Lexical ambiguity in the mind: theoretical challenges and interdisciplinary approaches
Workshop Proposal at SLE 2025

Keywords - lexical ambiguity, mental lexicon, computational methods, copredication, colexification

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Call for submissions - We invite submissions for 20-minute talks. Preliminary abstracts of 300 words (excluding references) should be sent to the workshop organisers by **14 November 2024** to be included in the workshop proposal. If the workshop proposal is accepted, presenters will be asked to submit a 500-word abstract by 15 January 2025.

Workshop Description

The question of how words with multiple meanings are processed and represented in the mental lexicon has been a recurring topic of investigation over the past thirty years. Despite significant advances, certain aspects remain the subject of considerable debate, and current research highlights the importance of interdisciplinary dialogue in broadening our understanding of lexical ambiguity (Eddington & Tokowicz 2015, Falkum & Vicente 2015, Haber & Poesio 2024, a.o.). Linguists are increasingly interested in evaluating the psychological validity of linguistic theories on lexical ambiguity, while psycholinguists draw on theoretical models to explore various aspects of processing and mental representation of ambiguous words. More recently, computational linguists have begun investigating the extent to which representations learned by computational models encode lexical meaning knowledge, offering new methodological perspectives for both linguistic and psycholinguistic research. The aim of this workshop is to foster collaboration between researchers from different disciplines and address unresolved issues related to lexical ambiguity through a comprehensive approach.

The different types of lexical ambiguity

The different types of ambiguous words have been extensively investigated in linguistic studies (Lyons 1977, Apresjan 1974, Cruse 1986, Copestake & Briscoe 1995, Pustejovsky 1995, a.o.). These types are distinguished based on key properties that define the relationship between the different meanings of ambiguous words, such as the presence of a semantic relationship (polysemy vs. homonymy), the nature of the relationship (metaphor vs. metonymy), and its consistency within the lexicon (episodic vs. regular polysemy). Although defined as categories, ambiguity types have been situated along a continuum ranging from unrelated homonymous meanings (e.g. *bat* 'animal' vs. 'wooden stick') to highly related, typically metonymic, meanings (e.g. *glass* 'container' vs. 'content'), with less related, typically metaphorical, meanings (e.g. *mouse* 'rodent' vs. 'computer device') falling between these two ends. However, some properties of the different types of ambiguity remain uncertain. For instance, the correlation between lexical figure, semantic relatedness, and sense alternation regularity is largely unknown. Similarly, the existence of words with different but contextually compatible meanings, which licence copredication (Asher 2011, Ortega-Andrés & Vicente 2019, Murphy

2021, a.o.), questions the boundaries of polysemy and the extension of the continuum of ambiguity.

Psycholinguistic evidence confirmed the distinction between the major types of ambiguity, revealing differences in lexical processing depending on ambiguity types. When investigating the distinction between homonymous and polysemous words, contrasts between more fine-grained types of ambiguity have been examined as well (Frazier & Rainer 1990, Klein & Murphy 2001, Klepousniotou 2002, Rodd et al. 2002, Pylkkänen et al. 2006, Jager & Cleland 2016, a.o.). Experimental results have shown that homonyms require greater cognitive effort to be processed than irregular polysemes, and even more so when compared to highly regular metonymic words (Klepousniotou & Baum 2007, Klepousniotou et al. 2008, Rabagliati & Snedeker 2013, Brocher et al. 2016, 2018, Yurchenko et al. 2020, Maciejewski et al. 2023). Studies focusing on the less explored parts of the continuum have also highlighted differences in processing depending on the degree of regular polysemy (Lombard et al. 2023), polysemy patterns (Apresjan et al. 2021), or the (in)compatibility of related meanings (Huyghe et al. 2024). Findings from previous studies support a hybrid theoretical model of lexical ambiguity, which still needs to be fully defined (see Haber & Poesio 2024 for an overview). A consensus has emerged regarding the representation of the main types of lexical ambiguity, with separate entries for homonyms, overlapping entries for irregular and metaphorical polysemes, and single, possibly complex, entries for regular and metonymic polysemes. However, little is known about how this tripartition accounts for distinctions among other types of ambiguous words, particularly how rich single entries of regular metonyms should be distinguished from pure monosemy and complex types. The nature and possible variation of the semantic overlap in the case of metaphorical and irregular polysemes are also uncertain and call for further research.

In addition, ambiguity types have been investigated through computational analysis of corpus data. Several studies have explored how sense similarity, as assessed by contextualised language models, aligns with human judgments and reflects the distinction between homonymy and polysemy (Lopukhina et al. 2018, Nair et al. 2020, Trott & Bergen 2021, Haber & Poesio 2021). This emerging field of research offers a promising perspective for evaluating the cognitive validity of lexical ambiguity representations (Cassani et al. 2023), and for minimising the need for costly and time-consuming norming studies (Trott 2024). It further raises methodological questions about how to assess the consistency between LLM knowledge and psychological representations.

Lexical ambiguity and linguistic diversity

Lexical ambiguity is a widespread phenomenon that occurs in comparable ways across languages. The existence of shared polysemy patterns, with varying degrees of realisation depending on both linguistic and cultural factors, has been discussed in theoretical studies (Apresjan 1974, Lehrer 1990, Nunberg & Zaenen 1992) and empirically investigated across a wide range of languages, especially in the case of regular metonymy (Srinivasan & Rabagliati 2015). In parallel, typological studies have focused on shared colexification—the expression of multiple concepts through a single form—as a comparative framework for examining lexical ambiguity from a cross-linguistic perspective (François 2008). Previous studies have sought to explain why certain concept associations are more consistently colexified across languages, highlighting conceptual relatedness as a key explanatory factor (Xu 2020, Brochhagen & Boleda 2022). These two lines of research could be further integrated to explore how similar sense

alternations in different languages (concerning words or polysemy patterns) relate to the continuum of lexical ambiguity, and what insights they provide about semantic relatedness and the ease of word processing.

Furthermore, research on the cognitive aspects of lexical ambiguity, primarily focused on nouns, has overlooked the influence of grammatical properties on the representation and processing of ambiguous words. An experiment involving nouns, verbs, and adjectives in Russian has shown that participants treat differently the literal, metonymic, and metaphorical meanings of words from different parts of speech in a semantic clustering task (Lopukhina et al. 2018). Similarly, the study of lexical ambiguity has paid little attention to the morphological properties of ambiguous words. Prior research has shown that certain polysemy patterns tend to be associated with specific derivational processes, such as the action-result alternation, which is commonly observed among deverbal nouns (e.g., Lehrer 2003, Lieber 2016, Salvadori & Huyghe 2022). However, the complex relationships between lexical forms and meanings require further investigation into how morphological properties specifically influence the cognitive processing of ambiguous words and shape their mental representation.

Research questions

This workshop will bring together researchers interested in the cognitive aspects of lexical ambiguity and will explore these issues from various theoretical and methodological perspectives. Research questions include, but are not limited to, the following:

- To what extent can the different types of lexical ambiguity distinguished in theoretical research be supported by findings from psycholinguistic studies? How does the nature, degree, and regularity of the relationship between word senses impact the processing and representations of ambiguous words? How can the salience and respective importance of these properties in the mental lexicon be assessed?

- How do similarity measures between contextual representations derived from LLMs align with processing differences or speakers' judgments regarding the different types of lexical ambiguity? Can these measures predict behavioural data from psycholinguistic experiments on lexical ambiguity?

- What are the cognitive correlates of linguistic diversity with respect to lexical ambiguity? Are recurrent cases of ambiguity easier to process than language-specific or idiosyncratic cases? Do the frequent colexifications observed among languages correspond to regular polysemies (i.e. systematic associations between semantic types), and do they facilitate the processing of ambiguous words?

- How do the grammatical properties of ambiguous words influence their processing and mental representation? Are the different types of lexical ambiguity similarly processed across different parts of speech? Does the cognitive processing of ambiguous words vary depending on their morphological properties (e.g. simplex vs. complex words, compounds vs. derived words)?

These questions will be addressed through studies on different languages, using various methodological approaches, and exploring a range of theoretical frameworks relevant to the discussed topics.

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