VERB LEXICALIZATION IN RUSSIAN [174]
(taken as example verbs of motion)

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ABSTRACT
This paper presents a study of possible factors that influence lexicalization of motion in Russian, specifically the choice of a verb from pairs of verbs of motion *идти-ходить [to walk], бежать-бегать [to run], плыть-плавать [to swim], лететь-летать [to fly], тащить-таскать [to drag], катить-катать [to roll], носить-нести [to carry]*. We restricted the study to cases where a narrator observes the scene of motion s/he describes rather than memorizes or imagines it. The conclusion that at least five factors may influence the verb choice is based on the extracts from literature, and empirical observations. The conditions are defined as follows: motion path, motion space, motion regularity, and targeted vs. random motion. The influence of two factors (motion path and motion target) was tested experimentally, and the results have shown that these two factors represent significant determinants of the verb choice.

KEYWORDS
Lexicalization, verbs of motion in Russian, cognitive experiment, идти-ходить, бежать-бегать, плыть-плавать, лететь-летать, нести-носить.

INTRODUCTION
The problem of lexicalization is a challenging subject, because it is positioned on the borderline of cognitive science and lexical semantics. This paper explores one of the parts that constitute this phenomenon; namely lexicalization of motion in Russian.

In Russian, there are pairs of verbs, which are very similar in morphology and describe someone's motion (*идти-ходить [to walk]),* or a motion of an object caused by someone/something (*нести-носить [to carry], etc.).* These pairs are commonly referred to as two types of verbs of motion. At first sight, the use of one or the other verb from such a pair is determined by whether the motion is goal-driven or not, but under careful consideration it becomes clear that the case is more complicated than it initially appears.

PAIRS OF MORPHOLOGICAL DERIVATIVES
14 pairs or morphological derivatives of Russian verbs of motion can be found in the Word-Formational Dictionary [4] (see Table 1). Generally these verbs are derivatives that share the same root and belong to the same word-formation paradigm, but there are also some exceptions (*идти-ходить, вести-водить*).

Table 1. Verb derivative pairs used for description of goal-driven vs. aimless motion

N	Derivative for goal-driven motion	Derivative for aimless motion	Semantics	Troponyms of	English equivalent
1	бежать	бегать	MOVE+fashion	MOVE	to run
2	брести	бродить	MOVE+fashion	MOVE	to stroll, to walk
3	везти	возить	CASE(MOVE)	CASE	to drive, to

N	Derivative for goal-driven motion	Derivative for aimless motion	Semantics	Troponyms of	English equivalent
			+fashion		transport
4	вести	водить	CASE(MOVE) +fashion	CASE	to lead, to conduct
5	гнать	гонять	CASE(MOVE) +fashion	CASE	to turn out
6	ехать	ездить	MOVE+fashion	MOVE	to go, to ride
7	идти	ходить	MOVE+fashion	MOVE	to go, to walk
8	катить	катать	CASE(MOVE) +fashion	CASE	to roll, to wheel, to trundle
9	лезть	лазить	MOVE+fashion	MOVE	to climb up
10	лететь	летать	MOVE+fashion	MOVE	to fly
11	нести	носить	CASE(MOVE) +fashion	CASE	to carry
12	плыть	плавать	MOVE+fashion	MOVE	to swim
13	ползти	ползать	MOVE+fashion	MOVE	to creep, to crawl
14	тащить	таскать	CASE(MOVE) +fashion	CASE	to drag

There are general observations that lead to the establishment of certain regularities:

1.   All verbs are in imperfective aspect.
2.   All verbs denote motion, either spontaneous or forced motion of an object, within some area.
3.   All pairs could be divided into two groups.

3.1. The first group possesses the semantics of a spontaneous motion (MOVE); pairs of this group differ in a manner of motion they describe. In other words, these pairs are troponyms sharing a meaning MOVE. The group consists of 8 such pairs (see Table 2).

Table 2. Pairs of troponyms 'MOVE'

Verb pairs		Manner of motion	English equivalent
бежать	бегать	Motion on foot, with a rather high velocity and without a vehicle	to run
брести	бродить	Motion on foot, with a very low velocity and without a vehicle	to stroll, to walk
ехать	ездить	Moving by vehicle	to go, to ride
идти	ходить	Motion on foot, with a medium velocity and without a vehicle	to go, to walk
лезть	лазить	Moving through obstacles	to climb up
лететь	летать	Moving by air	to fly
плыть	плавать	Moving on water	to swim
ползти	ползать	Moving without use of feet	to creep, to crawl

It is significant that this list contains troponyms which differ in environment of motion (*плыть-плавать [to swim], лететь-летать [to fly]*) as well as those that denote moving across obstacles (*лезть-лазить [to climb]*).

3.2. The second group of 6 pairs semantically expresses causation (causative verbs). The verbs of this group represent motion of the type CAUSE / MOVE and denote a forced motion of an object caused by someone/something (see Table 3). All verbs of this group are troponyms which differ in the manner of motion causation.

Table 3. Pairs of troponyms CAUSE / MOVE

Verb pairs		Manner of motion	English equivalent
везти	возить	To transport an object in a vehicle	to drive, to transport
вести	водить	To guide a spontaneous motion of an object	to lead, to conduct
гнать	гонять	To make an object leave some area	to turn out
катить	катать	To move a round object by rolling	to roll, to wheel, to trundle
нести	носить	To move an object by supporting	to carry
тащить	таскать	To cause an object to trail along some surface	to drag

Further inspections of lexicalization of motion by means of one or the other type of verbs show that factors influencing verb selection reflect goal-driven vs. random behavior, and also exhibit a multidimensional perspective.

Here are some examples[179].

Table 4. Russian corpora: verbs of motion

N	Example	English version	Hypothetic factor
1	*Я не встречала его больше никогда, когда-то мы с ним один-единственный раз в жизни ехали вместе к кому-то на далекую дачу, в рабочий поселок; идти надо было километра четыре по лесу, а потом по голому полю, которое, может, и красиво в любое время года, но в тот день оно было ужасно, мы стояли на краю леса и не решались выйти…* [Людмила Петрушевская. Через поля (1987)]	I have never met him since then. Once and the only time in my life we were going together to someone's faraway summer cottage in an industrial settlement. We had to walk [*идти*] through the forest for about four kilometers and, afterwards, across the bare field, which may be beautiful in any season, but that day it was awful, and we stood at the edge of the forest and couldn't make ourselves to go out… [Lyudmila Petrushevskaya. Across the fields (1987)]	Motion space, motion goal
2	*Может быть, на этом поле было что-то посажено, но к тому моменту не выросло пока что ничего, ноги разъезжались, ломались, корежились в этом вздыбленном голом поле, поскольку мы решили выбрать более короткий путь и идти напрямик.* [Людмила Петрушевская. Через	There could have been something sowed at this field, but nothing had come up by that moment, and it made our legs slide, break and bend in this rugged bare field because we decided to choose the shorter way and go straight [*идти*]. [Lyudmila Petrushevskaya. Across the fields (1987)]	Motion space, motion goal

[179] Most examples were selected from the National Russian Corpora (www.ruscorpora.ru), and one from the novel "Master and Margarita" by Mikhail Bulgakov.

N	Example	English version	Hypothetic factor
	поля (1987)]		
3	***Иди*** *домой и скажи другим, что произошло с тобой...* [Антоний (Блум), митрополит Сурожский. Исцеление гадаринского бесноватого (1987)]	Go [***идти***] home and tell the others what happened to you… [Anthony, the Metropolitan of Surozh. The healing of a devil-possessed from Gadarene. (1987)]	Motion goal
4	*На этот раз* ***иду*** *к диспетчеру ООО «Пермнефтеотдача».* [Виктор Пермяков. Нефтяные промыслы камского моря // «Нефтяник» (Пермь), 2003.07.08]	This time I'm going [***идти***] to the dispatcher of "Permnefteotdacha" LTD. (From a newspaper)	Motion goal
5	*— Кисин и Сариснудян — жители Ишима, — сказал «Известиям» помощник дежурного Тарского ОВД Олег Добрачев, — но* ***идти*** *в родной город им было гораздо дальше.* [Ирина Подлесова. Рабочих удерживали на буровой насильно // «Известия», 2002.07.14	"Kisin and Sarisnudyan live in Ishim", told the assistant police officer Oleg Dobrachev to a reporter from 'Izvestia', "but it was much further for them to go [***идти***] to their native town". (From a newspaper)	Motion goal
6	*Прекрасное животное, но пришлось отправить ее туда — она очень хорошо подготовлена, а от уровня подготовки зависит жизнь тех людей, кто* ***идет*** *за ней — ведь когда ищут мину, собака* ***идет*** *первой.* [Юлия Зорина. Собачья работа // «Семья», 2001.11.14]	It is a fine animal, but we had to send it there since it is very well trained, and lives of people who walk with [***идти***] it is up to it's training level, because when they look for a mine, the dog goes [***идти***] first. (From a newspaper)	Path, goal
7	*Поэтому и* ***ходят*** *толпы людей, и смотрят, и спрашивают, и едят.* [Ольга Шомина. Продэкспо 2000 // «Рекламный мир», 2000.02.15]	That's why crowds of people walk [***ходить***] around and look and ask and have their meals. (From a newspaper)	Habitual, random motion
8	*Артур* ***ходил*** *между агрегатами, любовно и хозяйственно похлопывал их по бокам и взахлеб расписывал прелести эксплуатации...* [«Комбайнер» // «Криминальная хроника», 2003.07.08]	Arthur walked among [***ходить***] the harvesters and, being full of enthusiasm and thrift, clapped them on the sides and excitely drew a picture of merits of their operation. (From a newspaper)	Motion path, absence of goal
9	*А наше Северное морское пароходство готово* ***возить*** *эти грузы через Баренцево и Норвежское моря.* [Анатолий Ефремов: «Севморпуть останется российским» // «Известия», 2002.01.28]	But our Northern sea steamship company is ready to transfer [***возить***] these cargoes through Barents Sea and Norwegian Sea. (From a newspaper)	Habitual motion, absence of goal
10	*Возле дома была кутерьма. По асфальтированному тротуару,*	There was turmoil by the building. On the asphalt pavement strewn	Chaotic motion

N	Example	English version	Hypothetic factor
	усеянному битым стеклом, бегали и что-то выкрикивали люди. Между ними уже мелькали милиционеры. [Булгаков]	with broken glass, people were running [*бегать*] and shouting something. Policemen were already flashing among them. [Mikhail Bulgakov. Master and Margarita]	
11	Однако на этот раз РОСИЗО **везет** на него в качестве главного события фундаментальную выставку «Русская пикториальная фотография», которая уже с успехом прошла в прошлом году на фестивале в Хьюстоне. [Анна Петрова. Немного классики и эксперимента. Наши фотографы на Братиславском фестивале // «Известия», 2002.10.25]	But this time ROSIZO takes [*везти*] there the substantial exhibition "Russian Pictorial Photography" as a main event, and this exhibition had already been a great success last year at the festival in Houston. (From a newspaper)	Goal-driven behavior
12	*«Михаил Сомов»* **везет** *медиков в Тикси* [Н. Онушко. «Михаил Сомов» везет медиков в Тикси // «Республика Саха» (Якутск), 1996.09.05]	"Mikhail Somov" [the ship] is bringing [*везти*] medical men to Tiksi. (From a newspaper)	Target, goal-oriented behavior
13	Нельзя сказать *идти по комнате,* можно - *ходить по комнате.*	One cannot say "*идти по комнате*" [to walk within the room], but only "*ходить по комнате*" [to walk around the room or to go through the room].	Closed motion space, absence of goal
14	Нельзя сказать *плыть в аквариуме,* можно – *плавать в аквариуме.*	One cannot say "*плыть в аквариуме*" [to swim at or within the aquarium], but only "*плавать в аквариуме*" [to swim in the aquarium].	Closed motion space, absence of goal

BASIC ASSUMPTIONS

The conclusions drawn from Table 4 - preliminary introspection and corpora analysis - allows us to assume that major factors affecting lexicalization of motion in Russian are as follows. The verbs can be roughly divided into two groups depending on the orientation of motion (goal-oriented vs. random). In addition, there are five basic features of the scene that might affect verb selection depending on whether the narrator observes a scene of motion. These are: path of motion, regularity of motion, characteristics of motion space, and certain targets and goals of the person who moves itself or causes the motion of an object (Table 5).

Table 5. Hypothetical factors of lexicalization

Factor	Description	Relevant examples
Path, or trajectory of a motion	The path the moving person goes along	2, 6, 10
Regularity (cyclicity, periodicity, repetitions)	Cycles in motion: passages could be unique or repeated, the path could be either open or closed, uniform or periodical	7, 10

Factor	Description	Relevant examples
Motion space	The space where the motion takes place; this space could be open or closed	1, 2, 13, 14
Target/aimless, chaotic motion	The moving person could approach a certain target in its motion, or just move aimless and chaotically	1, 3, 4, 5, 6, 11, 12
Goal-driven behavior	The moving person has some goal, and this goal is known to a narrator who describes the motion	11

Each factor from the list has its own parameters. For example, *path* could be linear, curvilinear (and periodical like zigzag or sinusoidal), chaotic, closed (like circular, ellipsoidal) and both closed and periodical at the same time.

By *regularity* we mean cyclicity, periodicity and repetitions in motion. When the observer who describes the motion can see the whole path, and the path is closed, we can speak of cyclicity. There is certain periodicity when the dynamics of motion is periodic, like in motion along sinusoidal trajectory. Repetitions are multiple iterations of the same movements or passages, and the number of iterations might also affect the verb choice.

The main possible sources of influence generally described as *motion space are*: the nature of the space that could be open (e.g. **field** or **sea**) or closed (e.g. **room** or **aquarium**), and a scale ratio of the space to the moving object.

There are also several options of a target: it could be moving or stationary or flashing or just imaginary. A moving person could approach a target which can be either location (e.g. **Tiksi town**) or object (e.g. **home** or **school building**).

Then, the behavior of a moving person and the manner of this behavior could be caused and affected by variety of factors, both internal (needs, emotions and goals) and external forces (e.g. a strong wind). There also could be such options of the goal-driven motion as approaching some target object vs. avoiding an object (e.g. a goal to escape from pursuit).

Last but not least, verb selection can be affected by some representation of the scene that emerges in the observer's cognitive system rather than by characteristics of the scene itself. For instance, two different observers can disagree whether a bird flies by itself, or it is carried by the wind, and such disagreement would lead them to different lexicalization. If so, then the influence of each factor described above is mediated by the cognitive processes of the narrator who observes the motion.

The general influence of all listed factors upon verb lexicalization is obvious – however, the extent of influence of each factor upon a particular verb pair is not described yet, and the ways of possible interactions of the above factors are still open to question. Since corpus analysis and introspection fail to provide appropriate answers to the questions posed above, we resorted to the cognitive experiment as a main method of the study.

EXPERIMENT
The purpose of the experiment is to test the influence of several possible factors upon the verb choice in Russian verbs of motion. For the first experiment, we have restricted the range of factors under consideration, so that the following hypotheses can be tested:

1.   Verb lexicalization depends on the path, or trajectory, of the movement under observation. The straight-line (directed) movement is most likely to be described by verbs like 'идти', ('type A' verbs), while the chaotic (undirected) movement is most likely to be described by verbs like 'ходить' ('type B' verbs).

2.   The choice of type A vs. type B depends on whether the narrator observes an obvious target of the motion. The probability of type A is supposed to be higher when an observer can see both the moving subject and the target it moves towards or after.

3.　　　If the narrator observes the target of the motion, the choice of type A vs. type B also depends on whether this target is stationary or moving.

In the experiment, each participant was tested as a narrator who observes and describes some simple motion scenes and events represented as short flash animations. Independent variables were manipulated through manipulation of movie properties, and probabilities of each verb against each property were measured.

METHOD

Design. Possible lexicalization factors were studied on several levels: four levels for the motion path (linear, zigzag, chaotic and circular), and three levels (no visible target, stationary visible target and moving visible target) for the type of a target that the movie character approaches. The influence of these factors was also tested under 6 varying conditions, originated from combinations of two additional factors: movie characters (realistic or abstract) and the environment of their motion (over land/on foot, in the air, in the water). The experiment employed 4x3x2x3 fractional factorial design with motion path, target type, character type, and the environment of motion as independent variables. The final set of selected treatment combinations is represented in Table 6 (excluded treatment combinations are marked by deleted cells).

All trials were organized in two blocks, randomized within each block. The first block (24 trials) consisted of trials from experimental treatment combinations based on 'no visible target' level of the target type factor, and distractor [180] trials, while the second block contained all other experimental conditions based on 'stationary target' and 'moving target' levels of the target type factor, and no distractors. Distractor movies from the first block depicted several additional characters approaching either stationary or moving targets, so participants were not exposed to any regularity. Such design was used to prevent any priming effects from movies with obvious visible targets upon the interpretations of movies without any obvious target faced by the character.

Participants. 34 Moscow students and graduates, 17 men and 17 women at the age range of 16-23 (mean age 19) volunteered for participation. All subjects were native speakers of Russian and had their major in either psychology (18) or computer science (16).

Stimuli. The stimulus set consisted of 72 cartoons prepared by means of Macromedia Flash MX, 60 test cartoons (one per treatment combination) and 12 distractors. Each cartoon was no more than 25 seconds in duration and depicted an episode organized according to the following outline: the character started from the left, moved along one of the four possible paths and stopped in the right part of the screen. Start and end points as well as paths were kept constant through the set of movies despite of the character, while the character size and velocity, and the size, velocity and motion path of a target (if any) varied. Realistic characters were represented by a dog, a bee and a fish, which could approach a bone, a car, a flower, an ice-cream or a worm, while abstract characters included three triangles, which could approach different balls. For each abstract character motion environments were depicted in an abstract way too, and the whole impression of a certain type of environment was supported by the way of character's motion like movements of 'swings', 'legs' and 'bodies' of triangles (see Fig.1).

Protocols. Responses were collected by means of paper blank protocols, one per trial. Each protocol contained three points: a sentence completion point, an interpretation point and a free comment point. At a sentence completion point a participant was asked to fill in a blank starting like "Собака ＿＿＿＿＿(что делает?)" ['The dog ＿＿＿＿＿(what is it doing?)']. At the interpretation point a participant was asked to answer a question whether it was clear to him/

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[180] *Distractors* are special stimuli or trials embedded into the experimental procedure to distract subjects' attention from the test stimuli or trials. For instance, if a subject has to accomplish a search task there should be some other stimuli, except the target, otherwise any search is impossible. Data from distractor trials is usually excluded from the analysis.

her what constitutes the character of the movie's behavior and whether it corresponds to the way it had been demonstrated. S/he was also asked to write down the reason if yes or to indicate the option 'unclear' if not. At the third point participants were asked to provide an additional comment concerning their insights or disappointments in the movie if they had any.

Procedure. Participants were tested in groups of 6-18 people. Movies were shown on a large screen by means of a projector, so that all participants in a group could see it at the same time. Each session started with detailed instruction, which included demonstration of a protocol and a sample task accomplishment. Subjects were instructed that the scope of the study is to investigate the way of how people interpret motion in cartoons. They were asked to rely upon their first impression of the movie while filling out the protocol. Each trial started with an attention signal followed by a cartoon presentation and then by a period of time for a protocol completion. After the participants passed all 72 trials, they were provided with information about the scope of the experiment.

Analysis. Each protocol was accepted for further analysis if it contained any verb at the sentence completion point. All verbs were classified as 'type A verbs', 'type B verbs' or 'others'. The influence of each factor was tested by means of Fisher angular transformation statistics.

RESULTS

We collected a total amount of 1939 valid responses, containing more than 200 different verbs[181]. 1246 of them also include verbs of motion (64,2%) and were selected for the analysis. The descriptions obtained from participants contain almost all possible verbs of motion from group I (troponyms of MOVE) as well as some of their derivatives: *бежать-бегать, гнать-гонять, гоняться, ехать, идти-ходить, лезть, летать-лететь, носиться, плыть-плавать, ползать-ползти*. Three verb pairs *бежать-бегать [to run], летать-лететь [to fly], плыть-плавать [to swim]* formed 86,7% of the verbs of motion used.

The exact percentage of type A verbs against the total amount of verbs of motion for each condition is presented in the Table 6. The influence of each factor (motion path, target type, character type, and the environment of motion) is summarized in Table 7.

The influence of motion path upon verb selection is also shown in detail in Fig.2. While there is a decay gradient for the percentage of type A verbs used for descriptions of motion along linear, zigzag and circular/chaotic path, there is no difference in the distribution of type A vs. type B verbs produced to describe circular or chaotic motion.

Table 6. Percentage of type A verbs under each condition (treatment combination).

Treatments		Overland motion		Motion on water		Motion by air	
		Realistic character	Abstract character	Realistic character	Abstract character	Realistic character	Abstract character
No visible target	Linear	92	69	100	89	87	76
	Zigzag						
	Circular						
	Chaotic	12	13	7	22	4	4
Stationary visible target	Linear	93	81	100	94	96	96
	Zigzag	62	62	83	73	73	50
	Circular	15	0	0	13	35	6
	Chaotic	6	9	21	33	33	10
Moving visible target	Linear	89	100	96	100	93	91
	Zigzag	65	57	89	58	38	44
	Circular	8	31	63	69	42	42
	Chaotic	43	41	55	57	40	40

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[181] At the sentence completion point, participants were allowed to use any words that complied with grammatical rules, to describe the character's actions. As a result, some answers contained verbs *перемещаться, двигаться [to move]* or verbs marked as perfective (*приплыл* [has swum to]), and so on.

We can see that additional factors (character type and the environment of motion) also significantly affect the process of verb selection. Descriptions of the motion on water significantly differ from the descriptions of motion in other environments, and demonstrate more frequent type A choices. Realistic characters are also more frequently described with type A verbs than abstract ones. Another difference in verb lexicalization under this conditions - abstract vs. realistic character - is rather qualitative than quantitative: the descriptions of abstract characters demonstrate greater diversity in verbs, and they more frequently include more general verbs such as *перемещаться, двигаться [to move]*.

Table 7. The influence of experimental factors upon verb selection

| Factor	Pair of levels	More type A choices at level	Significance
Motion path	Linear/zigzag	Linear path	p<0,001
	Zigzag/circular	Zigzag path	p<0,001
	Circular/chaotic		non sign.
Motion target	No obvious target / Stationary target	Stationary target	p<0,002
	Stationary target / Moving target	Moving target	p<0,000
	No obvious target / Moving target	Moving target	p<0,05
Type of character	Realistic/Abstract	Realistic character	p<0,05
Motion environment	Overland/on water	Motion on water	P<0,000
	On water/by air	Motion on water	P<0,000
	Overland/by air		non sign.
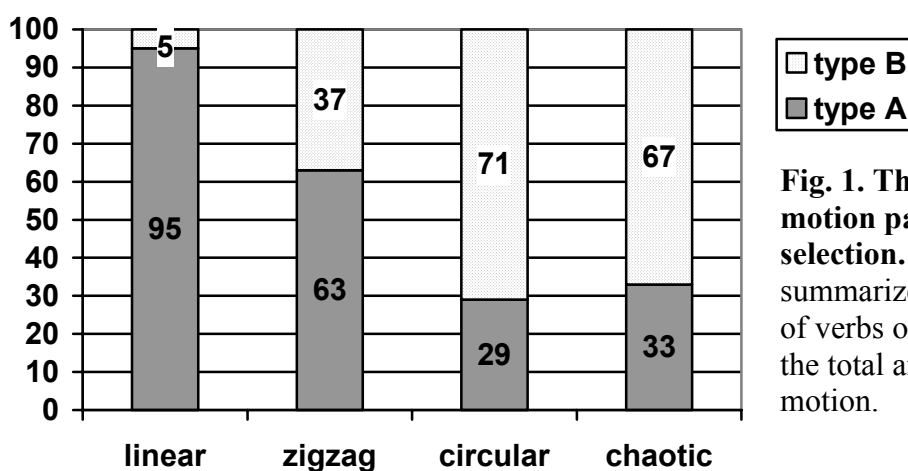
Fig. 1. The influence of motion path upon verb selection. The diagram summarizes the percentage of verbs of each type against the total amount of verbs of motion.

DISCUSSION

The analysis of data supports all three initial hypotheses. We have observed the influence of motion path, motion target, and the type of target upon the choice of a verb of motion. Almost equal portions of type A choices for 'chaotic' and 'cyclic' conditions could also be considered as an indirect evidence for the importance of *motion regularity* factor, and it is up to future research to test this suggestion.

Another interesting and unpredicted result is the difference of verb lexicalization in descriptions of realistic and abstract characters. Less frequency of type A verbs and higher frequency of verbs *перемещаться, двигаться [to move]* instead of their troponyms, observed under 'abstract character' condition could be possibly explained as a result of causal attribution processes. Participants can interpret the abstract characters as either living beings or things that are not animated and move due to some external factor. It is quite clear that in the last case the abstract characters cannot perform any goal-driven behavior since they have

no goals. But this suggestion needs more careful consideration since abstract characters are most often interpreted as living beings by most of people (see [2] for a sample study); furthermore, moving abstract figures serve as the so-called *projective* material that stimulates people to ascribe their own goals, needs, and emotions to inanimate objects.

The high percentage of verbs from pairs *бежать-бегать [to run], летать-лететь [to fly], плыть-плавать [to swim]* against the total amount of verbs of motion supports the validity of the stimuli (i.e. test movies each depict a proper manner of motion for each of the three environments). Sentence completion technique proved its efficiency for lexicalization studies. Despite of a high percentage of "noise" responses (responses without any verb of motion) and, consequently, the necessity to enlarge the number of participants, the collected data permits a more detailed analysis (such as comparison of ratio of troponyms frequency and initial verbs frequency) and is more valid ecologically. In any case, a forced-choice technique results in higher quantity of material from less subjects, though suffering from less ecological validity [3].

Alongside the achieved results concerning verb lexicalization, this study also demonstrates some advantages and disadvantages of behavioral experiment as being applied to research in linguistics. Experiment is the most objective and resourceful method in comparison with introspection and corpus analysis. At the same time, investments of effort and resources are usually recompensed by the possibility to test causal hypotheses (for example, whether a certain factor really *influences* lexicalization, or it is only indirectly related to it), and by additional unpredicted results as well (such as our results concerning abstract vs. realistic characters).

The data obtained makes it possible to establish a relation between lexicalization and causal attribution processes, if there are any. Our follow-up research is aimed at testing the data for such correlations, and investigating them from the standpoint of the role of the goal-driven behavior factor in verb lexicalization.

CONCLUSIONS

The results of experimental work show that motion path and motion target are among the factors that determine the choice of the verb from pairs of verbs of motion while an observer describes a scene of motion. These results are consistent with the conclusions drawn from introspection and preliminary corpus analysis, which allowed us to list five possible factors of lexicalization, including motion regularity, motion space, and goal-driven behavior.

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REFERENCES

1. Avilova, Natal'ja S. 1976. Vid glagola i semantika glagol'nogo slova. (The aspect and semantics of verb). — Moscow: Akademija nauk SSSR.
2. Heberlein A.S., Adolphs R. Impaired spontaneous anthropomorphizing despite intact perception and social knowledge. PNAS, 2004, vol. 101, no. 19, 7487-7491.
3. Polyakov V.N. Polzti, idti, bezhat', letet', nestis', mchat'sya: vliyanie uglovoj skorosti peremescheniya v polezreniya nablyudatelya na vybor glagola. (To crawl, to walk, to run, to speed or to rush: the influence of the angular velocity of an observed object upon the verb choice). // Proceedings of the first Russian Internet conference on cognitive science. – Moscow: UMK "Psikhologia", 2004. Pp. 44-55.
4. Tikhonov A.N. Slovoobrazovatel'ny Slovar Russkogo Jazyka. (Word-Formational Dictionary of Russian Language). — M.: Russkij Jazyk, 1985.