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## Gender-Marked Metaphors: Influence of Grammatical Gender and Frequency on Referential Choice of Metaphorical Name of the Person in the Russian Language

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### Abstract

The paper aims to discuss the results of the experimental research into the correlation between the influence of language (the gender of the noun) and speech (frequency of using words in speech) on the referential choice of a metaphorical name of a person. As a result, we prove a significant influence of grammatical gender on solving the problem of figurative reference to the name of a man or woman. The interaction between linguistic factors (the grammatical gender) and speech (frequency) is manifested in the fact that the frequency factor is significant in functionally weak areas where there is a conflict between the problem being solved and grammatical gender of the word (for example, the problem to determine the reference of feminine words to a male).

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### 1. Introduction

This study is grounded on the following theories:

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1. Theory of gender: gender is a cultural reflection of human sex differentiation (Goffman, 1994; Fuko, 1996; Ushakin, 1999, etc.).
2. Linguistic theory of gender: language and speech as semiotic systems of marking gender differentiation. In linguistic gender theory there are three significant directions of analysis: the difference between men's and women's speech (Philips, 1987; Günthner & Kotthoff, 1992, etc.), gender opposition in the semantics of linguistic units and categories, for example the correlation between the grammatical gender and the semantic category of sex (Borneman, 1991), gender stereotypes in lingual consciousness (Tafel, 1997; Kirilina, 1997).
3. Cognitive Theory of Gender: A system of ideas about the cognitive processing of various stimuli by men and women as gender actualization of hidden gender meanings and stereotypes (Pyykkönen, Hyönä, & van Gompel, 2010). We believe that this issue needs a comprehensive development. It is necessary to identify the types of cognitive tasks, in doing which men and women will differ most of all. The problem of cognitive processing the grammatical category of gender in different languages (Bulgarian, Italian, French, etc.) is relevant and actively discussed (Andonova, D'Amico, Devescovi, & Bates, 2004; Janyan, & Vergilova, 2011; Dahan, Swingley, Tanenhaus and Magnuson, 2000). We consider it important to address the impact of concealed semantic bases of grammatical gender on the tasks associated with the actualization of other types of gender semantics. To such meanings, interacting with the grammatical category of gender, in our opinion, belong those that are formed by conceptual metaphors.
4. The cognitive theory in which the metaphor is interpreted as a way of understanding various phenomena of the reality (Lakoff, & Johnson, 2003).

This paper is focused on the problem of the cognitive processing of gender metaphors by men and women, and the dependence of this process on the grammatical gender factor and the factor word frequency. The gender metaphor is metaphorical nomination limited in reference, which does not refer to a person in general, but to a male or a female. This restriction is not absolute, but a trend. The semantic component fixing gender restriction of metaphorical nomination of a person has the status of weak semantics in this case. Weak semantics is the meaning actualized in a limited number of contexts.

The units with gender restriction of references were identified based on the data from the Russian National Corpus (RNC); (Rezanova, 2011; Rezanova, & Komissarova, 2012). We explore the influence of linguistic and extra-linguistic factors on the gender restriction of metaphorical name reference in the Russian language in a series of experiments. The non-linguistic factors involved into the experiment are the sex of a subject and the task they are to fulfill – assigning a name to a male or female.

The linguistic factors are:

- a) the systemic linguistic factor- the grammatical gender;
- b) the speech factor – the frequency of the name in the modern Russian speech.

In a previous study we revealed the mutual influence of the factors of the grammatical gender and animateness on the solution of the problem of gender references. The gender of the name seems to directly affect fulfilling a task: figurative names of the female grammatical gender refer to women more often than masculine names, and vice versa, the subjects gave a much higher percentage of positive solutions for the names of the male grammatical gender, fulfilling the task of determining the possibility of naming the man. The significance of the subjects' sex factor was also revealed as the main effect of interactions was obtained in the women's reactions (Rezanova, Nekrasova, & Shilyaev, 2014).

In this article we present the results of the studies of changes in the significance of the category of gender and frequency in doing the tasks of gender references of metaphorical nomination of a human under the influence of a changing word frequency. We also solve the problem whether these factors have different influence on fulfilling the tasks by men and women. The experiment is aimed at testing the hypothesis that the influence of the grammatical gender on the referential choice of a figurative name may depend on its frequency, and this dependence may occur to various extent in men's and women's fulfilling the task.

## 2. Methodology

The experiment was performed using E-Prime Suite 2.0 (Copyright 1996-2012 Psychology Software Tools). The method of lexical decision task was used in the experiment. All the participants were native Russian speakers, university students aged 18 to 23. 64 persons participated in the experiment, 32 men and 32 women among them. The choice of stimuli was based on several criteria: 1. The words of masculine or feminine grammatical gender should be registered in the contexts of actualization of metaphorical meaning in the Russian National Corpus. 2. The word belonging to one grammatical gender should be included into a group of nouns with similar frequency in spontaneous Russian. The words were selected from the Russian frequency dictionary (Lyashevskaya, & Sharov, 2009). As a result, we obtained four classes of stimuli (Table 1). The groups of stimuli were opposed according to the degree of frequency that is a multiple of 10. The experiment group was conventionally denoted as min and max. All the stimuli have a formal indicator of the grammatical gender – a flexion. Thus, four groups of stimuli were formed, opposed according to two variables.

Table1. Illustration of the stimuli in experiment

Gender	<i>feminine</i>		<i>masculine</i>	
Frequency	<i>min (2-3 ipm)</i>	<i>max (20-30 ipm)</i>	<i>min (2-3 ipm)</i>	<i>max (20-30 ipm)</i>
words	ovechka (ewe lamb), tigrisa (tigress), medveditsa (she-bear), churka (chock), matryoshka, (matryoshka).	igrushka (toy), myshka (small mouse) bomba (bomb), svinya (pig), tryapka (rag)	pudel(poodle) sfinks(sphinx), motylyok, (moth), dyatel (woodpecke), chelnok (chuttle)	meshok (sac), musor (trash), sosud (receptacle), angel (angel), motor (motor), frukt (fruit), stolb (post), tank (tank)

In the experiment we excluded the influence of the factor of word length on the perception. Statically insignificant differences between the groups of the stimuli caused by the factor of word length were checked for the whole array of stimuli twice: first, between the stimuli, distributed in accordance with the grammatical gender (feminine words vs. masculine words); second, in accordance with the frequency verifiable factor (low frequency words vs. high frequency words). Bilateral significance (t-test for independent samples) by the factor of word length between groups of masculine and feminine words and by the factor of word length between the groups of high and low frequency words (the same stimuli rearranged in accordance with this factor) was  $p > .05$  (on the number of letters syllables, including the Libyа criterion). Accordingly, the factor of word length is not significant for the groups of the stimuli within the factor of grammatical gender and within the factor of frequency.

The stimuli were balanced formally and semantically. First, we formed equal groups of masculine and feminine nouns. Second, the percentage of positive and negative responses in each phase of the experiment (48%–“no”, 52%–“yes”, and 53.5–“no”, 46.5–“yes”, respectively) shows a general semantic equivalence of the stimuli in the referent-man and referent-woman.

All the data, except for a few cases of respondents' technical errors (pressing the "gap" instead of the correct keys, etc.), as well as the reactions with  $RT < 100$  ms were used to analyze the choice of response.

The task of the experiment is designed so that the subjects perceive the stimuli that in their literal sense are min vs. max frequency, having the form of masculine or feminine gender. The subjects do successively two tasks. At the first stage the subjects were asked to answer the question of whether the word on the screen can be figuratively applied to a woman, at the second stage – to a man.

Thus, four factors were manipulated in the study: the grammatical gender (Masculine vs. Feminine), frequency (Min vs. Max), task (Male-referencing vs. Female-referencing), and subject's Sex (Males vs. Females). The subjects indicated their choice by pressing 1 for "yes" or 0 for "no." The procedure consisted of the training session and the experiment proper. At the end of the practice, there followed the instruction: "Training is over. If you are ready to continue, press the spacebar". The stimuli were presented randomly, the time of stimulus presentation was 3000 ms.

Before starting a new trial a blank screen appeared (ITI - 500 ms.). The time of presentation of the fixation cross was 500 ms.

### 3. Discussion of Results

To analyse RT values the data were cut in more than  $\pm 2.5$  standard deviations from the mean per condition in accordance with standard deviations from the mean per condition (the total percentage of unrecorded data is 4.4%). A repeated measures ANOVA was performed for subject means (see Table 2).

Table 2. Means and SDs for each experimental condition.

Factors	frq max/feminine	frq max/masculine	frq min/feminine
Female decision	0,746 (0,242)	0,297 (0,226)	0,737 (0,216)
Male decision	0,394 (0, 236)	0,614 (0,27)	0,231 (0,189)

The analysis of the experiment results demonstrates the reproducibility of the grammatical gender effect obtained in the first experiment (Rezanova, Nekrasova, & Shilyaev, 2014). The influence of the grammatical gender and frequency on doing the task of the noun reference to a male was evident in the amount of positive decisions, and RT value. The grammatical gender has a direct impact on a positive decision about the possibility of references to a man or woman, the percentage of choosing a name of masculine gender to refer to a man is significantly higher than to a women, and vice versa, the name of the feminine gender is more likely to be used while choosing a reference to a woman.

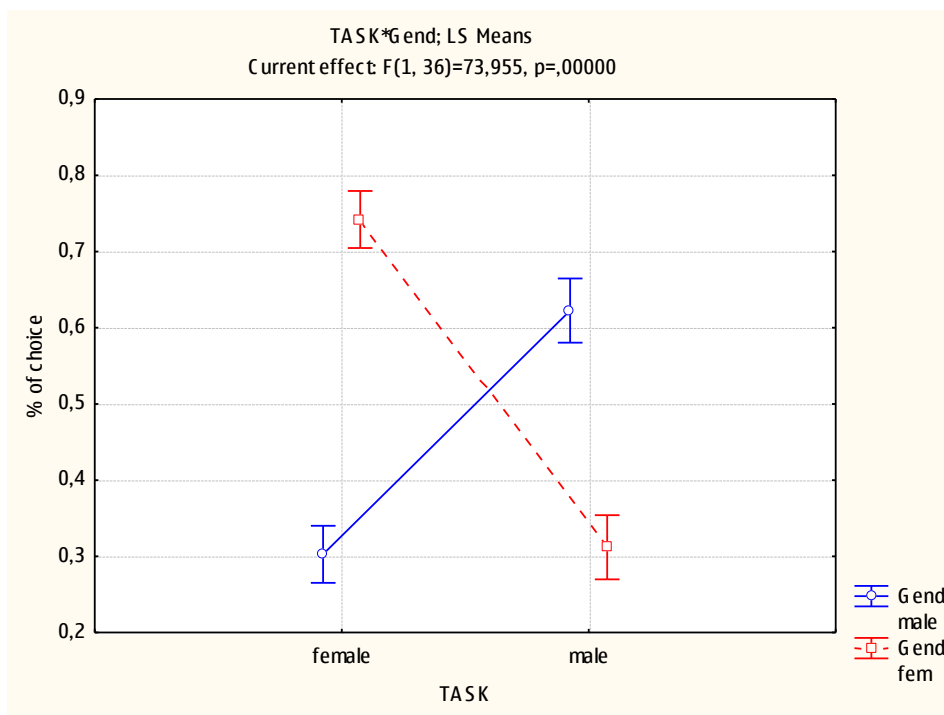


Figure 1. The percentage of positive decisions in referential choice under the influence of the factor «word gender».

The analysis of the frequency factor showed that this factor is significant in the case of feminine words referred to males: words with a maximum frequency have a greater percentage of positive responses than the minimum ( $F(1, 124) = 12,421, p = .0006$ ) (fig. 1.)

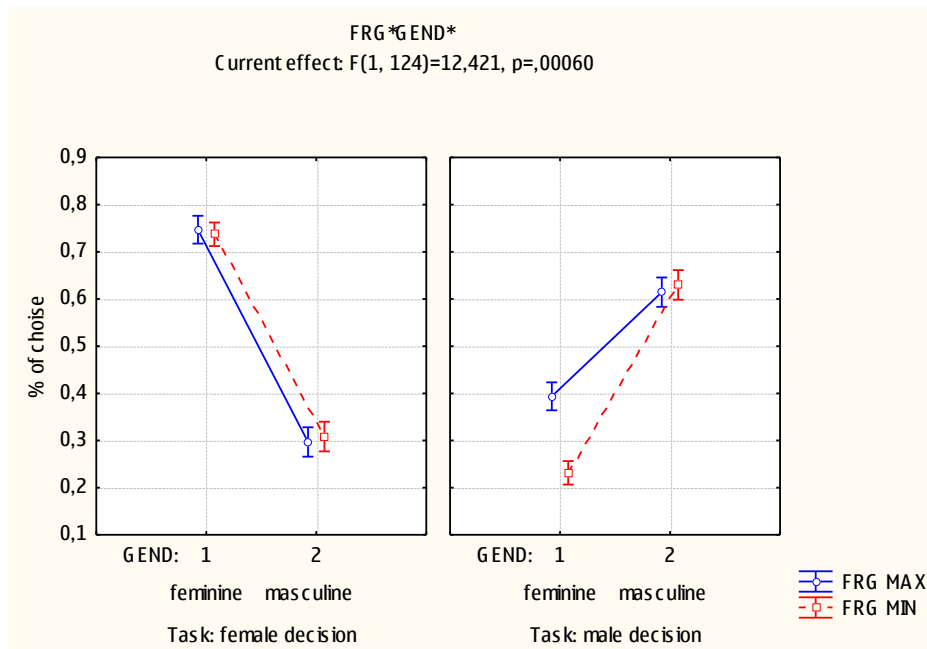


Figure 2. The percentage of positive decisions in referential choice under the influence of the factors «word gender», «frequency» and «task».

However, it is interesting to observe the problems resulting from the factor of the sex of the subjects. This result is characteristic of the conditions of female respondents: they set the general pattern. The correlation of these results with the data of the first experiment detects a common active trend. The masculine gender as the unmarked member of the grammatical opposition is indifferent to other language and speech properties of a name. The feminine gender as a strong member of the grammatical opposition is sensitive to the frequency of the word in speech. Animateness of feminine nouns lowers the percentage of positive decisions when naming men (Experiment 1 - Rezanova, Nekrasova & Shilyaev, 2014), and the frequency of words increases it. The analysis also indicated that men and women share the same strategy in gender choice. The experiment data displayed the interaction between the type of the task being done and the stimulus frequency. The significance of the frequency is manifested when the subjects solve the problem of reference to a woman: in this case recipients quickly decide on the names with high frequency (fig. 3). Opposition of the stimuli in frequency is not significant in the case when subjects solve the problem of reference of the name to a man. The reaction time of men in performing a task on references to a woman is much more than reference to a man. The subjects' sex factor made itself evident in the experiment - it is men who provide the significance of the frequency factor in performing a task of references to women.

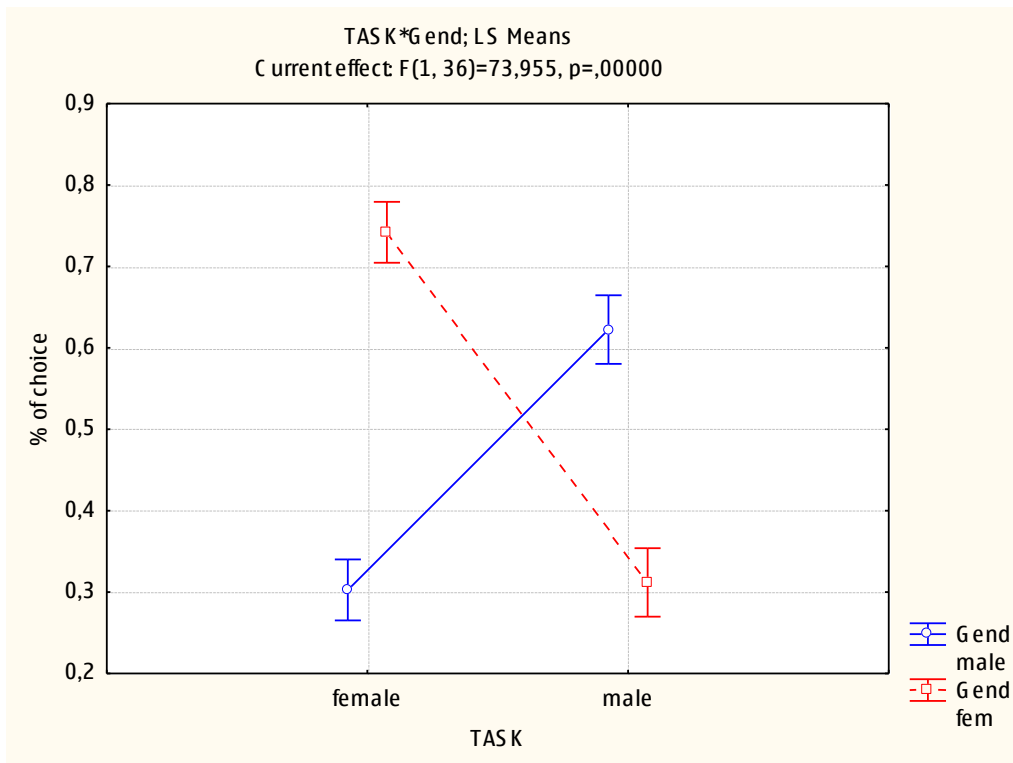


Figure 3. The correlation between the factors «word gender», «frequency» and «task».

#### 4. Conclusion

The analysis of the interaction between linguistic factors (grammatical gender) and speech (frequency) showed that the frequency factor is significant in weak areas where there is a conflict between a problem being solved and the grammatical gender of the word (for example, reference of the feminine words to a man). Frequency operates "on the side", "in support of linguistic characteristics." The influence of subjects' sex on meeting the challenges of reference is manifested in different directions in the two experiments and requires further investigation.

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#### References

- Andonova, E., D'Amico, S., Devescovi, A., & Bates, E. (2004). Gender and Lexical Access in Bulgarian. *Perception & Psychophysics*, 66 (3), 496-507.
- Bates, E., Devescovi, A., Pizzamiglio, L., D'Amico, S., & Hernandez, A. (1995). Gender and lexical access in Italian. *Perception and Psychophysics*, 57 (6), 847-862.
- Borneman, E. (1991). *Das Patriarchat. Ursprung und Zukunft unseres Gesellschaftssystems*. Frankfurt am Main.
- Dahan, D., Swingle, D., Tanenhaus, M. K., and Magnuson, J. S. (2000). Linguistic gender and spoken word recognition in French. *Journal of Memory and Language*, 42 (4), 465-480.
- Fuko, M. (1996). *Volja k istine: po tu storonu znanija, vlasti i seksual'nosti. Raboty raznyh let. [Will in truth: for the direction of knowledge, power and sexuality. Work over the years]* Moscow. (Rus.)

- Goffman, E. (1994). *Interaktion und Geschlecht*. Frankfurt am Main.
- Günthner, S., & Kotthoff, H. (1992). *Die Geschlechter im Gespräch: Kommunikation in Institutionen*. Stuttgart.
- Janyan, A., & Vergilova, Y. (2011). Biological sex context influences grammatical gender categorization of objects. *European Perspectives on Cognitive Science*. Sofia: New Bulgarian University Press.
- Kirilina, A. V. (1997). Stereotipy biologicheskogo pola vazyke. XII Mezhdunarodnyj simpozium po psiholingvistike i teorii kommunikacii "Jazykovoje soznanie i obraz mira". [Biological gender stereotypes in the language. XII International Symposium on psycholinguistics and communication theory "Linguistic awareness and image of the world"] Moscow, 2-4 June. 78-79.
- Lakoff, G., & Johnson, M. (2003). *Metaphors We Live By*. 2nd ed. The University of Chicago Press.
- Philips, S. U. (1987). *Introduction: The interaction of social and biological processes in women's and men's speech. Language, gender and sex in comparative perspective*. Eds. S.U. Philips, S. Steel, Ch. Tanz. New York, 1-11.
- Pyykkönen, P., Hyönä, J., & van Gompel, R.P.G. (2010). Activating Gender Stereotypes During Online Spoken Language Processing. Evidence From Visual World Eye Tracking. *Experimental Psychology*, 57 (2), 126–133.
- Rezanova, Z. I. (2011). Gender metaphor: typology, lexicographic interpretation, context representation. *Tomsk State University Journal of Philology*, 2 (14), 47-57.
- Rezanova, Z. I., & Komissarova, O. V. (2012). Metafora v modelirovanii gendernyh oppozicij: metodika analiza, tipologija [The metaphor in modelling gender oppositions: analysis methodology, typology]. *Language and culture*, 2(18), 80 – 90 (Rus.)
- Rezanova, Z., Nekrasova, E., & Shilyaev, K. (2014). Gender-marked Metaphors: Influence of Grammatical Gender and Animateness on Referential Choice of Metaphorical Name of the Person in the Russian language. *Procedia - Social and Behavioral Sciences*, 154, 280 – 285.
- Tafel, K. (1997). *Die Frau im Spiegel der russischen Sprache*. Wiesbaden.
- Ushakin, S. A. (1999). *Pole pola, Zhenshhina. Gender. [Pole pola, Women. Gender]*. (pp.35-45). Moscow: Kultura. (Rus.)