Russian case inflection: Processing costs and benefits
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Introduction. Recent psycholinguistic studies of morphological case processing suggest that case markers have radically underspecified semantic representations in the mental lexicon (see Clahsen et al. 2001; Penke et al., 2004; Opitz & Pechmann, 2013; Opitz et al., 2014; Leminen & Clahsen, 2015 for L1-German and Bosch & Clahsen, 2016; Bosch et al., 2016 for L2-German). Under this approach, case meaning is decomposed into a set of binary features with positive and negative values, but only positive values are stored in the mental lexicon, while negative ones are deduced from paradigmatic oppositions. Number of specified (positive) features is assumed to have a direct impact on the processing ease: the more information a form carries, the longer it takes to be recognized.

Yet, experimental evidence comes so far exclusively from German, a language which allows to test these hypotheses only on adjectives and determiners. The same principles should hold for noun case inflection as well, but reliable differences in case processing are observed only for the opposition between nominative and oblique cases, while oblique cases are reported to be processed with equal speed (see, i.e. Lukatela et al., 1980; Feldman & Fowler, 1987 for Serbian, Niemi et al., 1994; Hyönä et al., 1995 for Finnish). However, these studies never looked at all cases at once, usually choosing a small subset of 3 cases. We treated this issue more in detail in 2 lexical decision experiments employing Russian data, which is particularly tempting because there is no universally recognized formal account for its case syncretism (cf., for instance, Müller, 2004 and Wiese, 2004).

Method. Both experiments were run using DMDX software. We recruited 48 native speakers of Russian for experiment (a) and another 48 for experiment (b). In each trial, participants had to decide whether the string of letters presented on the screen was a real Russian word or not. We used all six case forms of inanimate nouns belonging to two declensional classes (54 female nouns ending in -a and 54 male nouns ending in -ơ, both groups belonging to the 1a inflectional class according to Zaliznyak (1977) and matched for lemma frequency and length in letters). 108 nouns with pseudoendings and 108 inflected pseudostems served as nonwords. In experiment (a), nouns were presented in singular; in experiment (b), in plural. Latin square design was employed with the number of lists corresponding to the number of case forms.

Results. Mean response latencies are presented in figure 1. We analyzed log-transformed reaction times using a 2x6 rmANOVA by-participants and by-items. In both experiments, we found a significant effect of case (F1(4.35, 204.4) = 37.04, p < .001; F2(4.69, 478.6) = 25.56, p < .001 and F1(4.6, 216.4) = 36.08, p < .001; F2(4.85, 504.2) = 24.89, p < .001, respectively) and a significant interaction between gender and case (F1(5, 235) = 21.69, p < .001; F2(5, 510) = 16.75, p < .001 and F1(5, 235) = 2.96, p = .013; F2(5, 520) = 2.47, p = .032, respectively). In the analysis of contrasts for experiment (a), apart from differences between nominative and oblique case forms, for female nouns we found that ambiguous dative–locative forms were processed slower than other oblique case forms; for male nouns, we observed that genitive and locative forms were processed slower than dative and instrumental. The analysis of contrasts for experiment (b) suggests that irrespective of gender, processing time of a case form is subject to the following hierarchy: [nominative = accusative] < [locative = genitive] < [dative = instrumental].
Discussion. Results of our two experiments disagree with previous findings on Finnish and Serbian, suggesting that even a lexical decision task can indeed highlight differences in oblique case processing. Data from the experiment with plural nouns mirrors the order of case acquisition (Polinsky, 2007) and roughly resembles Caha’s (2008) nanosyntactic approach to Russian case, but is inconsistent with predictions that could be drawn from underspecified representations elaborated by Müller (2004) or Wiese (2004) for Russian declension system. Results obtained for singular case processing, likewise, can not be explained by Müller’s, nor Wiese’s semantic representations for case exponents. At the conference, we will discuss if a new theoretical account of Russian case inflection is needed.

References