

Speech-accompanying gestures in Russian: functions and verbal context

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Abstract

The study of the relationships between speech and gesture promises a lot of insights into speech production and comprehension processes. In this work we explore syntactic and semantic characteristics of verbal correlates of speech-accompanying gestures. The results of the corpora studies show, that we can reveal the statistical probability for certain types of gestures to appear in given context. For example, semantic correlates of deictic gestures are mostly noun phrases, and only in few cases these gestures correspond to adverbs, although they may coincide with any part of a clause. Single beats differ from other gesture types in their tendency to accompany speech disfluencies, discourse markers, and unimportant parts of a clause. Looking from the perspective of the meaning of words, accompanied by gestures, we can see, that new or re-activated referents might be presented with deictic gestures, uncertainty or direct speech are a domain of beat gestures.

1 Introduction

Gesticulation or speech-accompanying gestures perform the same functions, serve the same goals and relate to the same information as do the words, as showed in (McNeill, 1992). At the same time the interplay of speech and gesticulation, especially distribution of pragmatic, semantic and referential meanings still stays unclear. Maha Salem and her colleagues point out that synchronization of different modalities for conversational agents or robotic platforms “is either achieved only approximately or by solely adapting one modality to the other, e.g. by adjusting gesture speed to the timing of running speech” (Salem et al. 2011). Our work is aimed to describe statistical probability for different types of gestures to appear in certain verbal contexts. These contexts were described depending on their morphological and syntactical characteristics, as shown in part 3.1. To achieve this goal we created two 20-minutes corpora consisting of TV talk-show fragments and retellings of “The pear stories” (Chafe, 1980).

2 Data analysis

2.1 Corpus description

We formed two different corpora to compare gesture properties in different types of discourse, namely dialogue and narration. The first one included seven fragments of TV interviews and panel discussion of some common social issues and was supposed to include various types and styles of conversation. The aim of this corpus was to register as many examples of gestures with diverse functions in different contexts, as possible. The second corpus consisted of eight retelling of “The pear stories” made by university students with very little or no interventions by a listener, thus it was more homogeneous from the viewpoint of genre, topic and discourse structure, so it allowed comparing gesture features, concerning global discourse structure. The results show, that most gesture functions are common for different genres.

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2.2 Transcribing and coding

2.2.1 Gesture types

Coding concentrated on movements of the hands. Gestures were divided into five groups, using modified D. McNeill's classification (1992). Besides deictics, we distinguish descriptive, meta-discursive, beat and rhythmic gestures. Considering the fact that distinctions between iconic and metaphoric gestures are not always obvious (see e.g. Gullberg, 1995), we reviewed these classes as descriptive and meta-discursive, relying on the form of the gesture and its relation to speech. Meta-discursive gestures treat simultaneous words as if from the outside, regarding speech as an object that can be transferred to an addressee, or manipulated in a different way (e.g. a whole that can be divided into parts, or a process that can be accelerated or slowed down). Descriptive gestures concern to the storyline and reflect the content of the illustrated words. Also we distinguish single beats and rhythmic gestures (named in Ekman, Friesen, 1969). So, the main ground for this classification was the form of the gesture, also taking into account its meaning and relation to the corresponding words. The future analysis proved the validity of this division.

2.2.2 Characteristics of speech segments accompanied by gestures

We examined the following types of gesture correlates:

1. full clauses, which can describe the line of the story or else can be
 - a. meta-discursive (*We are talking about...*);
 - b. citations (*He asked: "How do you do it?"*);
 - c. repetition of the previous clause;
 - d. reformulation or elaboration of the previous clause;
 - e. false-start.
2. noun phrases, divided into groups relying on their accessibility and syntactical role;
3. adverbs, considering their semantics;
4. verbs and verbal phrases, taking into account their syntactical form and meaning
5. discourse markers, also divided into groups, following Schiffrin (1987).

We labeled all the items in the corpora according to this list and compared the probability to be accompanied of every type of gesture (or to appear without any gesture). For referential gestures we counted the speech segments with the same meaning, for beats and rhythmic only the temporal correspondence was possible.

3 Results

The first corpus contains 545 gestures, the second one – 338 gestures. It seems worth to mention, that proportions of gesture types were similar to those in D. McNeill's study (1992), taking into account the difference in classification (Table 1).

Table 1. Frequency of gesture types in three corpora.

| | The pear stories | | Talk-shows | | D. McNeill's corpus | |
|------------------------------|------------------|-----|------------|-----|---------------------|------|
| Deictic | 36 | 11% | 45 | 8% | 28 | 5% |
| Descriptive (iconic) | 193 | 57% | 195 | 36% | 261 | 44% |
| Meta-discursive (metaphoric) | 57 | 17% | 87 | 16% | 42 | 7% |
| Beat | 47 | 14% | 134 | 25% | 268 | 45% |
| Rhythmic | 3 | 1% | 83 | 15% | | |
| Emblems | 2 | 1% | 1 | 0% | - | - |
| Total | 338 | | 545 | | 599 | 100% |

Table 2. Verbal correlates with each type of gestures.

| | Noun phrase | Verb phrase | Adverb | Clause | Unfinished clause | Discourse markers | Total |
|-----------------|-------------|-------------|--------|--------|-------------------|-------------------|-------|
| Deictic | 19% | - | 12% | (5%) | - | - | 9% |
| Descriptive | 33% | 48% | 40% | 35% | - | 27% | 45% |
| Meta-discursive | 19% | 11% | 10% | 16% | 32% | 24% | 16% |
| Beat | 24% | 30% | 36% | - | 68% | 49% | 20% |
| Rhythmic | 5% | 11% | 2% | 44% | - | - | 10% |
| Total | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

Table 2 shows comparative frequency of each type of gestures to appear with different syntactic units. For deictics temporal correlates are shown in brackets.

Table 3. Certain types of clauses with speech-accompanying gestures.

| | Meta-discursive | Citation | Repetition | Reformulation | Regulatory clause | Total for these clauses |
|-----------------|-----------------|----------|------------|---------------|-------------------|-------------------------|
| Deictic | 6% | 5% | - | - | 1% | 4% |
| Descriptive | 14% | 17% | 13% | 21% | 6% | 18% |
| Meta-discursive | 9% | 4% | 6% | 4% | 2% | 7% |
| Beat | 6% | 16% | 25% | 4% | 10% | 11% |
| Rhythmic | 4% | 16% | - | 8% | 4% | 8% |

Table 3 summarizes percentage of some special clauses with gestures.

Analysis of the data in Tables 1-3 is presented below.

3.1 Deictic gestures correlates

Deictic gestures illustrate noun phrases (87%) and adverbs of time and place (13%), although they may appear in any part of a clause. There was even an example, where the gesture was used without an explicit verbal correlate (1) (the underlined words are accompanied by the gesture).

(1) Go!

(right palm facing the center, fingers extended toward the listener)

When used with adverbs, deictics can reveal standard metaphors, such as *past is behind us* (Lakoff, Johnson, 1980), or appeal to common knowledge in the context of discourse, see (1).

(2) Like now and here.

(right palm up, fingers towards the listener slightly curved)

Deictic gestures often mark the clauses of meta-discursive level, when the speaker points at himself or at a listener, and also these gestures accompany citations, placing a referent in the space near the speaker or illustrating adverbs.

3.2 Descriptive gestures correlates

These gestures tend to illustrate verbs and less often can be seen with noun phrases, comparing to other gesture types. Only descriptive gestures, that have complex form and can carry much information additional to words, were met with interjections.

When used with clauses, these gestures tend to appear with reformulations, what can be explained as a speaker's intention to elaborate and to force her/his idea, so that visual illustration is needed, whether in order to resolve verbalization problems, the speaker's rhetoric aim or listener's demand (when the last does not completely understand the message).

3.3 Meta-discursive gestures correlates

The most often example of this gesture type is palm up opened hand (Müller, 2004). The semantics of the gesture reveals *conduit metaphor* (Lakoff, Johnson, 1980), when a speaker passes his words or ideas to a listener.

Meta-discursive gestures more often refer not to a single word, but to a phrase or a part of a discourse. Their form is less connected to the meaning of accompanied words, than it is with two previous types. They are used to emphasize related words and often coincide with prosodic accentuation.

Meta-discursive gestures tend to appear with more static parts of a clause, like noun phrases and discourse markers, and less often are met with verbal phrases and adverbs. It can be explained in connection with the meaning of the *conduit metaphor*, which interprets the words said by a speaker like a material object passed to a listener. Nouns are less easier to be seen as objects than verbs. So, NPs with meta-discursive gestures serve as topics or themes in the segment of a discourse. When they emphasize a whole clause, these gestures underline important links in the logic chain composed by the speaker; usually these statements contain causes, consequences, or concessions, crucial for understanding of the described facts.

Obviously, these gestures are often used with meta-discursive clauses, describing, for example, the structure of a narration or intentions of a speaker. Also they tend to accompany literal repetitions of a previous clause. This shows that meta-discursive gestures are also a rhetoric instrument, used with less graphic predicates, than descriptive gestures, and with less thought-out statements, than rhythmic.

3.4 Beat and rhythmic gestures correlates

Short simple movements, usually up and down, can have only single words as their correlates, not phrases or clauses. They are twice more often met with discourse markers, speech disfluencies, and conjunctions, than other gestures. Also they tend to mark citations and repetitions. We suggest the hypothesis that beats are oriented at a speaker and their use is motivated by cognitive tasks resolved by a speaker. Another hypothesis of high beats frequency during the least interesting parts of a discourse can be that they serve as pause-fillers, showing the listener, that the speech is not finished yet.

Rhythmic gestures label each syllable of a word or each word in a phrase and often cover the whole clause. They are never met with discourse markers, pauses, or false starts, so we can suppose, that these gestures tend to mark well-planned parts of a discourse and serve as conscious rhetoric instrument. They tend to accompany citations, which are important in the discourse or emphasized by a speaker.

4 Conclusion

Deictic gestures may appear in any part of a clause, even without explicit verbal correlate, but semantically they correspond to an adverb of time or place or to a noun phrase. Another tendency for these gestures is to illustrate meta-discursive sentences, describing the actual situation of communication.

Descriptive gestures can be met with verbs and verbal phrases more often, than other types, and they are usually used with the reformulations and other important part of the discourse, contributing to the story-line. They avoid noun phrases and especially discourse markers.

Meta-discursive gestures apparently are used with meta-discursive clauses. Yet they tend to illustrate unfinished clauses, noun phrases or discourse markers. They are not usual with verb phrases, citations and reformulations.

Beats are remarkable for their tendency to appear with citations and repetitions, and especially speech disfluencies and discourse markers.

Rhythmic gestures usually accentuate long segments of discourse, at least a clause, and they can be used to underline citations, which the speaker considers to be important in his speech.

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