Universität des Saarlandes
Postfach 15 11 50 | 66041 Saarbrücken

Uniwersytet im. Adama Mickiewicza w Poznań
Biuro Obsługi Wydziału Neofilologii UAM
Collegium Novum
al. Niepodległości 4
61 874 Poznań
pok. 116B
Polska

**FR Sprachwissenschaft
und Sprachtechnologie**

Prof. Dr. Bernd Möbius
Phonetik und Phonologie
Campus, Geb. C 7.2
66123 Saarbrücken

moebius@lst.uni-saarland.de
www.lst.uni-saarland.de
T: +49 (0) 681 302 4500

Sekretariat: Cristina Deeg
T: +49 (0) 681 302 2926
F: +49 (0) 681 302 4684
sek-bm@lst.uni-saarland.de

15.8.2023

Review of the doctoral dissertation

Lexical convergence in Polish dialogues

by mgr **Karolina Jankowska**

The dissertation submitted by Karolina Jankowska (KJ) is concerned with the phenomenon known as convergence (or accommodation, alignment, entrainment) in spoken language communication. Convergence refers to the observation that interlocutors tend to become more similar to each other in terms of linguistic choices (structure, vocabulary, etc.) and acoustic-phonetic patterns (speech rate, loudness, pitch) as the spoken interaction evolves. Specifically, KJ focuses on lexical convergence, which she defines as the degree of similarity or repetition of words used by interlocutors in dialogues. The thesis is structured in four major text chapters, each partitioned in several sections, followed by the bibliography and appendices. Chapter I is the general introduction, chapter II presents the theoretical and methodological background, chapter III the empirical work and results, and chapter IV a summary and outlook.

Chapter I introduces the topic, aims, and structure of the thesis and the motivation for KJ's research and offers four hypotheses to be tested throughout the thesis. It formulates specific objectives of the dissertation project and provides a preview of the methodology applied to achieve these goals. As KJ points out, lexical convergence has not been a research topic in previous work on dialogues in Polish (in contrast to acoustic-phonetic convergence) and in particular the methodology of Language Style Matching, a technique for assessing stylistic similarities between speakers that is already established in a few other languages, has not yet been adapted to Polish. An important ingredient of KJ's approach is the curation and analysis of speech corpora. To this end, KJ evaluated the performance of available tools for part-of-speech tagging and developed custom-made programs.

Chapter II provides more detailed background information on convergence in spoken language. This theoretical chapter is suitably structured and covers all relevant facets of this research area, starting with a competent discussion of the two main theories that aim to explain how and why speakers accommodate to each other's speech patterns: the *Communication Accommodation Theory* (CAT), advocated by Giles, and the *Interactive Alignment Model* (IAM), proposed by Pickering and Garrod. The two theories are by no means incompatible but rest on different assumptions about the social and linguistic roots of communicative accommodation and, among other aspects, the degree of consciousness vs. automation underlying convergence behavior. KJ then discusses the linguistic and phonetic levels that are affected by, or subserve, convergence. She introduces the Language Style Matching methodology that she adapted for her empirical work and the resources in terms of speech corpora and annotation and analysis tools. The chapter concludes with a brief review of potential applications of convergence in language and speech technology.

KJ demonstrates her expert knowledge in these areas. However, to my taste, the sections on linguistic resources and language technologies are too detailed and extensive, and not sufficiently focused on the empirical work on which the PhD thesis is based. Admittedly, they do provide a useful overview of available resources for Polish, even though most of them are not directly applicable in the light of the stated research objectives. I would have appreciated it if the connections to, and implications for, KJ's own research had been explained more concretely. One example of this perceived lack of focus is the large Table 4 (p. 36), which contains details of previous work whose relevance in the present context escapes me.

Chapter III on the other hand, with its focus on the resources, methods and tools actually used in the empirical work, is strong and informative and picks up some of the loose ends from chapter II. It starts with a detailed description of the corpus materials recorded in the context of the Harmonia project, the experimental subjects, the various task scenarios, and the impressive range of annotation levels. This is followed by an exposition of the lexical levels of convergence, i.e. formality, collaborative effort, and lexical choice, and of the methodology, specifically Language Style Matching. I believe the degree of granularity of what is presented in these sections is not always ideal. For instance, in Table 6, which extends over 2.5 (!) pages, it would have been more efficient to just list the grammatical categories and a few lexical items for each category. The full list of items, while perhaps informative, could have been relegated to an appendix. I found the sections on the evaluation of computational linguistics tools and their (limited) performance on Polish quite strong and a convincing motivation for KJ's ultimate decision to perform a manual, and thus high-quality, part-of-speech annotation of the corpus data. But again, some of the tables are unnecessarily detailed in the main body of the thesis.

Section 2 of this chapter presents the results of the analysis of lexical convergence. To preempt the main findings: (i) the experimental subjects adjusted the level of formality (greetings, personal addresses) to their own role, to the dialogue interlocutor, and to the communicative task and situation; (ii) convergence was observed on the levels of vocabulary choice and collaborative effort (dialogue length), again as a function of the communicative task. It is especially the task scenarios, judiciously chosen and designed to evoke different degrees of convergence, that facilitated the observation of nuanced and fine-grained facets of lexical convergence behavior. The tasks included joint activities, such as find-the-difference pictures, map tasks, and giving directions, as well as discussions of controversial artwork. The Language Style Matching analysis revealed that the highest degrees of lexical convergence were observed in tasks pertaining to controversy and strong opinions. In this section, I actually found the details in the tables highly useful: in particular, the Polish transcriptions of the

dialogues and their English translations were a perfect complement to the exposition of the findings in the text.

The empirical work presented in chapter III yielded a wealth of interesting results that by and large confirmed the hypotheses formulated at the beginning of the thesis. However, the statistical analysis is restricted to descriptive statistics, i.e., counting frequencies and expressing proportions. What I found missing is formal hypothesis testing, such as tests of statistical significance and effect strength. As it stands, we have a set of numerical trends, some rather strong and others smaller. But we do not know whether the effects of factors such as formality, task, or conversation topic are statistically significant.

Chapter IV summarizes the main findings in the light of the original hypotheses and discusses possible implications for the implementation of technological applications, for instance human-computer dialogue systems and assistive systems. This is of course an active research area, and recent conferences have seen an increased number of pertinent contributions but, as KJ points out, perhaps not yet for the Polish language. The thesis is completed by the bibliography, which has an excellent coverage of relevant work, and a set of appendices that provide details on linguistic corpora and the recording scenarios as well as programming code.

Karolina Jankowska's PhD dissertation is based on her original scientific work, includes novel ideas, is technically sound, and thus meets the requirements for an independent scientific qualification thesis. The research questions are made explicit and they are informed and orientated by the state of the art. The relevant literature has been covered and competently analyzed. The corpus-based and experimental methods generally comply with the current standard in our field. As argued above, the findings should have been corroborated by tests of statistical significance. The results are critically evaluated and the conclusions are well-considered. The thesis is written in excellent scientific English and well-structured and has no substantial copy-editing or other formal deficits.

I recommend acceptance of the doctoral dissertation submitted by Karolina Jankowska and request that the doctoral student be admitted to further stages of the doctoral dissertation.

Saarbrücken, 15.8.2023

Prof. Dr. Bernd Möbius