Gender agreement processing: inflectional endings and stereotypes

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Russian has three genders (M, F and N). The gender of the noun cannot be unambiguously determined from its inflectional affixes (although there are some clear tendencies), 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. *zhurnalist* 'journalist$_M$' – *zhurnalistka* 'journalist$_F$', *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 (*nash / nasha vrach* 'our$_M$ / our$_F$ doctor'). This route is available for any noun denoting profession (but, interestinly, not to most other noun groups).

This study focuses on the second option. 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. We wanted to compare the processing of such errors to the processing of (1b) — the sentence is grammatical, but the subject noun is originally M and has zero inflection typical for M nouns, so the readers might react to that. Group 1 had two subgroups, A and B: with 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).[1]

Participants were 62 native Russian speakers. We had 32 stimulus sentence sets (16 per group, group 1 'Professions' had two subgroups A/B and two conditions, group 2 'Qualities' had four conditions, as in (1)-(2)). Two factors were manipulated: (i) whether the gender of the predicate coincides with the (original) gender of the subject and (ii) whether the subject is M or F (in group 2). All sentences had the same structure. We also had 64 grammatically correct filler sentences.

Average RTs in different conditions are presented on Fig. 1. 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, the idea that every noun denoting profession, even the most stereotypically male one, can be used to refer to a woman, is already present in the mental grammar of Russian speakers. If the profession is perceived as a stereotypically female, there is virtually no reaction to the surface mismatch between the common gender noun that is originally M (and 'looks M' due to its inflection) and the predicate. This is an interesting addition to the gender-to-ending consistency literature (e.g. Caffarra et al. 2015).

In the group 2, reaction to agreement violations was significantly more pronounced for M subjects than for F ones. This resonates with earlier findings by (Akhutina et al. 1999, 2001; Romanova & Gor 2017; Slioussar & Malko, 2016; Slioussar 2018) who noted that agreement errors with M nouns cause larger effects than the ones with F or N nouns. This can be explained by the M gender being unmarked (although see Slioussar & Malko, 2016 for some interesting details).

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[1] This study also analyzed reading times for sentences with Russian nouns denoting professions, but only whole-sentence reading times were recorded.

(1) a. *Pediatr byl obespokoen iz-za objavlenija karantina.*   b. *Pediatr byla…*
pediatrician$_{M/F}$ was$_M$ worried$_M$ because of the quarantine   pediatrician$_{M/F}$ was$_F$

(2) a. *Intrigan byl ostorozhen v etom voprose.*   b. **Intrigan byla…*
intriguer$_M$ was$_M$ cautious$_M$ in this question   intriguer$_M$ was$_F$

    c. *Intriganka byla ostorozhna v etom voprose.*   d. **Intriganka byl…*
    Intriguer$_F$ was$_F$ cautious$_F$ in this question   intriguer$_F$ was$_M$
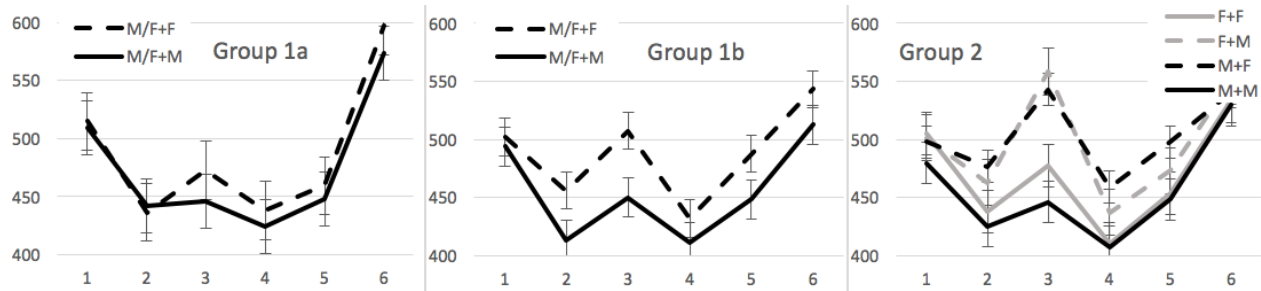

Fig. 1. Average RTs (in ms) per region (word) in different conditions.

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