

Introduction

The volume at hand is an outcome of the workshop on empirical psycholinguistic methods “Slavic Languages in the Black Box”, which took place from September 24 to 26, 2014, at the University of Tübingen and was organized by Slavists from the Universities of Bochum and Tübingen¹. The workshop brought together psycholinguists and Slavists from the Czech Republic, Germany, Great Britain, Norway and Russia.

The idea for this workshop was rooted in our shared experience while conducting psycholinguistic research on Slavic languages. On the one hand, we all face particular methodological problems that seem to be at least partially specific to the experimental investigation of Slavic languages. On the other hand, regardless of these difficulties, we appreciate the benefit of this research, not only for Slavic linguistics but also for psycholinguistics in general. Thus, the aim of the workshop was to discuss these and similar issues with other experts on this field. The multifaceted projects and studies presented at the workshop and our intense discussions of methodological problems attested to the high demand for this type of scientific exchange.

Research on the topic of Slavic languages from a psycholinguistic view comes from at least two directions: first, from genuine psycholinguists, who deal with Slavic languages as their material, and second, from Slavists, who “discover” new perspectives on their subject and research methods. Thus, the researchers working in this field approach the topic from different starting points. From the purely psycholinguistic point of view, the general cognitive abilities of humans are the focus, which are analyzed in the linguistic material at hand – usually the language by which the respective scientist is surrounded. An example of this point of view is the psycholinguistic controversy about whether syntactic and semantic information is processed sequentially or in parallel during sentence comprehension. Important contributions to this issue were made by Friederici and colleagues for German (cf. Friederici, 2002; Hagoort & van den Brink, 2004); however, they did not intend to obtain specific results for the German language.

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The development of psycholinguistics as a discipline in Slavic countries was rigidly isolated from that in Western countries for a long time, and the research questions and methods of both differed (cf. Sappok, 1999). However, important contributions to the development of the discipline were made in the 19th and early 20th centuries by researchers such as J. Baudouin de Courtenay, L. S. Vygotskij and A. N. Leont'ev, and later by A. A. Leont'ev, R. M. Frumkina in the Soviet Union and I. Kurcz in Poland, to mention just a few names. In the last few decades, there has been a growing exchange between the different traditions of psycholinguistics, documented in the work of T. V. Černigovskaja and her laboratory in St. Petersburg and by B. Bokus and her chair in Warsaw.

In contrast, psycholinguistic research from the perspective of a Slavist – or more general, that of a linguist – tries to gain new insights into a specific language by investigating its processing in the human mind, intending findings of a new kind with regard to classical questions and re-analyzing “traditional” issues from the viewpoint of psycholinguistics. A good example is the psycholinguistic perspective on the verbal aspect, which recently has received increasing attention. Roussakova and colleagues examined whether members of Russian aspectual pairs are stored and processed as separate lexemes or as forms of one lexeme (Roussakova et al., 2002, p. 306), obviously motivated by the old controversy of the question of how to describe the relationship between two verbs such as the perfective *pomoč'* and the imperfective *pomogat'*, both meaning “to help.”

Presumably, most of the psycholinguistic studies on Slavic languages are derived from the linguistic point of view. Upon closer examination, we can again observe two different types of studies, mentioned by Sekerina (2006, p. 20-21). The first and, in the opinion of Sekerina, “easier,” way is “to take an existing line of research in English (and other languages) and modify it to accommodate Slavic data” (2006, p. 20). An example is the investigation of the mental lexicon by Feldman (1994). She applied a primed Lexical Decision Task to Serbo-Croatian material and asked respondents to figure out if derivational and inflected word forms differed in the way they were represented in the mental lexicon. This “line of research” has a long tradition in psycholinguistic research on morphology, and, until then (the end of the nineties), had been applied predominantly to English. The second, and, as Sekerina (2006, p. 20) calls it, “more challenging,” approach is “to take a phenomenon specific to Slavic and to try to work out the psycholinguistic analysis for it, including choosing a new hypothesis or technique” (2006, p. 20-21). Examples of this type of work are the doctoral theses by Makavčik (2004) and Clasmeier (2015). Both scholars applied new techniques to obtain adequate insights into the psycholinguistics of the Russian verbal aspect.

Applying a new technique is challenging, because in contrast to established experiment designs, many things are unclear in the beginning. The verbal aspect is a striking example of the difficulties the researcher confronts in applying classical questions and methodologies to Slavic languages, and a considerable number of the contributions to this volume deal with this grammatical category.

In general, in the last few decades linguistics has experienced an empirical turn, corresponding to the growing technical possibilities. This turn was further accelerated by the increase in studies in multilingualism that became an important issue especially for Slavic languages. Thus, the last few years have witnessed a growing body of research on Slavic languages in migration contexts, trying to find answers to the question of how and why multilingual speakers use their languages in this or that way and what the specifics of processing more than one language look like. The close relationship between multilingualism research and psycholinguistics is demonstrated by Grosjean and Li (2013). A closely related topic that has been the long-time focus of empirical psycholinguistic research is the research on second language (L2) acquisition, again gaining additional actuality in migrational contexts. Thus, another large portion of the contributions deal with issues in the field of multilingualism (cf. the work of Kira Gor, e.g., Gor, 2007; Gor, Cook, Mal-yushenkova, & Vdovina, 2010).

For the workshop and this volume, it is essential to define psycholinguistics not only by its major research questions on language knowledge, processing and acquisition (Rickheit, Sichelschmidt, & Strohner, 2007, p. 15) but also in terms of a discipline based upon empirical and experimental research. An initial overview of cognitive-oriented works in the field of Slavic studies was conducted by Irina Sekerina in 2006. Since then, a number of volumes have been published covering the question what studies on Slavic languages contribute to the investigation of language in the human mind, cf. *Cognitive Paths into the Slavic Domain*, edited by Divjak and Kočańska (2007), *Slavic Linguistics in a Cognitive Framework*, edited by Grygiel and Janda (2011) and *Die slavischen Sprachen im Licht der kognitiven Linguistik* (The Slavic Languages in Light of Cognitive Linguistics), edited by Anstatt and Norman (2010). These volumes, as is clear from their titles, acknowledge they are based in the research field of cognitive linguistics. However, they contain theoretical as well as empirical work. Distinguishing between psycho- and cognitive linguistics is, especially in Slavonic studies, anything but a simple task. Both terms are often used in parallel and are not clearly distinguished from each other. Cognitive linguistics became a brand name in the 1980s and 1990s. The term seems to be connotatively clear; however, it has remained without sharp denotative outlines (Knobloch, 2003, p. 26).

Therefore, not least in Slavonic studies, the number of surveys assigning themselves to cognitive linguistics is high and eclectic.

Thus, for the workshop and this volume, we decided to refrain from using the term cognitive linguistics. Instead, we assigned our work to psycholinguistics, determining our discipline by methodology. We propose that investigations of “human experience or behavior concerning language” (Rickheit et al., 2007, p. 13) which use empirical methods belong to psycholinguistics. Corresponding to this definition, the volume contains classical psycholinguistic studies that draw upon the measurement of behavioral data during language processing, as well as neurolinguistic investigations that study the physiological mechanisms by which the brain processes linguistic information. However, since this volume is dedicated to methodological issues, scientific work dealing with language and cognition by purely theoretical consideration and modeling goes beyond the aims of this book.

Therefore, methodological issues and the peculiarities of psycholinguistic investigations particularly on Slavic languages are the recurring themes in the articles in this volume. Each work considers at least some of the following questions:

- What about the research questions, methods and/or results is specific to Slavic languages?
- What are the advantages and the disadvantages of the chosen research method? Which problems does the researcher have to cope with in this respect?
- Did the specific properties of Slavic languages influence the selection of the method? How suitable is the selected method for the specific Slavic research question?
- How do the results fit into the general psycholinguistic research? Is there a specific contribution of the Slavic languages?

All contributions in this volume take into account Slavic languages, but the linguistic subareas the articles focus upon differ considerably.

In the opening contribution, **Barbara Mertins** presents a classification of experimental methods and reveals the benefits and difficulties of offline and online methods in experimental linguistic research on various Slavic languages. With regard to three concrete experimental settings, Mertins discusses the methods of elicitation, eye tracking, memory tasks, and preference judgment tasks for research on language production. Native speakers of various Slavic languages and Slavic native speakers in foreign languages make up the main group of participants in her experiments, the focus of which is the effect of grammatical aspect on cognition. Mertins concludes

that with respect to experiment planning, besides other aspects, calculating intercoder reliability is necessary to code linguistic data. Furthermore, she contends that for valid results, quantitative analyses are required.

Roumyana Slabakova focuses on difficulties in the experimental investigation of sentence interpretation in Slavic languages. She presents two case studies with Russian native speakers that examine the interpretation of bare plural and mass objects in sentences with perfective or imperfective verbs (case study 1) and the acceptability of fronted objects when they are topics or foci (case study 2). Both studies observe an unexpectedly high variability in the interpretation of the sentences and thus reveal a multitude of factors affect the participants' judgments. Finally, Slabakova introduces a specific concept of grammar, which provides an explanation for these findings.

The contribution by **Dagmar Divjak**, **Antti Arppe** and **Harald Baayen** highlights the effects of tense, aspect and mood (TAM) marking for processing in Russian. The authors test experimentally the predictions of a corpus-based model and ask how TAM markers on verbs affect processing in Russian. They illustrate the modeling of experimental data of a self-paced reading experiment on TAM marking on six near-synonymous Russian verbs expressing "try." In addition, they impressively present appropriate data analysis by contrasting the linear generalized linear mixed model against the nonlinear generalized additive mixed model.

The article by **Anja Gattnar** discusses the pros and cons of the adaptation of target sentences for eye tracking and self-paced reading studies for inter-Slavic and cross-linguistic experimental research about the processing of the verbal aspect. Examples of her own studies on the processing of the verbal aspect in languages with (Russian and Czech) and without the grammatical aspect (German) illustrate that a one-to-one translation of target sentences is nearly impossible without syntactical or semantic changes. Gattnar develops opportunities and measures to get out of the dilemma.

The contribution of **Anastasia Makarova** is concerned with Russian Aktionsarten. Based on two empirical studies on the Russian attenuative and semelfactive Aktionsart, preceded by a corpus study, she analyses the influence of the factors frequency, morphology and context on speakers' preference for one of two functionally equivalent morphemes. Makarova thus offers a technique that handles and yields reliable results in dealing with a very typical phenomenon of Slavic languages, namely, morphological variation.

The article by **Denisa Bordag** concerns a range of reaction time experiments on Czech morphology. Her investigations deal with the perspective of language comprehension and psycholinguistic paradigms. Using a lexical decision task, morphological repetition priming and two picture-word inter-

ference paradigms, Bordag investigates the representation of Czech prefixed verbs, grammatical gender and gender processing in Czech, as well as the representation of the declensional and conjugational classes.

Elena Dieser, similar to Makarova, focuses on variation in Russian grammar. However, while Makarova highlights variation in standard language, Dieser explores “cases of doubt,” fringe phenomena of Russian, which seldom occur and thus allow analysis of how native speakers relate to the periphery of grammar. She shows that in the mental grammar there is no sharp border between “wrong” and “right.” While Dieser explores these phenomena based on grammaticality judgments, the core of the contribution is the comparison of different judgment techniques, from simple questionnaires to the more sophisticated method of thermometer judgment.

Julija Nigmatulina, Olga Raeva, Elena Riechakajnen, Natalija Slepukurova and **Anatolij Vencov** assume in their contribution that the perceptual system of a listener depends on the phonological system of the language. They investigate Russian spontaneous speech in everyday communication, discuss the method of a dictation task experiment to study the recognition of Russian reduced word forms and point out the role of the context for the interpretation of such reduced word forms. The authors show that for their experimental design the use of spontaneous speech corpora is highly necessary.

The contribution by **Christina Clasmeier, Tanja Anstatt, Jessica Ernst** and **Eva Belke** is situated in the context of bilingualism research. The authors present problems they faced in the preparation of stimuli for a study of coactivation phenomena in the bilingual mental lexicon. As one-word stimuli that matched strict criteria had to be found in two languages, the authors discuss in detail the issues of phonetic similarity, measuring frequency and specifics of the picture-word relations, thus pointing to general problems that must be considered in the preparation of bilingual stimuli.

Bernhard Brehmer, Tatjana Kurbangulova and **Martin Winski** discuss a closely related issue, that also concerns the bilingual mental lexicon. They present the results of four lexical tasks (picture naming, semantic mapping, translation and verbal fluency) conducted with bilingual Russian-German and Polish-German adolescents. The contribution thus is devoted to the important issue of methodological comparison, as in bilingualism research usually only one test is conducted. While the authors found significant medium to strong correlations for the non-dominant heritage language, for the dominant environmental language no significant correlations were found.

Jan Patrick Zeller, Gerd Hentschel and **Esther Ruigendijk** make a third contribution to the psycholinguistic investigation of bilingualism. In their article, they discuss the specifics of the language contact situation in Belarus

and then report an ERP study on code-switching between the two closely related languages Russian and Belarusian. The researchers built Russian and Belarusian sentences that did or did not contain code switches to the other language, presented them auditorily to 36 young Belarusians and measured the participants' event-related electrophysiological potential. The authors found some components (N400) to show similarity with the processing of code-switching between less closely related languages, but other components showed differences that might reflect the specifics of the language contact situation.

The last paper in this volume, by **Jakub Jehlička**, is situated in research on the interaction between language and cognition (linguistic relativity). Jehlička examines the influence of spatial language on the non-linguistic spatial reasoning of Czech sign language users. He presents his study, which set out to investigate the influence of different factors, such as the subjects' gender and their competence in Czech sign language, on accuracy in a mental rotation task. He reports interim results on the group of Czech hearing subjects (without competence in Czech sign language) and compares them to the findings of the seminal study by Emmory et al. (1998). Finally, he discusses several challenges in developing an appropriate design for this type of experimental work.

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References

- Anstatt, T., & Norman, B. (Eds.). (2010). *Die slavischen Sprachen im Licht der kognitiven Linguistik*. Wiesbaden: Harrassowitz.
- Clasmeier, C. (2015). *Die mentale Repräsentation von Aspektpartnerschaften russischer Verben*. Leipzig: BiblionMedia.
- Divjak, D., & Kochańska, A. (Eds.). (2007). *Cognitive paths into the Slavic domain*. Berlin: De Gruyter.

- Emmorey, K., Klima, E. S., & Hickok, G. (1998). Mental rotation within linguistic and nonlinguistic domains in users of American Sign Language. *Cognition*, 68, 221-246.
- Feldman, L. B. (1994). Beyond orthography and phonology: Differences between inflections and derivations. *Journal of Memory and Language*, 33, 442-470.
- Fernández, E. M., & Smith Cairns, H. (2011). *Fundamentals of psycholinguistics*. Chichester: Wiley-Blackwell.
- Friederici, A. D. (2002). Towards a neural basis of auditory sentence processing. *Trends in Cognitive Sciences*, 6(2), 78-84.
- Gor, K. (2007). Experimental study of first and second language morphological processing. In M. Gonzalez-Marquez, I. Mittelberg, S. Coulson, & M. J. Spivey (Eds.), *Methods in cognitive linguistics* (pp. 367-398). Ithaca, NY: Benjamins.
- Gor, K., Cook, S. V., Malyushenkova, V., & Vdovina, T. (2010). Russian verbs of motion: Second language acquisition and cognitive linguistics perspectives. In V. Driagina-Hasko & R. Perelmutter (Eds.), *Multiple perspectives on Slavic verbs of motion* (pp. 361-381). Amsterdam: Benjamins.
- Grosjean, F., & Li, P. (2013). *The psycholinguistics of bilingualism*. Chichester: Wiley-Blackwell.
- Grygiel, M., & Janda, L. A. (Eds.). (2011). *Slavic linguistics in a cognitive framework*. Frankfurt am Main: Lang.
- Hagoort, P., & van den Brink, D. (2004). The influence of semantic and syntactic context constraints on lexical selection and integration in spoken-word comprehension as revealed by ERPs. *Journal of Cognitive Neuroscience*, 16(6), 1068-1084.
- Knobloch, C. (2003). Geschichte der Psycholinguistik. In G. Rickheit & T. Herrmann (Eds.), *Psycholinguistik. Ein internationales Handbuch Bd. 24. Handbücher zur Sprach- und Kommunikationswissenschaft* (pp. 15-33). Berlin: De Gruyter.
- Makavčik, V. O. (2004). *Vido-vremennaja kategorizacija russkogo glagola v jazykovom soznanii nositelej russkogo jazyka*. Tomsk: Avtoreferat.
- Rickheit, G., Sichelschmidt, L., & Strohnner, H. (2007). *Psycholinguistik*. Tübingen: Stauffenburg.
- Roussakova, M., Sai, S., Bogomolova, S., Guerassimov, D., Tangisheva, T., & Zaika, N. (2002). On the mental representation of Russian aspect relations. In S. Bendjaballah, W. U. Dressler, O. E. Pfeiffer, & M. D. Voeikova (Eds.), *Morphology 2000. Selected papers from the 9th Morphology Meeting, Vienna, 24-28 February 2000* (pp. 305-312). Amsterdam: Benjamins.
- Sappok, C. (1999). Zur Psycholinguistik in Russland. In H. Jachnow (Ed.), *Handbuch der sprachwissenschaftlichen Russistik* (pp. 1191-1214). Wiesbaden: Harrassowitz.
- Sekerina, I. (2006). Building bridges: Slavic linguistics going cognitive. In S. Franks, E. Andrews, R. Feldstein, & G. Fowler. (Eds.), *Slavic Linguistics 2000: The future of Slavic Linguistics in America. Glossos*, 8.