“Edible” colour names: age-related differences in Russian

Yulia A. Griber[a]*, Galina V. Paramei[b], Dimitris Mylonas[c]

[a] Smolensk State University, Smolensk, Russia
[b] Liverpool Hope University, Liverpool, UK
[c] University College London, London, UK
* y.griber@gmail.com

ABSTRACT

The present study is an age-group analysis of Russian colour terms (CTs) derived from names of food objects and edible substances. CTs were elicited in a web-based experiment using an unconstrained colour-naming method. Respondents, native Russian speakers (N = 2,457), were aged between 16-95 years. In the analysis, data were stratified for seven age cohorts: 16-19, 20-29, 30-39, etc., the eldest group being ≥70 years old. For each age group, we estimated (1) frequency of occurrence of individual CTs; (2) the list of “edible” categories and the inventory of CTs in each category; (3) the number of descriptors derived from individual “edible” object names (the term’s derivational productivity). Similarities in age-groups’ inventories of “edible” colour names were visualized using the hierarchical Ward’s clustering method. The findings indicate considerable age-related variation in CT referents, which we attribute to last-decades’ marked changes in social, including “gastronomic”, reality of Russian speakers.

Keywords: *“Edible” colour terms, Russian, age-related differences*

INTRODUCTION

Across languages, studies provide evidence that richness and linguistic refinement of colour-term vocabulary differs markedly among representatives of different age groups. In particular, it was shown that the number of object-derived colour names, compared to nonspecific ones, varies in different age groups (Simpson and Tarrant 1991), with older people manifesting less extensive colour space partitioning (Kay 1975), but richer colour lexicon than younger speakers (Samarina 2007). However, systematic exploration of colour-naming patterns of speakers from different age groups of a certain language, to our knowledge, is hardly existent; the situation pertains to Russian language as well.

With the aim to stratify participants’ responses according to age groups, in the present study we extended our earlier analysis of Russian colour terms derived from names of food objects and edible substances (Griber et al. 2018). Metonymically, such “edible” colour names stand for colour of the

objects in question. In modern Russian language, they, too, constitute a substantial number of non-basic colour terms (non-BCTs).

EXPERIMENT

Colour names were elicited in a web-based psycholinguistic experiment (Mylonas and MacDonald 2010, http://colournaming.com). Colour samples (N = 606 in total) were approximately uniformly distributed in the Munsell Renotation Dataset with an addition of 8 samples at the corners of the sRGB cube and 9 neutral samples. An unconstrained colour-naming method was employed: observers were free to name any number of randomly selected colour samples using any colour descriptor in Russian, either a single word, or a compound, or term(s) with modifiers or qualifiers. In addition, information about the participant's residency, nationality, language proficiency, educational level, age, gender, and colour competence was collected.

Respondents, native speakers of Russian (N = 2,457; 1,402 females), were aged between 16 and 95 years (mean age 42.54, SD = 17.71). They typed their responses using a Cyrillic alphabet. The participant sample was drawn using a combination of several sampling schemes. At an initial stage (n < 1000), we used a simple random sampling. This was followed by a stratified sampling, distinguishing seven age groups: 16-19, 20-29, 30-39 years, and so on, with the eldest group being 70 years and over.

The dataset included 55,818 responses; those of observers with normal colour vision were only considered. Of all responses, 18,300 (33%) contained object-derived colour terms; 6,811 (12%) of these were derived from names of food objects and edible substances (Figure 1).

For each age group, we estimated the following linguistic measures:

(i) frequency of occurrence of individual colour terms;

(ii) the list of "edible" categories and the inventory of colour names in each category;

(iii) the patterns and number of mono- and polylexemic descriptors derived from each "edible" object name (the term's derivational productivity).

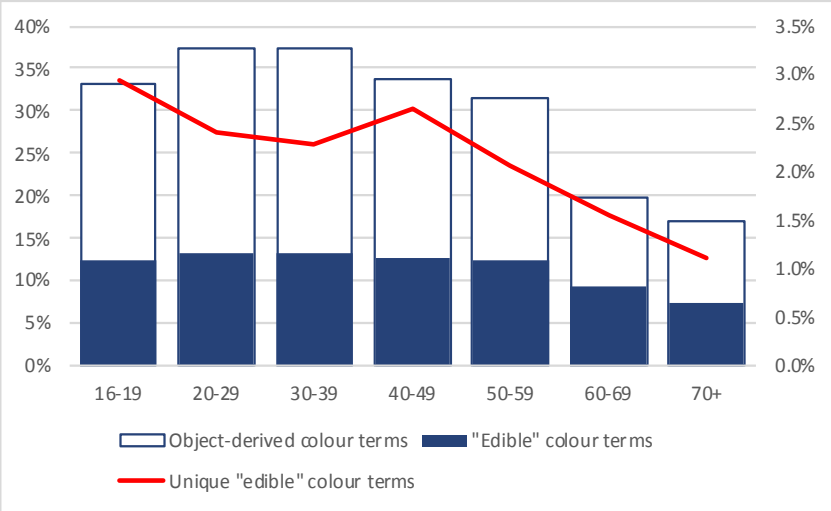

Figure 1: Percentage of occurrence of object-derived and, specifically, "edible" colour terms in different age groups (left axis) and of distinct "edible" colour names elicited in each age group (right axis) of Russian speakers.

RESULTS AND DISCUSSION

(i) Frequency of occurrence of "edible" colour names in different age groups

Initially, we compared frequency of recurring "edible" colour names in different age groups. It appeared that six out of the ten most frequent non-BCTs were similar in all age groups, namely, *salatovyj* "lettuce-coloured", *bordovyj* "claret" (and its nominalized version *bordo*), *malinovyj* "raspberry", *persikovyj* "peach", *gorčičnyj* "mustard-coloured", and *mâtnyj* "mint", although the name ranking varied slightly among the groups (highlighted by blue in Table 1). The first three of these – *salatovyj, bordovyj/bordo*, and *malinovyj* – were offered most frequently (cf. Paramei et al. 2018).

The inventory of other most frequent colour names revealed, in comparison, age-related differences. The following names were specific for individual age groups (given in bold in Table 1): *tëmno-bordovyj* "dark claret" was frequently offered only by the youngest group (16-19 years); *svekol'nyj* "beetroot" was frequently offered in the 40-49 years group; *višnëvyj* "cherry-coloured" was high in frequency for respondents over 50; *morkovnyj* "carrot" occurred among frequent "edible" names in the 60-69 years group. Conversely, "negative" age-group colour-naming referents were observed: the recurring term *slivovyj* "plum" (Table 1, in purple) was not among the most frequent terms of participants aged 40-49 or 60-69 years; another recurring term, *olivkovyj* "olive" (Table 1, in olive), did not occur among frequent lists of participants over 60 years.

	16-19	20-29	30-39	40-49	50-59	60-69	70+
1	salatovyj	salatovyj	salatovyj	salatovyj	salatovyj	bordovyj	Salatovyj
2	bordovyj	bordovyj	bordovyj	bordovyj	bordovyj	salatovyj	bordovyj
3	persikovyj	malinovyj	malinovyj	malinovyj	malinovyj	persikovyj	persikovyj
4	malinovyj	gorčičnyj	gorčičnyj	gorčičnyj	persikovyj	malinovyj	malinovyj
5	gorčičnyj	persikovyj	mâtnyj	persikovyj	gorčičnyj	gorčičnyj	slivovyj
6	mâtnyj	mâtnyj	persikovyj	fistaškovyj	mâtnyj	mâtnyj	mâtnyj
7	slivovyj	baklažanovyj	limonnyj	olivkovyj	bordo	**višnëvyj**	**višnëvyj**
8	bordo	slivovyj	bordo	**svekol'nyj**	olivkovyj	limonnyj	gorčičnyj
9	olivkovyj	limonnyj	slivovyj	mâtnyj	**višnëvyj**	**morkovnyj**	baklažanovyj
10	**tëmno-bordovyj**	olivkovyj	olivkovyj	limonnyj	slivovyj	baklažanovyj	limonnyj

Table 1: Ten most frequent "edible" colour names elicited in different age groups of Russian speakers.

(ii) The list of "edible" categories and the inventory of colour names in each category

Following our previous classification (Griber et al. 2018), in the present study we also focused on 14 specific categories of "edible" objects, functioning as colour-term referents – Fruits, Vegetables, Berries, Herbs, Nuts, Cereals, Spices, Fish, Poultry, Dairy products, Sweets, Alcohol, Hot and Soft Drinks – and compared their inventories in different age groups. For all age groups, among the most common "edible" object categories as colour-term referents were Fruits and Berries. Furthermore, participants under 40 years frequently referred to Sweets; in comparison, respondents over 50 years eagerly named colours using various Vegetables (Figure 2, Table 2).

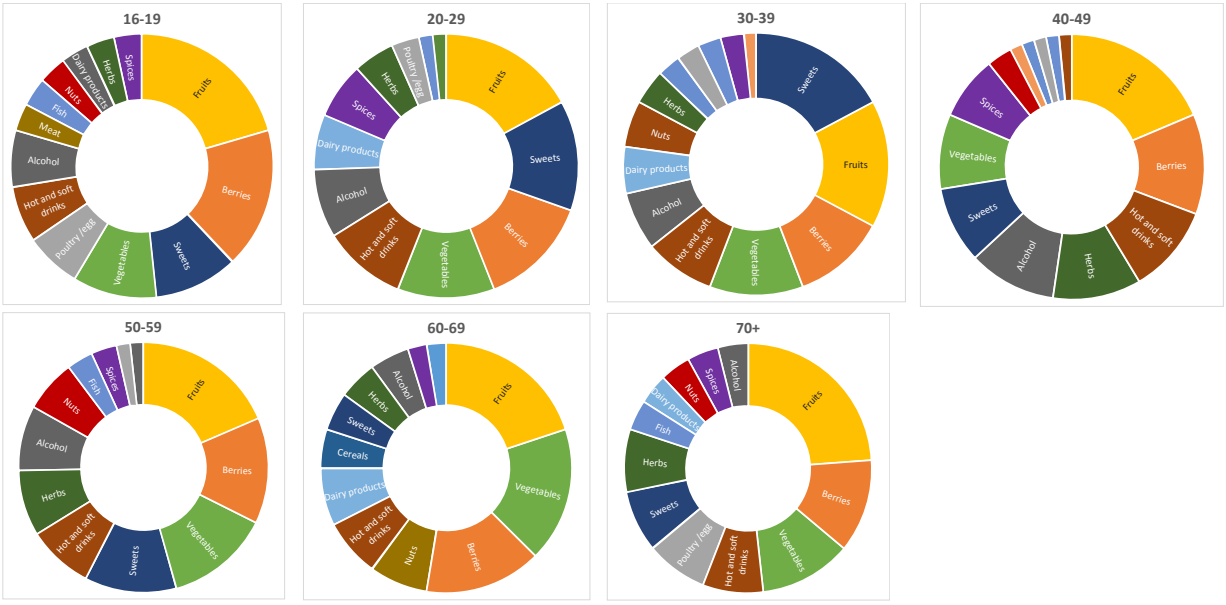

Figure 2: Categories of "edible" objects referred to in colour names by different age groups of Russian speakers.

(iii) The patterns and number of mono- and polylexemic descriptors derived from individual "edible" object names (the term's derivational productivity)

In all age groups, colour terms derived from names of "edible" objects constituted a significant number: in total, among 3,128 unique colour words in the Russian dataset we identified 2,297 terms (73%) derived from names of objects, with nearly one third of them, 690 (22%), derived from the names of food objects and edible substances.

The most frequent colour terms, in all age groups, also revealed rich derivational productivity, i.e. the variety of unique mono- and polylexemic descriptors derived from the object name. The greatest variety of descriptors, in the age groups 16-19 and 50-59 years, was obtained for *salatovyj* "lettuce-coloured" (8 and 17 respectively), and in all other groups for *bordovyj/bordo* "claret" (between 5-29 derivatives in different age groups).

Noteworthy, the proportion of polylexemic colour terms derived from food objects and edible substances appears to decrease with age (Figure 3, left). Compared to younger respondents, participants over 60 years offered more often monolexemic "edible" colour terms (e.g. *persikovyj* "peach"), while much less frequently double and triple compound colour terms (e.g. *vinno-krasnyj* "wine-red"; *žëlto-zelenovato-gorčičnyj* "yellow-greenish-mustard") or colour terms with achromatic modifiers, such as *svetlo-* "light", *tëmno-* "dark", *jarko-* "bright", *tusklo-* "dull", *bledno-* "pale", *nežno-* "tender", or *grâzno-* "dirty". Conversely, participants in the age between 20–39 years eagerly used unusual objects as referents, as well as complex patterns entirely absent in the lexicon of other age groups, such as *klubnika so slivkami* "strawberry with cream", *melanzana* "melanzane" (an Italian classic bake with aubergines, tomato and cheese), *moloko s ostatkami kofe* "milk with coffee residue".

Furthermore, to name colour stimuli, participants aged between 20-59 years more frequently than respondents from younger or older age groups employed the model "*cveta X*" ("colour of X") (e.g. *cvet golubiki* "colour of bilberry") or the object-noun model "*X*", as a compound or modifier (e.g. *višnâ* "cherry"), rather than traditional Russian-language suffixed adjectival forms (e.g. *višnëvyj* "cherry-coloured") (Figure 3, right).

Category	Inventory of colour-term referents	Total	16-19	20-29	30-39	40-49	50-59	60-69	70+
Fruits	*abrikos* "apricot", *apel'sin* "orange", *arbuz* "watermelon", *banan* "banana", *citrus* "citrus", *frukt* "fruit", *granat* "pomegranate", *gruša* "pear", *jabloko* "apple", *kuraga* "dried apricot", *lajm* "lime", *limon* "lemon", *mandarin* "tangerine", *maslina* "black olive", *olivka* "(green) olive", *persik* "peach", *sliva* "plum"	17	6	10	11	12	11	8	6
Sweets	*huba buba* "Hubba Bubba", *karamel* "caramel", *krem* "custard", *konfeta* "candy", *ledenec* "lollipop", *mëd* "honey", *moroženoe* "ice cream", *pastila* "pastila", *pečen'e* "cookie", *plombir* "Plombir ice cream", *sorbet* "sorbet", *šerbet* "sherbet", *šokolad* "chocolate", *vanil'* "vanilla", *varen'e* "jam", *žvačka* "bubble gum"	16	3	8	12	6	7	2	2
Vegetables	*asparagus* "asparagus", *baklažan* "aubergine", *gorokh* "pea", *kabačok* "squash", *kapusta* "cabbage", *kartofel'* "potato", *morkov'* "carrot", *ogurec* "cucumber", *paprika* "paprika", *perec* "pepper", *pomidor*, *tomat* "tomato", *salat* "lettuce", *svëkla* "beetroot", *tykva* "pumpkin"	14	3	7	8	6	8	7	3
Berries	*brusnika* "cowberry", *černika* "blueberry", *čerešnâ* "sweet cherry", *eževika* "blackberry", *golubika* "bilberry", *jagoda* "berry", *klubnika* "strawberry", *klûkva* "cranberry", *malina* "raspberry", râbina "rowan berry", *vinograd* "grape", *višnâ* "cherry, cerise"	12	5	8	8	8	8	6	3
Herbs	*koriandr* "coriander", *lemongrass* "lemongrass", *lipa* "lime", *lën* "flax", *mâta* "mint", *raps* "rapeseed", *tabak* "tobacco", *vodorosl'* "sea weed", *zelen'* "potherbs"	9	1	3	3	7	5	2	2
Alcohol	*bordo* "bordeaux, claret", *burgundskij* "burgundy", *likër* "liqueur", *marsala* "marsala", *portvejn* "port wine", *punš* "punch", *šampan* "champagne", *šartrëz* "chartreuse", *vino* "wine"	9	2	5	5	7	5	2	1
Hot and soft drinks	*čaj* "tea", *espresso* "espresso", *kakao* "cocoa", *kapučino* "cappuccino", *kofe* "coffee", *koktejl'* "cocktail", *mokko* "mocha", *sok* "juice", *voda* "water"	*9*	2	6	6	7	5	3	2
Dairy products	*jogurt* "yoghurt", *maslo* "butter", *moloko* "milk", *slivki* "cream", *smetana* "sour cream", *syr* "cheese", *tvorog* "cottage cheese"	7	1	4	4	1	1	3	1
Nuts	*fistaška* "pistachio", *funduk "hazel nut"*, *kaštan* "maroon", *kedrovyj orekh* "pine nut", *mindal'* "almond", *orekh* "nut"	6	1	1	4	2	4	3	1
Spices	*gorčica* "mustard", *karri* "curry", *korica* "cinnamon", *mentol* "menthol", *šafran* "saffron"	5	1	4	2	5	2	1	1
Cereals	*kukuruza* "maize", *pšenica* "wheat", *rož'* "rye"	3	0	0	2	1	0	2	0
Poultry	*jaičnaâ skorlupa* "egg shell", *želtok* "egg yolk"	2	2	2	2	1	1	0	2
Fish	*losos', selman* "salmon"	1	1	1	1	1	1	1	1
Total		**110**	**28**	**59**	**68**	**64**	**58**	**40**	**25**

Table 2: Inventory of frequent "edible" referent objects in different age groups of Russian speakers.

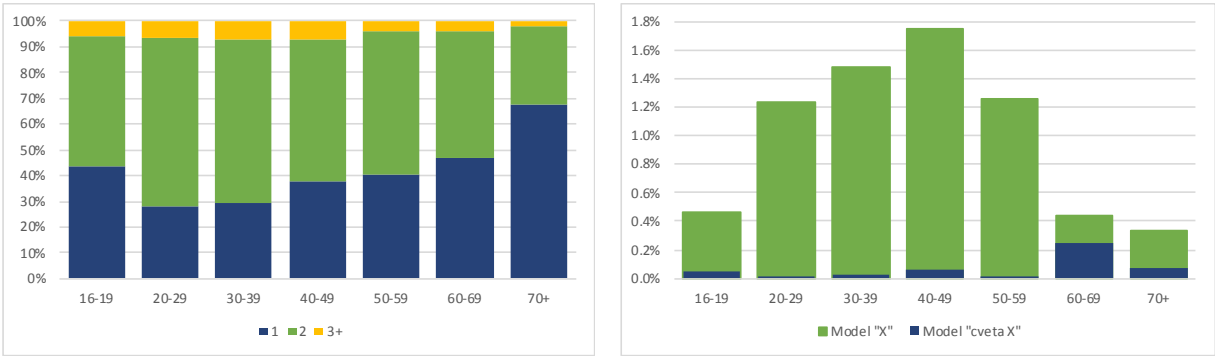

Figure 3: Percentage of colour descriptors with varying number of words in Russian speakers' different age groups (left); frequency of occurrence of the model "*cveta X*" ("colour of X") and object-noun model "*X*" (right).

(iv) Visualizing similarities between different age groups in inventories of "edible" colour names

To visualize similarities between different age groups in inventories of "edible" colour names, we implemented a hierarchical Ward's clustering method (Ward 1963). The dendrogram (Figure 4) prompts that participants 20-29 and 30-39 (born between 1980-1999) fall into one cluster; in comparison, the 60-69 years group shares similarity with the 40-49 and 50-59 years groups (respondents born between 1950-1979); while the 16-19 year old are similar to those aged 70 and above.

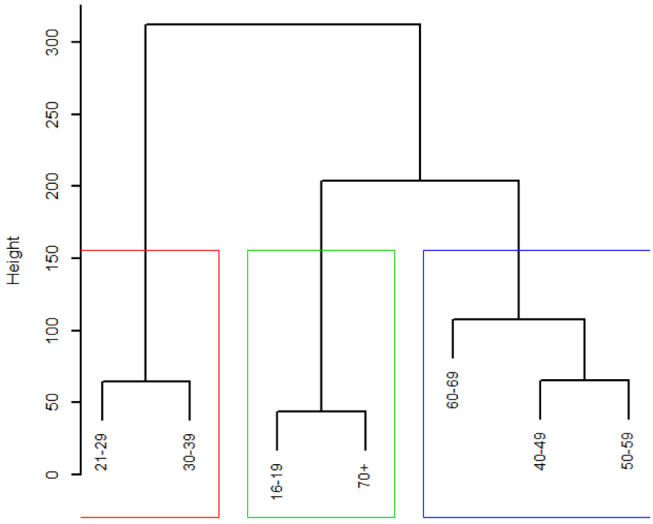

Figure 4: Dendrogram representing inter-age group adjacencies in inventories of "edible" colour names.

CONCLUSION

The present findings indicate that colour-term referents and patterns of naming colour vary considerably between age groups. We attribute the revealed differences to dramatic social and economic changes in the Russian society during last decades and, hence, in life experience of informant age cohorts. The inventory of "edible" colour terms is supposed to reflect the diversity of "gastronomic" reality of different age groups of Russian speakers – their characteristic cuisine, the array of available food products (marked by substantial influx of western products after 1991) and, as a result, inter-generational shift in "semantic anchors" in naming colours.

ACKNOWLEDGEMENTS

Yulia A. Griber was supported by the Grant 17-29-09145 from the Russian Foundation for Basic Research (RFBR).

REFERENCES

Griber, Y. A., D. Mylonas, and G. V. Paramei. 2018. Objects as culture-specific referents of colour terms in Russian. *Color Research and Application* 43 (6): 958-975.

Kay, P. 1975. Synchronic variability and diachronic change in basic color terms. *Language in Society* 4 (3): 257-270.

Mylonas, D., and L. MacDonald. 2010. Online colour naming experiment using Munsell colour samples. In: *Proceedings of the 5th European Conference on Colour in Graphics, Imaging, and Vision (CGIV)*. Springfield: IS&T, 27-32.

Paramei, G. V., Y. A. Griber, and D. Mylonas. 2018. An online colour naming experiment in Russian using Munsell colour samples. *Color Research and Application* 43 (3): 358-374.

Samarina, L. V. 2007. Gender, age, and descriptive colour terminology in some Caucasus cultures. In: *Anthropology of colour: interdisciplinary multilevel modeling*, R. E. MacLaury, G. V. Paramei, and D. Dedrick, eds. Amsterdam: John Benjamins, 457-466.

Simpson, J., and A. W. S. Tarrant. 1991. Sex- and age-related differences in colour vocabulary. *Language and Speech* 34 (1): 57-62.

Ward, J. H. 1963. Hierarchical grouping to optimize an objective function. *Journal of the American Statistical Association* 58 (301): 236-244.