Gender agreement processing in Russian: predictions based on linguistic and extralinguistic information
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Russian has three genders (M, F and N). The gender of the noun cannot be unambiguously determined from its inflectional affix (although there are some clear tendencies, see Table 1), but becomes evident from agreeing adjectives, participles and verbs. Like many other languages, Russian faces the following problem: many nouns denoting professions are grammatically M. How to call a female director or a female author? In Russian, two routes are available. Firstly, a corresponding grammatically F noun can be formed (e.g. zhurnalista ‘journalist’ – zhurnalistka ‘journalistess’, uchitel’ ‘teacher_m’ – uchitel’nica ‘teacher_f’). Unlike German, where the -in suffix can be applied to any relevant noun, and like French, Russian uses a variety of suffixes to form such nouns, and many M nouns denoting professions do not have an established F counterpart at all.

Secondly, Russian has so-called common gender, and an originally M noun can be used with M and F agreeing forms (e.g. naš / naša pediatr ‘ourM / ourF pediatrician’). This route is available for any noun denoting profession (but, interestingly, not to most other noun groups).

This study focuses on the second option. When a Russian speaker sees a noun denoting profession that is originally M and ends in a consonant like a prototypical M noun (see Table 1), but can be used as common gender, to what extent is F agreement expected? And are these expectations modulated by extralinguistic factors, namely, by the stereotypes that exist in the society about the percentage of men and women in a particular profession?

We conducted a self-paced reading experiment comparing word-by-word reading times for the sentences in two groups: group 1 with subject nouns denoting professions that can be used as common gender nouns, as in (1a-b), and group 2 with subject nouns denoting personal qualities, like in (2a-d).

In the latter case, there is always a M and a F noun, common gender is impossible, and (2b) and (2d) contain an agreement error. Group 1 had two subgroups, A and B: we selected professions that are perceived as stereotypically female (e.g. pediatr ‘pediatrician’, as in (1)) or male (e.g. mjasnik ‘butcher’). Stereotypical norms for Russian were taken from (Garnham, Yakovlev 2015).

We used RM ANOVAs (by participants and by items) for the statistical analysis. Factor I was found to cause significantly smaller RT differences in the group 1A (stereotypically female professions) than in the group 1B, and in the group 1B than in the group 2. Thus, for every noun denoting profession, even the most stereotypically male one, Russian speakers expect F agreement to be possible, even though these nouns were originally M and have inflectional endings typical for M nouns. If the profession is perceived as a stereotypically female, there is virtually no difference between M and F agreement. This means that stereotypes are immediately taken into account to predict the gender of the predicate, but evidently are still not strong enough to bias for F agreement with originally M nouns ending in a consonant. This is an interesting addition to the gender-to-ending consistency literature (e.g. Caffarra et al. 2015).

We also found that in group 2, the interaction between factors I and II was significant: the reaction to agreement violations was more pronounced for M subjects than for F ones. This can be explained by the M gender being more frequent than F (and N). M subjects produce stronger expectations about the gender of the predicate, so agreement errors trigger larger effects. This resonates with earlier findings by (Akhtina et al. 1999, 2001; Romanova & Gor 2017; Slioussar & Malko, 2016; Slioussar 2018).

(1) a. Pediatr byl obespokoen iz-za objavlenija karantina. b. Pediatr byla...
        pediatrincM wasM worriedM because of the carantine pediatrincF wasF

1 This study also analyzed reading times for sentences with Russian nouns denoting professions, but only whole-sentence reading times were recorded.
(2) a. *Intrigan byl ostorozhen v etom voprosе. b. *Intrigan byla...
    intriguerM wasM cautiousM in this question intriguerM wasF

Intriganka byla ostorozhna v etom voprosе. d. *Intriganka byl...
    intriguerF wasF cautiousF in this question intriguerF wasM

Declension and gender % in the RNC Ending in Nom.Sg Examples

| 1\textsuperscript{st} decl. F | 29\% nouns | end in -a/ja | zhen ‘wife’ |
| 1\textsuperscript{st} decl. M | 1\% nouns | end in -a/ja | djajda ‘uncle’ |
| 2\textsuperscript{nd} decl. M | 46\% nouns | end in a consonant (any type) | syn ‘son’, gel ‘gel’ |
| 2\textsuperscript{nd} decl. N | 18\% nouns | end in -o/e | pole ‘field’ |
| 3\textsuperscript{rd} decl. F | 5\% nouns | end in a consonant (palatalized or /x/, /š/, /č/’/ ) | mel ‘shallow’ |

irregular & indeclinable 1\% nouns

Table 1. The distribution of nouns among genders and declensions in the grammatically disambiguated subcorpus of the Russian National Corpus (http://www.ruscorpora.ru).

<table>
<thead>
<tr>
<th>Group 1A</th>
<th>Group 1B</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject: gender and ending meaning and stereotypes</td>
<td>‘female’ profession</td>
<td>‘male’ profession</td>
</tr>
<tr>
<td>M/F (both gramm.)</td>
<td>M/F (both gramm.)</td>
<td>M (gramm.) / F (ungramm.)</td>
</tr>
</tbody>
</table>

Predicate

Table 2. Experimental design

Fig. 1. Average RTs (in ms) per region (word) in different conditions.

References:


\[2\] The counts are from Slioussar and Samoilova (2015). Substantivized adjectives were not counted.