. This distribution highlights a global network of institutions actively engaged in advancing the understanding of complex word formation.

Interestingly, the list encompasses universities from North America, Europe, and the Middle East, underscoring the international scope of this research area. Moreover, the presence of both public and private institutions suggests a diverse range of funding sources and research priorities contributing to the field's growth. These findings collectively demonstrate a vibrant and internationally collaborative research landscape dedicated to unraveling the intricacies of complex word formation.

Geolocated Publications

The geographic distribution of publications on complex word formation from 2014 to 2024 reveals a clear dominance of North America and Europe, as represented in the Figure 6, with the United States leading with an impressive output of 148 documents. This high concentration of research activity likely reflects the presence of well-established linguistics departments and research centers within the US, coupled with a strong tradition of morphological investigation. Germany follows with 73 documents, further solidifying the prominent role of these regions in advancing the field. The United Kingdom and Canada also demonstrate substantial contributions, with 37 and 33 documents respectively, indicating a robust research landscape across the Anglosphere.

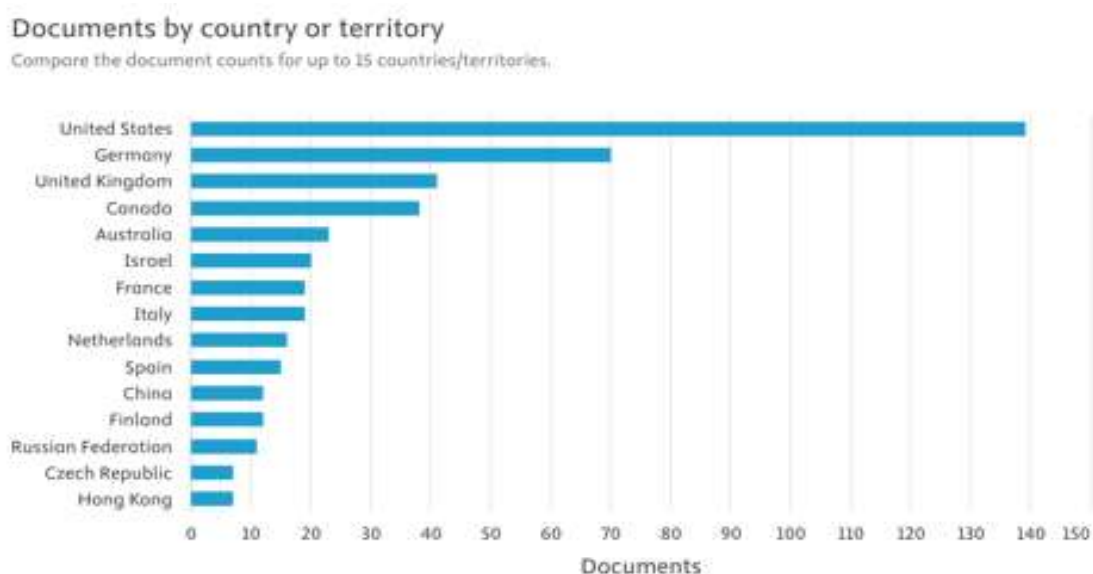


Figure 6. Geolocated Publications

While North America and Europe constitute the major research hubs, contributions from other continents are also evident. Israel, Australia, and France each contribute between 15 and 20 documents, suggesting growing research interests in these regions. Notably, the presence of countries like the Netherlands, Spain, and China highlights the global reach of complex word formation research, encompassing diverse linguistic families and theoretical perspectives. This geographic distribution underscores the international and collaborative nature of the field, with researchers across the globe engaging with the complexities of word structure and its implications for language processing, acquisition, and pedagogy.

Grant-Supported Documents

Analysis of funding sources supporting research on complex word formation between 2014 and 2024 reveals a diverse landscape with both national and international sponsors contributing to the advancement of the field. As illustrated in the Figure 7, the Deutsche Forschungsgemeinschaft (DFG) emerges as the leading funding body, having supported 25 documented research projects. This prominent role highlights the strong commitment of German research institutions to furthering our understanding of complex word structure. The National Science Foundation (NSF) in the United States follows closely with 21 funded projects, underscoring the significance of this research area within the American academic landscape.

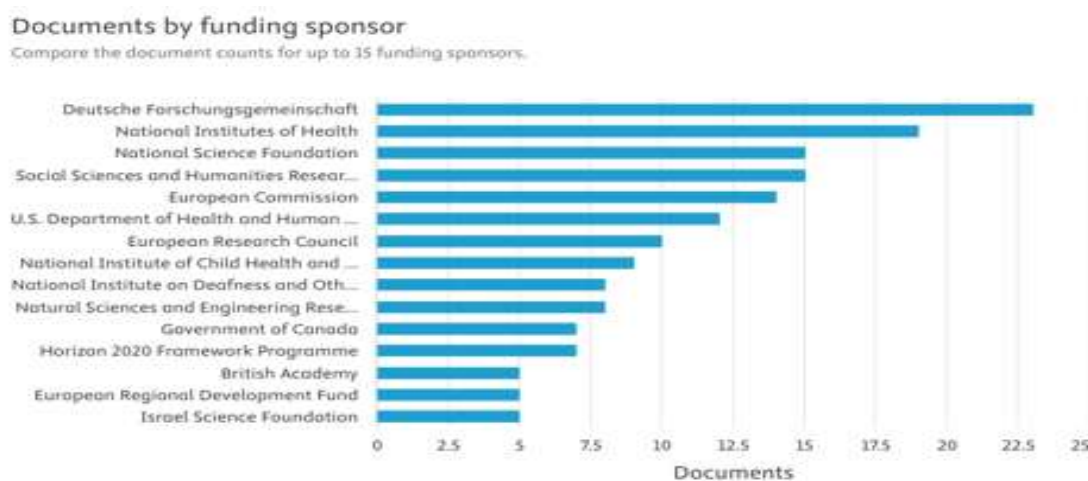


Figure 7. Grant-Supported Documents

Interestingly, the funding landscape reflects a blend of support for basic research and targeted initiatives. Organizations like the National Institutes of Health (NIH) and the National Institute of Deafness and Other Communication Disorders (NIDCD) have contributed significantly, indicating a growing interest in the clinical and applied aspects of complex word processing, particularly concerning language development and disorders. Furthermore, the presence of international funding bodies such as the European Commission and the European Research Council emphasizes the collaborative nature of this research domain, with researchers across borders working together to address fundamental questions about the nature and acquisition of complex words. This diverse funding portfolio contributes to a more comprehensive and nuanced understanding of the nature of complex word formation.

Subject-Classified Papers

As demonstrated in the Figure 8(a), the distribution of publication types concerning complex word formation research between 2014 and 2024 reveals a clear preference for the traditional journal article format, constituting 68% of the total output. This finding aligns with the established norms of academic dissemination in linguistics, where peer-reviewed articles serve as the primary means of knowledge production and validation. Book chapters comprise a significant portion as well, representing 21% of the publications, indicating the importance of in-depth analyses and comprehensive overviews within this field of morphological research. Conference papers and reviews, while less frequent at 8% and 3% respectively, still play a role in disseminating research findings and fostering scholarly dialogue. Interestingly, conference abstracts constitute a negligible proportion, suggesting a preference for full-length presentations and publications in this research domain of morphological phenomenon. This distribution underscores the emphasis on rigorous research and in-depth scholarly discourse within the field of complex word formation, with journal articles and book chapters serving as the primary vehicles for knowledge dissemination and advancement.

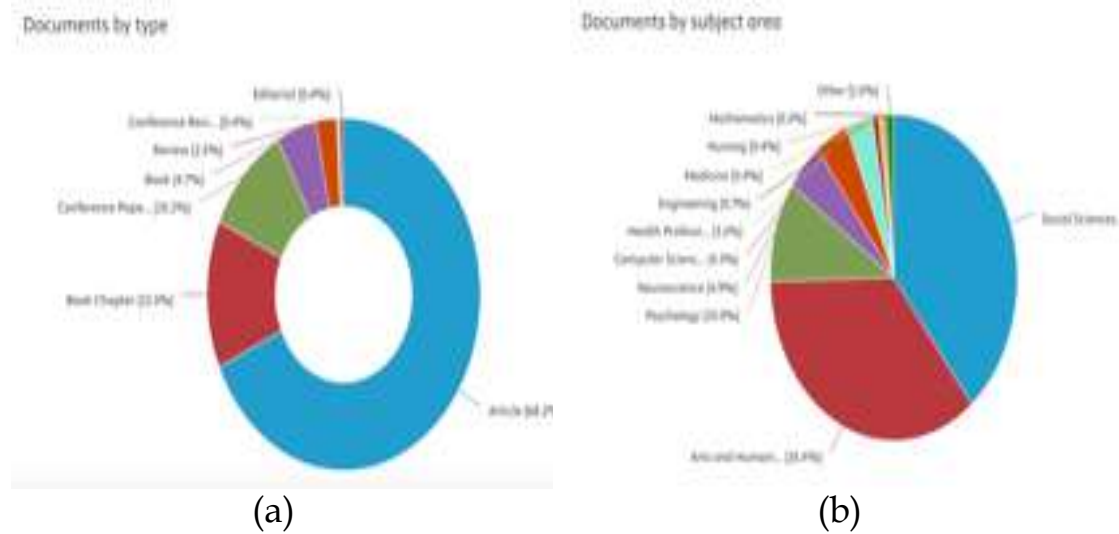


Figure 8. Type of Publications (a) & Subject-Classified Papers (b) of the Morphological Research Concerning Complex Word Formation (2014 – 2024)

Moreover, Figure 8(b) reveals a strong concentration within the “Social Sciences,” constituting 39% of the total output. This dominant position underscores the importance of linguistic inquiry within the broader social science domain, particularly in interdisciplinary areas like psycholinguistics, sociolinguistics, and language acquisition, in the respect to morphological analysis of complex word formation. “Arts and Humanities” follow closely with 28%, highlighting the relevance of this research to fields like literature, philosophy, and cultural studies, where the nuances of language play a crucial role. Interestingly, contributions from Psychology (10%) and Neuroscience (4%) are also evident, underscoring the interdisciplinary nature of this research area, drawing upon insights from cognitive science and brain research to understand the mental processes underlying complex word representation and processing. While other fields like Computer Science and Engineering exhibit minimal representation (less than 3% each), their presence also suggests potential applications of complex word research to diverse domains such as natural language processing and artificial intelligence. In short, this distribution reflects the nature of morphological research on the complex word formation, with implications spanning several academic disciplines and practical applications.

Lexical Network Analysis

Lexical network analysis of keywords in complex word formation research (2014 – 2024), as visualized in the Figure 9, reveals a detail landscape with six distinct thematic cluster. The larger cluster or cluster 1 (red, 25.5%) centers on fundamental concept like “morphology,” “word formation,” and “complex words,” with related terms like “derivation,” “compounding,” and “affixation” highlighting specific morphological process. The second largest cluster or cluster 2 (green, 23.4%) shifts focus to language processing and acquisition, encompassing terms like “reading,” “comprehension,” and “language development,” with “child” and “adult” indicating a language developmental perspective. The blue cluster or cluster 3 (21.3%) delves into cognitive aspects of word recognition, with keywords like “eye movements,” “cognition,” and “reaction time” suggesting investigations into real-time processing. The yellow cluster or cluster 4 (14.9%) further explores cognitive mechanisms, with terms like “memory,” “dyslexia,” and “aphasia” highlighting clinical and experimental approaches. Cross-linguistic variation is captured in purple cluster or cluster 5 (9.6%), which includes “child language,” “language development,” and “phonetics.” Finally, the smallest cluster or cluster 6 (sky blue, 5.3%) touches upon theoretical linguistics, with keywords like “distributed morphology,” “phonology,” and “polysynthesis.” In general, this clustered distribution provides a comprehensive overview of the key themes and research foci within the topic of complex word formation based on the morphological framework.

In details, Table 1 presents the most prominent cluster (red cluster) or Cluster 1 identified word formation research from 2014 to 2024. This cluster, comprising 24 keywords (25.5% of the total), encapsulates the core thematic focus within this research topic. As evident from the itemization, the cluster revolves around fundamental concepts such as “morphology,” “word formation,” and “complex words,” reflecting the foundational nature of these concepts in driving research on morphological complexity. The inclusion of specific morphological processes like “derivation,” “compounding,” and

sub-cluster highlights the importance of morphological knowledge in facilitating efficient and accurate reading, with implications for language acquisition and literacy development. Furthermore, the inclusion of terms like “competition,” “semantic transparency,” and “syntax” (Cl-1.3) suggests investigations into the interaction of morphology with other linguistic systems, reflecting a broader perspective on the role of morphology in language structure and use. This sub-clustering within the red cluster provides a more nuanced understanding of the diverse research directions within the specific theme of complex word formation.

To further advance the understanding of complex word formation, it is essential to delineate specific research questions that build upon the three sub-clusters identified within the prominent red cluster. The following research questions are proposed to guide future investigations. For instance, as for the sub-cluster Cl-1.1, we can consider the specific questions, such as (a) to what extent does masked priming with morphologically related primes facilitate (or inhibit) the processing of complex words, and how does this priming effect vary across different types of morphological relations (e.g., derivation vs. compounding); (b) how does morphological awareness, as measured through various tasks (e.g., morphological judgement, decomposition), correlate with reading comprehension abilities, and does this relationship differ across individuals with varying levels of language proficiency or different language backgrounds; and (c) does morphological decomposition, the process of breaking down complex words into their constituent morphemes, occur automatically during word recognition, or is it a strategic process that is employed selectively depending on task demands and individual differences?

Next, for the sub-cluster Cl-1.2, one may interest in analyzing (a) how does morphological priming, using morphologically related words as primes, influence reading comprehension, and does this effect vary depending on the type of reading materials (e.g., narrative vs. expository texts) or the reader’s age and reading skill level; (b) what is the relationship between morphological awareness and reading fluency, and how does this relationship develop over time in children

learning to read; and (c) how does cross-linguistic variation in morphological structure affect reading comprehension processes, and what strategies do bilingual or multilingual readers employ to navigate the complexities of different morphological systems? Lastly, for the sub-cluster Cl-1.3, one can put attention on (a) how does competition between different morphological processes (e.g., derivation vs. compounding) influence word formation and comprehension, and what factors determine the resolution of such competition; (b) to what extent does semantic transparency, the degree to which the meaning of a complex word is predictable from its constituent morphemes, affect word processing and acquisition, and how does this vary across different types of complex words and different language learners; and (c) how does morphology interact with syntax in the processing and interpretation of complex sentences, and how do these interactions contribute to overall sentence comprehension?

Table 1.
Prominent Cluster of the Most Important Keywords

Cluster	N	(%)	Color in Figure 9	Itemization
1	24	25.5%	Red	affixation; agreement; bilingualism; competition; compound words; compounding; construction morphology; derivation; etymology; French; inflection; masked priming; morphological awareness; morphological decomposition; morphological processing; morphology; priming; reading comprehension; reduplication; semantic transparency; syntax; typology; word formation; word reading
2	22	23.4%	Green	complex morphology; computational linguistics; computer aided language translation; English; learning systems; linguistics; morphological analysis; morphological complexity; morphological features; natural language processing; natural language processing systems; performance; semantics; sentiment analysis; Spanish;

Cluster	N	(%)	Color in Figure 9	Itemization
3	20	21.3%	Blue	speech perception; speech recognition; syntactics adolescent; adult; cognition; decomposition; eye movements; hearing; language; lexical decision; middle aged; pattern recognition; psycholinguistics; reaction time; reading; recognition; recognition (psycholinguistics); visual word recognition; vocabulary; word processing; word recognition
4	14	14.9%	Yellow	accuracy; aphasia; clinical article; comprehension; controlled study; dyslexia; Hebrew; language processing; memory; orthography; production; spelling; task performance; writing
5	9	9.6%	Purple	child; child language; inflectional morphology; language development; language test; learning; phonetics; procedures; speech
6	5	5.3%	Sky Blue	distributed morphology; phonology; polysynthesis; stress; wordhood

In addition to Cluster 1, Table 1 also provides specific breakdown of keywords within Cluster 2. Comprising 22 keywords (23.4% of the total), this cluster highlights the significant focus on language processing and acquisition with this research domain. The key words encompass a range of topics related to how complex words are learned, processed, and utilized in language comprehension and production. Terms like “morphological complexity,” “morphological features,” and “natural language processing” indicate an interest in understanding the computational aspects of complex word representation and processing. Furthermore, the inclusion of “semantics,” “speech perception,” and “speech recognition” suggests investigations into the phonetic and semantic dimensions of complex words and their role in spoken language understanding. This cluster, therefore, reflects other facet of approach to investigating the complexities of word formation, encompassing both theoretical and applied perspective on language processing and acquisition.

A closer examination of the keywords within Cluster 2 reveals potential sub-clusters based on shared themes and research foci. One distinct sub-cluster (Cl-2.1) centers around computational linguistic and natural language processing, as evidenced by term like “complex morphology,” “computational linguistics,” “computer aided language translation,” and “natural language processing systems.” This sub-cluster suggests a growing interest in applying computational methods and technologies to analyze and model the complexities of morphological structure and processing. Another sub-cluster (Cl-2.2) focuses on the learning and acquisition of complex morphology, as indicated by keywords like “learning systems,” “morphological analysis,” and “performance.” This sub-cluster highlights the importance of understanding how learners acquire and utilize morphological knowledge in language learning, with implications for language pedagogy and assessment. Furthermore, the inclusion of “English” and “Spanish” (Cl-2.3) suggests cross-linguistic investigations into the acquisition and processing of complex words, while the presence of “semantics” and “syntactics” points to research exploring the interface of morphology with other linguistic domains. This sub-clustering within the green cluster provides a more nuanced perspective on the diverse research directions within the theme of language processing and acquisition in complex word formation.

Moreover, based on the three sub-clusters identified within the green cluster, the following research question are proposed to guide future investigations. For the sub-cluster Cl-2.1, we can consider questions such as (a) how can computational models be developed to accurately simulate the processing of complex morphology in different languages, taking into account cross-linguistic variations in morphological structure and processing strategies; (b) can computer-aided language translation systems be improved by incorporating more sophisticated representations of morphological complexity, and how can these systems be optimized to handle the challenges posed by morphologically rich languages; and (c) how can natural language processing systems be leveraged to automatically identify and analyze morphological features in large corpora of text data, and what are the

potential applications of such analyses in fields like linguistics and education?

Thereafter, for sub-cluster Cl-2.2, one can put attention on (a) what are the most effective instructional strategies for teaching complex morphology to language learners, and how can these strategies be adapted to different learning context and learner populations; (b) how does the acquisition of complex morphology differ across individuals with varying language backgrounds (e.g., monolingual vs. bilingual learners) and learning styles, and what factors contribute to these individual differences; and (c) how can we accurately assess learners' understanding and application of complex morphology, and what are the most reliable and valid measures for evaluating morphological competence in different languages? Lastly, for the sub-cluster Cl-2.3, several research questions can be investigated, for instance (a) how does morphological complexity interact with semantic processing, and to what extent does morphological structure influence the interpretation of word meaning in different context; (b) how do syntactic structures influence the processing and interpretation of complex morphology, and what are the cognitive mechanisms that mediate the interaction between morphology and syntax in sentence comprehension; and (c) what is the role of morphology in speech perception and speech recognition, and how do morphological cues contribute to the accurate identification and segmentation of words in spoken language?

Besides the two major clusters aforementioned above, Table 1 also presents the third most prominent cluster (blue cluster or cluster 3). This cluster, comprising 20 keywords (21.3% of the total), focuses primarily on the cognitive processes involved in recognizing and processing complex words. The keywords highlight various aspects of word recognition, including “visual word recognition,” “word processing,” and “lexical decision.” The inclusion of terms like “eye movements” and “reaction time” suggests a strong emphasis on experimental methodologies employed to investigate the temporal dynamics of word recognition. Moreover, the presence of “cognition,” “psycholinguistics,” and “pattern recognition” indicates a broader

recognition, with implications for models of lexical access and retrieval. Furthermore, the inclusion of “adolescent,” “adult,” and “middle aged” (Cl-3.3) suggests investigations into the developmental trajectory of word recognition abilities across the lifespan. This sub-clustering within blue cluster, at least, provides a more nuanced perspective on the diverse research directions within the broader theme of cognitive processing in complex word recognition.

To further refine our understanding of the cognitive processes involved in complex word recognition, it is essential to formulate specific research questions that delve into the intricacies of visual processing, cognitive mechanisms, and developmental trajectories. As for the sub-cluster Cl-3.1, we can consider several important questions, such as (a) how do eye movements during reading reflect the processing of morphologically complex words, and do these patterns differ depending on factors such as word length, morphological structure (e.g., derivation vs. compounding), and reading skill; (b) to what extent does visual word recognition rely on the decomposition of complex words into their constituent morphemes, and how does this process interact with other visual cues, such as letter patterns and word shape; and (c) how does the visual processing of complex words differ across different writing systems (e.g., alphabetic vs. logographic scripts), and what are the implications of these differences for models of visual word recognition?

For the sub-cluster Cl-3.2, we can pay attention on (a) how do cognitive factors, such as attention, working memory, and executive function, influence the recognition and processing of morphologically complex words, and how do these influences vary across individuals and different task demands; (b) does morphological decomposition occur automatically during word recognition, or is it a strategic process that is modulated by factors such as word frequency, semantic transparency, and individual differences in morphological awareness; and (c) how do lexical decision tasks, in which participants judge whether a string of letters is a real word or not, reveal the underlying mechanisms of complex word recognition, and how can these tasks be adapted to investigate specific morphological phenomena? Finally, for

impact on complex word processing. Additionally, “controlled study” and “clinical article” point to the methodological approaches employed in this research area, emphasizing experimental designs and clinical investigations. Within this cluster, a potential sub-cluster emerges around language assessment and intervention, as cluster emerges around language assessment and intervention, as evidenced by keywords like “orthography,” “production,” “spelling,” “task performance,” and “writing.” This sub-cluster suggests a research focus on evaluating and improving language skills related to complex word formation, with implications for language education.

The purple cluster (or Cluster 5), with 9 keywords (9.6%), focuses on language development and acquisition, particularly in children. Keywords like “child,” “child language,” “language development,” and “learning” highlight the importance of understanding how children acquire and process complex words. The inclusion of “inflectional morphology” and “phonetics” suggests investigations into specific aspects of language development related to morphology and phonology. Additionally, “language test” and “procedures” indicate a focus on methodological approaches for assessing and studying language development in children. Within this cluster, a potential sub-cluster emerges around cross-linguistic and cross-cultural perspectives on language development, as evidenced by the inclusion of “speech.” This sub-cluster suggests a research interest in comparing language development trajectories across different languages and cultural contexts, with implications for understanding the universality and variability of language acquisition processes.

The sky-blue cluster (or Cluster 6), with only 5 keywords (5.3%), represents the smallest cluster and focuses on theoretical linguistics and specific morphological phenomena. Keywords like “distributed morphology” and “phonology” indicate a focus on theoretical frameworks and models of morphology and its interaction with phonology. The inclusion of “polysynthesis,” “stress,” and “wordhood” suggests investigations into specific morphological phenomena and their implications for linguistic theory. This cluster, while small, highlights the importance of theoretical and cross-

linguistic perspectives in understanding the complexities of word formation. It suggests a research focus on developing and refining linguistic models that can account for the diverse range of morphological phenomena observed across languages.

Moreover, to further advance our understanding of complex word formation, it is essential to address specific research questions that delve into the cognitive aspect, developmental trajectories, and theoretical foundations of this domain. Based on the Clusters 4, 5, and 6, the following research questions are proposed to guide future investigations. For Cluster 4, we can consider questions such as (a) how do individuals with aphasia or dyslexia process morphologically complex words, and what are the underlying cognitive mechanisms that contribute to their difficulties with word recognition and comprehension; (b) to what extent can targeted interventions improve the processing and production of complex words in individuals with language disorders, and what are the most effective strategies for enhancing morphological awareness and language skills in these populations; and (c) how does the processing of complex words differ across individuals with varying levels of language proficiency or different language backgrounds, and what are the cognitive and linguistic factors that contribute to these differences?

As for the Cluster 5, one may put attention on (a) what are the developmental milestones in the acquisition of complex word formation, and how do these milestones vary across different languages and cultural contexts; (b) how do children with language delays or disorders acquire and process complex words, and what are the specific challenges they face in mastering morphological structures and rules; and (c) what are the most effective methods for assessing children's understanding and use of complex morphology, and how can these assessments be used to identify potential language difficulties and inform intervention strategies? Lastly, for the Cluster 6, several questions can be further explored, for instance (a) how can theoretical frameworks like Distributed Morphology account for the diverse range of morphological phenomena observed across languages, and what are the implications of these frameworks for our

understanding of the nature of language and the human mind; (b) what is the role of phonology in complex word formation, and how do phonological processes interact with morphological processes to shape the structure and sound of words; and (c) how do specific morphological phenomena, such as polysynthesis, stress patterns, and wordhood criteria, vary across languages, and what are the implications of these variations for linguistic typology and language universals? At least, by addressing these research questions within all clusters, future morphological studies can contribute to a more comprehensive understanding of complex word formation.

DISCUSSION

This scientometric investigation into complex word formation research reveals a dynamic field (2014 – 2024). The upward trend in publications, despite fluctuations, reflects growing interest in this area, potentially driven by factors like increased computational resources and heightened awareness of morphology's role in language acquisition, as implied in previous notable works (e.g., Ciaccio et al., 2023; Clahsen & Jessen, 2020; Plag, 2016). The diverse distribution of publications across various journals and institutions underscores the field's nature, drawing upon insights from cognitive sciences and theoretical linguistics. In Figure 10, the overlay visualization further illustrates this dynamism by mapping the evolution of key themes over time. The shift in color from blue (representing earlier years) to yellow and green (representing later years) indicates a progression in research focus. Specifically, we observe a growing emphasis on topics related to language processing, acquisition, and cognitive mechanisms. This temporal shift aligns with the increasing interest in cognitive underpinnings of complex word processing, as noted in the analysis of reputable journal publishers. Correspondingly, Figure 11 provides a density visualization of keywords occurrences, with warmer colors (reds and yellows) indicating higher frequency. The central positioning of "morphology" confirms its status as the core concept within the field, while the prominence of terms like "compounding" and "masked priming" reflects the significant research focus on specific

morphological processes and their cognitive underpinnings. Furthermore, the interconnectedness of these themes, as depicted by the network links, underscores the integrated nature of complex word research, where advancements in one area often inform and influence others.

Concerning the lexical network analysis towards all notable keywords within the analyzed period, Cluster 1, centering on fundamental concepts like “morphology,” “word formation,” and specific processes like “derivation” and “compounding,” highlights the core of the field. This aligns with Plag (2020) who emphasizes the importance of understanding both the rule-governed nature and the creativity of inherent in complex word formation (cf. Nugraha, 2022, 2023, 2024b, 2024f). However, the cluster also reveals a potential bias towards certain morphological processes, with less emphasis on less-studied phenomena like conversion or blending. Future research should strive for a more balanced exploration of diverse morphological processes across languages. Additionally, Clusters 2 and 3 shifts focus to language processing and acquisition. The emphasis on “reading,” “comprehension,” and “language development” in Cluster 2 reflects the growing body of research on how complex words are learned and used (cf. Clahsen & Jessen, 2019, 2020; Uygun & Clahsen, 2021). Cluster 3 delves into the cognitive mechanisms underlying word recognition, with “eye movements,” “cognition,” and “reaction time” suggesting a focus of experimental methodologies (e.g., Deutsch et al., 2021; Ginestet et al., 2021; Lahoud et al., 2024). However, a critical observation for this cluster is the limited attention to individual background or cognitive abilities. Future work should investigate how factors like bilingualism or working memory capacity influence complex word processing. Also, Cluster 4, 5, and 6 touch upon more specialized areas. The focus on “aphasia,” “dyslexia,” and “controlled study” in Cluster 4 highlights the clinical relevance of complex word research (e.g., Güven, 2024; Vender et al., 2017, 2021). Cluster 5, with “child language” and “language development,” emphasizes the importance of understanding how children acquire morphological knowledge (e.g., Ginestet et al., 2021; Levesque et al., 2019; Levesque &

Deacon, 2022). The smallest cluster, with “distributed morphology” and “phonology,” points to the theoretical underpinnings of the field. A critical observation is the limited integration between these specialized areas and the core clusters. Future research should bridge these gaps, for instance, by investigating how theoretical models of morphology can inform the development of interventions for individuals with language disorders.

From a pedagogical perspective, these findings underscore the need for explicit instruction in morphology, particularly for complex word formation. Teaching learners to analyze morphemes, understand their meanings, and apply morphological rules can enhance vocabulary acquisition, reading comprehension, and overall language proficiency. As for the vocabulary acquisition, by recognizing the constituent morphemes within complex words, learners can decipher the meaning of unfamiliar words based on their knowledge of morpheme meanings. For instance, encountering the word “unbreakable” can be readily understood if learners know the prefix “un-” signifies negation, the root “break” refers to the act of separating, and the suffix “-able” denotes possibility (see also Audring et al., 2017; Lieber & Plag, 2022). This morphological awareness facilitates the acquisition of new vocabulary by enabling learners to infer meaning from word structure, rather than relying solely on rote memorization. Furthermore, in line Booi (2017) and Booi & Audring (2018), understanding morphological processes like derivation and compounding allows learners to generate new words and expand their lexical repertoire. For example, knowing the suffix “-ness” can be added to adjective to form nouns allows learners to create words like “happiness” or “sadness.” This generative capacity empowers learners to actively construct meaning and expand their vocabulary through morphological analysis.

As for the reading comprehension, morphological awareness plays a crucial role in reading comprehension by enabling readers to decode unfamiliar words and access their meanings effectively. When encountering a complex word like “reforestation,” a reader with morphological awareness can break it down into its constituent

morphemes: /re-/ ‘again’, /forest/ ‘a wooden area’, and ‘-ation/ ‘the process of’. This decomposition process facilitates quick and accurate word recognition, which in turn supports fluent reading and comprehension, as implied in a notable study of Booij (2018). Moreover, understanding the morphological relationships between words can aid in inferring meaning from context and resolving ambiguity. For instance, recognizing the shared root in “transport” and “portable” can help readers understand the underlying concept of movement and apply it to different contexts. This ability to analyze morphological structure enhances reading comprehension by facilitating word recognition, vocabulary development, and inferential reasoning.

In addition, as for the overall language proficiency, morphological awareness contributes to overall language proficiency by enhancing both receptive and productive language skills, as concluded by Kraut (2015) and Mulder et al. (2022). By understanding the building blocks of words, learners can more effectively decode and comprehend spoken and written language, leading to improved listening and reading skills (Fejzo, 2016; Kraut, 2015). Moreover, morphological knowledge supports accurate and nuanced language production, enabling learners to generate grammatically correct and semantically appropriate words and sentences (Jiang & Kuo, 2019). For instance, understanding the rules of affixation allows learners to produce correct verb forms like “walked” or “running,” while knowledge of compounding enables them to create novel noun phrases like “sun-dried tomatoes” or “skyscraper.” This ability to manipulate morphemes and apply morphological rules enhances overall language proficiency by facilitating both comprehension and production across different modalities.

However, traditional grammar instruction often neglects morphology, focusing primarily on syntax. The neglect stems from a variety of factors, including the historical dominance of syntactic theories in linguistic scholarship and the practical challenges of teaching morphology in a comprehensive and engaging manner. Contrary to the findings of Crosson & Moore (2017) and Zhang et al.,

(2023), Traditional grammar instruction often prioritizes sentence-level analysis, emphasizing the rules of sentence structure and the relationships between phrases and clauses. While syntax undoubtedly play a crucial role in language comprehension and production, as documented in Matveeva et al. (2018)'s study, the relative neglect of morphology can limit learners' ability to fully grasp the complexities of word formation and its impact on meaning. This oversight can be particularly detrimental for learners of languages with rich morphological systems, where a deep understanding of morphology is essential for both comprehension and accurate language production. By overlooking the intricacies of word structure, traditional grammar instruction may inadvertently hinder learners' ability to develop a sophisticated understanding of language and its related application.

Echoing the suggestions of Booi (2020) and Nation (2023), a shift towards a more morphologically-rich pedagogy is crucial, particularly in contexts where learners encounter morphologically complex languages. Such a shift would entail a more balanced approach to grammar instruction, where morphology is given equal consideration alongside syntax and other linguistic domains. In line with the work of McDonald (2017) and Soares et al. (2020), this would involve incorporating explicit instruction on morphological processes, such as derivation, compounding, and inflection, and providing learners with opportunities to analyze and manipulate morphemes in meaningful contexts. A morphologically-rich pedagogy would also emphasize the interconnectedness of morphology with other aspects of language, such as phonology, semantics, and pragmatics (cf. Crosson & Moore, 2017; Eryiğit et al., 2023; Moats, 2019). By fostering a deeper understanding of word formation, this pedagogical approach can empower learners to become more effective communicators and critical thinkers, capable of navigating the complexities of language with greater confidence and accuracy. In essence, a shift towards a more morphologically-rich pedagogy is crucial for equipping learners with the necessary tools to succeed in an increasingly interconnected and multilingual world.

CONCLUSION

From 2014 to 2024, research on complex word formation has expanded into a dynamic field. Growing interest now centers on cognitive linguistic mechanisms and the pedagogical implications of morphological processing. An analysis of bibliographic data and keyword co-occurrence networks identifies six distinct thematic clusters. These clusters collectively reveal the field's core concepts, primary research interests, and evolving trends. Spanning foundational elements such as morphology and word formation, this investigation also addresses more intricate issues of language processing, acquisition, and cognitive foundations. The study therefore offers a comprehensive overview of both the current state and potential future directions in complex word formation.

Despite its contributions, this study has limitations. Firstly, the reliance on a single database (Scopus) may have excluded relevant publications indexed elsewhere. Secondly, the analysis focused primarily on keywords, potentially overlooking nuanced thematic information embedded within full texts. Substantively, the study primarily provides a descriptive account of the field, with limited capacity for causal inferences or predictive modelling. Future research could address these limitations by incorporating multiple databases, employing more text analysis techniques, and exploring longitudinal trends to provide a more comprehensive picture of the field's progression. Additionally, there is also a need for more integrative models that bridge the gap between linguistic theory, cognitive science, and educational practices.

DECLARATION OF AI AND AI-ASSISTED TECHNOLOGIES

During the preparation of this work the authors used Grammarly (app.grammarly.com) for optimizing language and readability. The authors have reviewed and edited the content as needed and take full responsibility for the content of the publication after the use of this tool/service.

REFERENCES

- Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4), 959–975. <https://doi.org/10.1016/j.joi.2017.08.007>
- Audring, J. (2022). Advances in Morphological Theory: Construction Morphology and Relational Morphology. *Annual Review of Linguistics*, 8(1), 39–58. <https://doi.org/10.1146/annurev-linguistics-031120-115118>
- Audring, J., Booij, G., & Jackendoff, R. (2017). Menscheln, kibbelen, sparkle Verbal diminutives between grammar and lexicon. *Linguistics in the Netherlands*, 34(1), 1–15. <https://doi.org/10.1075/avt.34.01aud>
- Baayen, R. H., Schreuder, R., & Sproat, R. (2000). Morphology in the Mental Lexicon: A Computational Model for Visual Word Recognition. In F. Van Eynde & D. Gibbon (Eds.), *Lexicon Development for Speech and Language Processing* (pp. 267–293). Kluwer Academic Publishers. https://doi.org/10.1007/978-94-010-9458-0_9
- Baerman, M., Brown, D., & Corbett, G. G. (2017). Morphological complexity. In *Morphological Complexity*. <https://doi.org/10.1017/9781316343074>
- Beard, R., & Volpe, M. (2005). Lexeme-Morpheme Base Morphology. In P. Štekauer & R. Lieber (Eds.), *Handbook of Word-Formation. Studies in Natural Language and Linguistic Theory*, vol 64 (pp. 189–205). https://doi.org/10.1007/1-4020-3596-9_8
- Blevins, J. P. (2006). Word-based morphology. *Journal of Linguistics*, 42(3), 531–573. <https://doi.org/10.1017/S0022226706004191>
- Booij, G. (2014). Language use and the architecture of grammar: A construction morphology perspective | Jezična uporaba i ustroj gramatike: Perspektiva konstrukcijske morfologije. *Suvremena Lingvistika*, 40(78), 193–212.
- Booij, G. (2015). Word-formation in construction grammar. In *Word-Formation: An International Handbook of the Languages of Europe* (Vol. 1). <https://doi.org/10.1515/9783110246254-014>
- Booij, G. (2017). Inheritance and motivation in construction morphology. In *Defaults in Morphological Theory*. <https://doi.org/10.1093/oso/9780198712329.003.0002>
- Booij, G. (2018). Phonology and the Dutch-Polish connection: A personal memoir. In *Phonology, Fieldwork and Generalizations*.
- Booij, G. (2020). Principles of word formation. In *The Cambridge Handbook of Germanic Linguistics*. <https://doi.org/10.1017/9781108378291.012>
- Booij, G., & Audring, J. (2018). Category change in construction morphology. In *Constructional Approaches to Language* (Vol. 20). <https://doi.org/10.1075/cal.20.08boo>

- Nugraha, D. S. (2026). Mapping the morphology of complex words: A scientometric and pedagogical perspective. *JEELS (Journal of English Education and Linguistics Studies)*, 13(1), 389–429.
- Boyé, G. (2018). Lexemes, categories and paradigms: What about cardinals? In *The Lexeme in Descriptive and Theoretical Morphology*. <https://doi.org/10.5281/zenodo.1406989>
- Casalis, S., Commissaire, E., & Duncan, L. G. (2015). Sensitivity to morpheme units in English as L2 word recognition. *Writing Systems Research*, 7(2), 186–201. <https://doi.org/10.1080/17586801.2014.976165>
- Ciaccio, L. A., Bürki, A., & Clahsen, H. (2023). Inter-individual variability in morphological processing: An ERP study on German plurals. *Journal of Neurolinguistics*, 67. <https://doi.org/10.1016/j.jneuroling.2023.101138>
- Clahsen, H., & Jessen, A. (2019). Do bilingual children lag behind? A study of morphological encoding using ERPs. *Journal of Child Language*, 46(5), 955–979. <https://doi.org/10.1017/S0305000919000321>
- Clahsen, H., & Jessen, A. (2020a). Variability and its limits in bilingual word recognition: A morphological priming study. *Mental Lexicon*, 15(2), 295–329. <https://doi.org/10.1075/ml.20013.cla>
- Clahsen, H., & Jessen, A. (2020b). Variability and its limits in bilingual word recognition: A morphological priming study. *Mental Lexicon*, 15(2), 295–329. <https://doi.org/10.1075/ml.20013.cla>
- Crosson, A. C., & Moore, D. (2017). When to Take Up Roots: The Effects of Morphology Instruction for Middle School and High School English Learners. *Reading Psychology*, 38(3), 262–288. <https://doi.org/10.1080/02702711.2016.1263699>
- Deutsch, A., & Kuperman, V. (2019). Formal and semantic effects of morphological families on word recognition in Hebrew. *Language, Cognition and Neuroscience*, 34(1), 87–100. <https://doi.org/10.1080/23273798.2018.1513541>
- Deutsch, A., Velan, H., Merzbach, Y., & Michaly, T. (2021). The dependence of root extraction in a non-concatenated morphology on the word-specific orthographic context. *Journal of Memory and Language*, 116. <https://doi.org/10.1016/j.jml.2020.104182>
- Dressler, W. U. (2015). Allomorphy. *Word-Formation: An International Handbook of the Languages of Europe*, 1, 500–516. <https://doi.org/10.1515/9783110246254-029/HTML>
- Engemann, U. M., & Plag, I. (2021). Phonetic reduction and paradigm uniformity effects in spontaneous speech. *Mental Lexicon*, 16(1), 165–198. <https://doi.org/10.1075/ml.20023.eng>
- Eryiğit, G., Bektaş, F., Ali, U., & Dereli, B. (2023). Gamification of complex morphology learning: the case of Turkish. *Computer Assisted Language Learning*, 36(8), 1421–1449. <https://doi.org/10.1080/09588221.2021.1996396>

- Nugraha, D. S. (2026). Mapping the morphology of complex words: A scientometric and pedagogical perspective. *JEELS (Journal of English Education and Linguistics Studies)*, 13(1), 389–429.
- Fejzo, A. (2016). The contribution of morphological awareness to the spelling of morphemes and morphologically complex words in French. *Reading and Writing*, 29(2), 207–228. <https://doi.org/10.1007/s11145-015-9586-8>
- Fradin, B. (2020). Characterizing derivational paradigms. *Empirical Approaches to Linguistic Theory*, 16, 49–84. https://doi.org/10.1163/9789004433410_004
- Gahl, S., & Plag, I. (2019). Spelling errors in english derivational suffixes reflect morphological boundary strength: A case study. *Mental Lexicon*, 14(1), 1–36. <https://doi.org/10.1075/ml.19002.gah>
- Ginestet, E., Shadbolt, J., Tucker, R., Bosse, M.-L., & Deacon, S. H. (2021). Orthographic learning and transfer of complex words: insights from eye tracking during reading and learning tasks. *Journal of Research in Reading*, 44(1), 51–69. <https://doi.org/10.1111/1467-9817.12341>
- Goldin, M., López Otero, J. C., & Hur, E. (2023). How frequent are these verbs? *Isogloss. Open Journal of Romance Linguistics*, 9(2), 1–25. <https://doi.org/10.5565/rev/isogloss.194>
- Güven, S. (2024). Dyslexia in Turkish: A Complex Morphological System With Highly Transparent Orthography. In *Dyslexia in Many Languages: Insights, Interactions and Interventions*. <https://doi.org/10.4324/9781003408277-17>
- Hood, W. W., & Wilson, C. S. (2001). The literature of bibliometrics, scientometrics, and informetrics. *Scientometrics*, 52(2), 291–314. <https://doi.org/10.1023/A:1017919924342>
- Hüning, M., & Booij, G. (2014). From compounding to derivation the emergence of derivational affixes through “constructionalization.” *Folia Linguistica*, 48(2), 579–604. <https://doi.org/10.1515/flin.2014.019>
- Jiang, Y.-L. B., & Kuo, L.-J. (2019). The development of vocabulary and morphological awareness: A longitudinal study with college EFL students. *Applied Psycholinguistics*, 40(4), 877–903. <https://doi.org/10.1017/S014271641900002X>
- Körtvélyessy, L., & Štekauer, P. (2020). Complex Words: Advances in Morphology. In *Complex Words: Advances in Morphology*. <https://doi.org/10.1017/9781108780643>
- Kotowski, S., & Plag, I. (2023). *The Semantics of Derivational Morphology* (S. Kotowski & I. Plag, Eds.). De Gruyter. <https://doi.org/10.1515/9783111074917>
- Kotzer, M., Kirby, J. R., & Heggie, L. (2021). Morphological Awareness Predicts Reading Comprehension in Adults. *Reading Psychology*, 42(3), 302–322. <https://doi.org/10.1080/02702711.2021.1888362>

- Kraut, R. (2015). The relationship between morphological awareness and morphological decomposition among English language learners. *Reading and Writing*, 28(6), 873–890. <https://doi.org/10.1007/s11145-015-9553-4>
- Lahoud, H., Eviatar, Z., & Kreiner, H. (2024). Eye-movement patterns in skilled Arabic readers: effects of specific features of Arabic versus universal factors. *Reading and Writing*, 37(5), 1079–1108. <https://doi.org/10.1007/s11145-023-10424-4>
- Levesque, K. C., Breadmore, H. L., & Deacon, S. H. (2021). How morphology impacts reading and spelling: advancing the role of morphology in models of literacy development. *Journal of Research in Reading*, 44(1), 10–26. <https://doi.org/10.1111/1467-9817.12313>
- Levesque, K. C., & Deacon, S. H. (2022). Clarifying links to literacy: How does morphological awareness support children’s word reading development? *Applied Psycholinguistics*, 43(4), 921–943. <https://doi.org/10.1017/S0142716422000194>
- Levesque, K. C., Kieffer, M. J., & Deacon, S. H. (2019). Inferring Meaning From Meaningful Parts: The Contributions of Morphological Skills to the Development of Children’s Reading Comprehension. *Reading Research Quarterly*, 54(1), 63–80. <https://doi.org/10.1002/rrq.219>
- Lieber, R. (2017). Derivational Morphology. In *Oxford Research Encyclopedia of Linguistics*. Oxford University Press. <https://doi.org/10.1093/acrefore/9780199384655.013.248>
- Lieber, R., & Plag, I. (2022). The semantics of conversion nouns and -ing nominalizations: A quantitative and theoretical perspective. *Journal of Linguistics*, 58(2), 307–343. <https://doi.org/10.1017/S0022226721000311>
- Matveeva, N. N., Fatkhutdinova, V. G., & Khromov, S. S. (2018). Lingo-didactic potential derivation syntagmatics in Russian language. *Journal of Social Sciences Research*, 2018(Special Is), 166–169. <https://doi.org/10.32861/jssr.spi5.166.169>
- McDonald, E. (2017). The challenge of a “lacking” language: The historical development of Chinese grammatics. *Chinese Language and Discourse*, 8(2), 244–265. <https://doi.org/10.1075/cld.00005.mcd>
- Moats, L. (2019). Phonics and spelling: Learning the structure of language at the word level. In *Reading Development and Difficulties: Bridging the Gap Between Research and Practice*. https://doi.org/10.1007/978-3-030-26550-2_3
- Mulder, E., van der Graaf, J., Verhagen, V., Mos, M., & Droop, M. (2022). Developing a morphological awareness intervention through inquiry-based learning. *Journal of Research in Reading*, 45(3), 468–487. <https://doi.org/10.1111/1467-9817.12405>

- Nugraha, D. S. (2026). Mapping the morphology of complex words: A scientometric and pedagogical perspective. *JEELS (Journal of English Education and Linguistics Studies)*, 13(1), 389–429.
- Nation, P. (2023). Word Parts and Language Learning. *JALT Journal*, 45(2), 235–245. <https://doi.org/10.37546/JALTJJ45.2-3>
- Nugraha, D. S. (2022). Identifying Light Verb Constructions in Indonesian: A Direct Translation Approach. *International Journal of Language and Literary Studies*, 4(3), 298–311. <https://doi.org/10.36892/ijlls.v4i3.1042>
- Nugraha, D. S. (2023). Morphosemantic Features of Mengambil ‘Take’ in the Light Verb Constructions of Indonesian. *International Journal of Linguistics and Translation Studies*, 4(3), 120–138. <https://doi.org/10.36892/ijlts.v4i3.327>
- Nugraha, D. S. (2024a). A Corpus-Based Study of Memberi ‘Give’ Light Verb Constructions. *International Journal of Society, Culture and Language*, 12(2), 104–120. <https://doi.org/10.22034/ijscsl.2024.2023112.3389>
- Nugraha, D. S. (2024b). A Morphological Analysis of the Indonesian Suffixation: A Look at the Different Types of Affixes and Their Semantic Changes. *GEMA Online Journal of Language Studies*, 24(4), 109–132. <https://doi.org/10.17576/gema-2024-2404-07>
- Nugraha, D. S. (2024c). Analyzing Prefix /me(N)-/ in the Indonesian Affixation: A Corpus-Based Morphology. *Theory and Practice in Language Studies*, 14(6), 1697–1711. <https://doi.org/10.17507/tpls.1406.10>
- Nugraha, D. S. (2024d). Analyzing the Derivational Verb of Indonesian Based on the Derivational Morphology. *South Asian Research Journal of Arts, Language and Literature*, 6(01), 1–11. <https://doi.org/10.36346/sarjall.2024.v06i01.001>
- Nugraha, D. S. (2024e). Quantitative Analysis within Language Studies: An Analytical Views Based on the Bibliometrics Method. *Script Journal: Journal of Linguistics and English Teaching*, 9(2), 16–34. <https://doi.org/10.24903/sj.v9i2.1695>
- Nugraha, D. S. (2024f). Some Notes on Indonesian Word Formation: A Study Based on the Derivational Morphology Approach. *South Asian Research Journal of Humanities and Social Sciences*, 6(01), 20–31. <https://doi.org/10.36346/sarjhss.2024.v06i01.004>
- Nugraha, D. S. (2025). A decade of research on word formation in foreign language education: A scientometric mapping (2014–2024). *Journal on English as a Foreign Language*, 15(2), 485–516. <https://doi.org/10.23971/jefl.v15i2.9841>
- Olsen, S. (2015). Composition. *Word-Formation: An International Handbook of the Languages of Europe*, 1, 364–386. <https://doi.org/10.1515/9783110246254-022/HTML>

- Nugraha, D. S. (2026). Mapping the morphology of complex words: A scientometric and pedagogical perspective. *JEELS (Journal of English Education and Linguistics Studies)*, 13(1), 389–429.
- Plag, I. (2014). Phonological and phonetic variability in complex words: An uncharted territory. *Italian Journal of Linguistics*, 26(2), 209–228.
- Plag, I. (2016). English. In *Word-Formation: An International Handbook of the Languages of Europe* (Vol. 4).
- Plag, I. (2019). Word-Formation in English, Second Edition. In *Word-Formation in English, Second Edition*. <https://doi.org/10.1017/9781316771402>
- Plag, I. (2020). Productivity and the Mental Lexicon. In *Language in Use: A Reader*.
- Rolle, N. (2023). Polysynthesis, stress uniformity, and the opposite-to-anchor stress system in Ese Ejja. In *Word Prominence in Languages with Complex Morphologies*. <https://doi.org/10.1093/oso/9780198840589.003.0012>
- Schmidtke, D., Van Dyke, J. A., & Kuperman, V. (2021). CompLex: an eye-movement database of compound word reading in English. *Behavior Research Methods*, 53(1), 59–77. <https://doi.org/10.3758/s13428-020-01397-1>
- Soares, D., Carvalho, P., & Dias, D. (2020). Designing Learning Outcomes in Design Higher Education Curricula. *International Journal of Art and Design Education*, 39(2), 392–404. <https://doi.org/10.1111/jade.12286>
- Sooryamoorthy, R. (2020). *Scientometrics for the Humanities and Social Sciences*. Routledge. <https://doi.org/10.4324/9781003110415>
- Stump, G. (2020). 9 - Complex Exponents. In *Complex Words: Advances in Morphology*. <https://doi.org/10.1017/9781108780643.010>
- ten Hacken, P. (2019). Morphology in Jackendoff's Parallel Architecture. In *SpringerBriefs in Linguistics*. https://doi.org/10.1007/978-3-030-18009-6_3
- Uygun, S., & Clahsen, H. (2021). Morphological processing in heritage speakers: A masked priming study on the Turkish aorist. *Bilingualism*, 24(3), 415–426. <https://doi.org/10.1017/S1366728920000577>
- van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523–538. <https://doi.org/10.1007/s11192-009-0146-3>
- van Eck, N. J., & Waltman, L. (2023). *VOSviewer* (1.6.20). Universiteit Leiden.
- Vender, M., Hu, S., Mantione, F., Savazzi, S., Delfitto, D., & Melloni, C. (2021). Inflectional morphology: evidence for an advantage of bilingualism in dyslexia. *International Journal of Bilingual Education and Bilingualism*, 24(2), 155–172. <https://doi.org/10.1080/13670050.2018.1450355>

Nugraha, D. S. (2026). Mapping the morphology of complex words: A scientometric and pedagogical perspective. *JEELS (Journal of English Education and Linguistics Studies)*, 13(1), 389–429.

Vender, M., Mantione, F., Savazzi, S., Delfitto, D., & Melloni, C. (2017). Inflectional morphology and dyslexia: Italian children's performance in a nonword pluralization task. *Annals of Dyslexia*, 67(3), 401–426. <https://doi.org/10.1007/s11881-017-0152-8>

Waltman, L., & van Eck, N. J. (2019). *Field Normalization of Scientometric Indicators* (pp. 281–300). https://doi.org/10.1007/978-3-030-02511-3_11

Zhang, J., Zhang, H., Relyea, J. E., Wui, M. G. L., Yan, Y., Nam, R., Enriquez, A., & Kharabi-Yamoto, L. (2023). Orthographic facilitation in upper elementary students: does attention to morphology of complex words enhance the effects? *Annals of Dyslexia*, 73(1), 148–163. <https://doi.org/10.1007/s11881-022-00270-4>