How to investigate interpretation in Slavic experimentally?

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The issue

- In the investigation of meaning that speakers attribute to linguistic strings, Slavic languages present a curious empirical and methodological challenge.
- They often allow grammatical meanings (such as definiteness, specificity or quantization of the object) to be expressed without morphological marking on the noun phrase.
- Instead, the meanings under discussion are signaled by the perfective marking on the verb, by information structure (Topic, Focus) or by the word order of the whole sentence.

The issue

- Linguistic theory often makes **categorical predictions** about the availability of certain interpretations of strings, while native speaker judgments reveal a lot more intra- and inter-personal **variability** than predicted.
- As a result, we researchers have a problem on our hands: how to make sure that speakers really have the interpretations that we think they have, for a certain string.
- Furthermore, how can we make sure that the interpretation depends on the linguistic factors we think it depends on?

Preview of an answer

- Research needs to pay a lot more attention to a multitude of factors: grammatical, contextual, lexical but also
- psycholinguistic variables such as the type of task, presentation, order, of tasks, fillers, etc.
- Possible take-home message: if we are aware of the pitfalls to our experimental research, we are half-way to meaningful solutions.

Case Study 1

Quantization and Perfectivity

Some terminology

Quantization (as proposed by Krifka, 1989) has proven relevant to the proper characterization of grammatical telicity and count/mass nouns.

Telicity = the property of sentences to present events as bounded/unbounded in time (in the Manfred Krifka/Hana Filip sense of the word).

Count nouns are quantized; mass/bare plural nouns are not.

Some terminology

A **quantized** expression is such that, whenever it is true of some entity, it is not true of any proper subparts of that entity.

Example: If something is “an apple", then no proper subpart of that thing is “an apple.” If something is "water,” then many of its subparts will also be "water.”

Hence, “an apple" is quantized, while "water" is not.

Grammatical Telicity

Two major mechanisms of "composing" telicity have been identified in the literature (Krifka, 1989, 1998, Verkuyl 1972, 1993, 1999).

- One mechanism is to combine a non-stative (dynamic) verb with an object which is marked as exhaustively countable or measurable (a quantized object, in Krifka's terminology; a specific quantity object, in Verkuyl's terminology). English uses this object-marking mechanism in (most) accomplishment and activity predicates.

Event-object homomorphism

1) Claire ate **an apple/the apple/three apples/a bag of popcorn.** (telic)

2) Claire ate **apples/popcorn**. (atelic)

In English, quantized nominal arguments linked to the Incremental Theme (Dowty, 1991) combined with dynamic verbs bring forward a telic interpretation as in (1); cumulative Incremental Theme objects contribute to an atelic interpretation as in (2) (Verkuyl, 1972; Krifka, 1998; Filip, 2000).

Event-object homomorphism

1) Claire ate **an apple/the apple/three apples/a bag of popcorn.** (telic)

2) Claire ate **apples/popcorn**. (atelic)

Notice that quantization is orthogonal to definiteness, since both the indefinite nominal argument *an apple* and the definite *the apple* are quantized.

Event-object homomorphism

However, the homomorphism only holds for Incremental Theme objects (Dowty, 1991).

1) Mike **drove** a red car. (atelic)

2) Mike **made** a red car. (telic)

The difference is due to the two verbs. Verbs of creation (*make, write*) and verbs of consumption (*eat, drink*), among others, are unified by the having Incremental Theme objects.

Event-object homomorphism

These objects are affected by the event in a special way, and according to three recent theoretical accounts, "measure out" the progress of the event (Tenny, 1994), their discrete parts map to parts of the event (Krifka, 1989), or serve as an "event odometer" (Verkuyl, 1993).

Event-object homomorphism

- In Slavic languages without articles, like Russian, Czech, and Polish, the verbal form carries the quantization information, while the objects are overtly unmarked in this respect (Wierzbicka 1967, Forsyth 1970, Krifka 1998, Filip 1993, 2000).

1) ja yel gruši / tort (atelic)
   I eat-PAST.1sg pears-ACC/cake-ACC
   'I was eating **(some) pears / cake**.'
2) ja **s**-yel gruši / tort (telic)
   I PV-eat-PAST.1sg pears-ACC / cake-ACC
   'I ate **all the pears / the whole cake.'**

How many factors are at play?

In order to know what interpretation Russian speakers attribute to the objects in perfective and imperfective sentences, we have to check construals

in the absence of context and word order variations!

If many factors are in play, we don't know which one is producing the effect.

Slabakova (2004) experiment

Task: Please read the sentences and choose the correct interpretation of the sentence, from the ones below

4 conditions, 5 sentences in each, equal number of fillers

Experiment was online.

Russian NSs, N = 45, mean age = 32.2

Slabakova (2004) experiment

Task: Please read the sentences and choose the correct interpretation of the sentence, from the ones below:

Petya pro-čital etot roman.
Petya PERF-read this novel

- **A.** no yeščo ne zakončil čitat'.
  but yet not finished reading
- **B.** i uže zakončil čitat' da kanca. ⇐ **the only possible answer**
  and already finished reading.
- **C.** oba A and B vozmožny.
  both A and B possible

Slabakova (2004) experiment

Please read the sentences and choose the correct interpretation of the sentence, from the ones below:

Petya Ø-čital etot roman.
Petya IMP-read this novel

- **A.** no yeščo ne zakončil čitat'. ⇐ **also possible**
  but yet not finished reading
- **B.** i uže zakončil čitat' da kanca.
  and already finished reading to end
- **C**. oba A and B vozmožny. ⇐ **best answer**
  both A and B possible

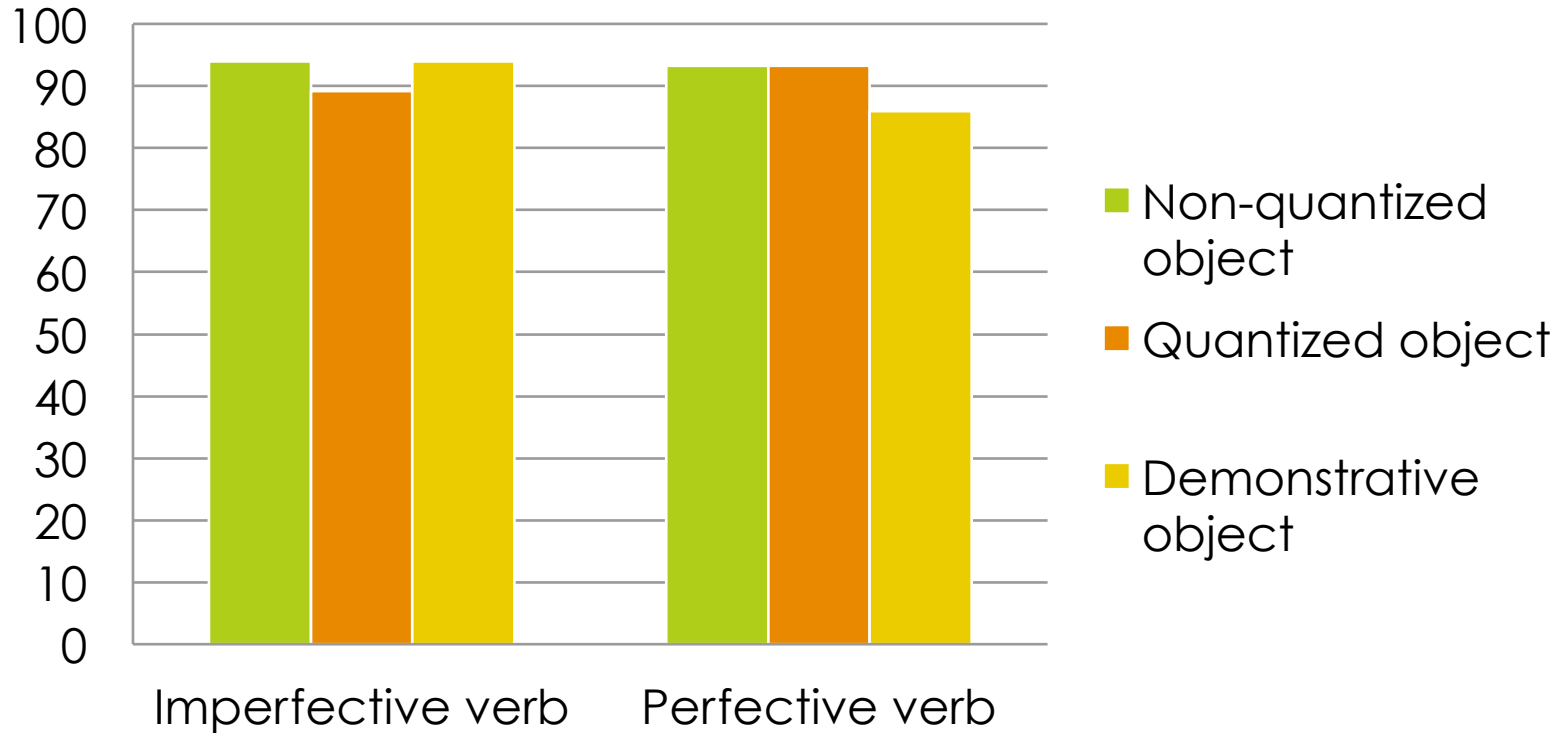
Slabakova (2004) experiment

The experiment had three conditions in which Perfective and Imperfective verbs were crossed with three types of objects:

- quantized objects with demonstrative pronouns, as in the example (*this novel*)
- objects with quantifiers (two *sweaters, a glass of beer*)
- non-quantized mass or bare plural objects (*beer, tea*).

The type of object is not supposed to have any effect on the telicity (completion) of the event; only the perfective prefix can change telicity values.

Accuracy on event-object homomorphism:



Non-quantized object interpretation

Anya **Ø-stirala** odeždu…,

Anya IMP-washed (the) clothes

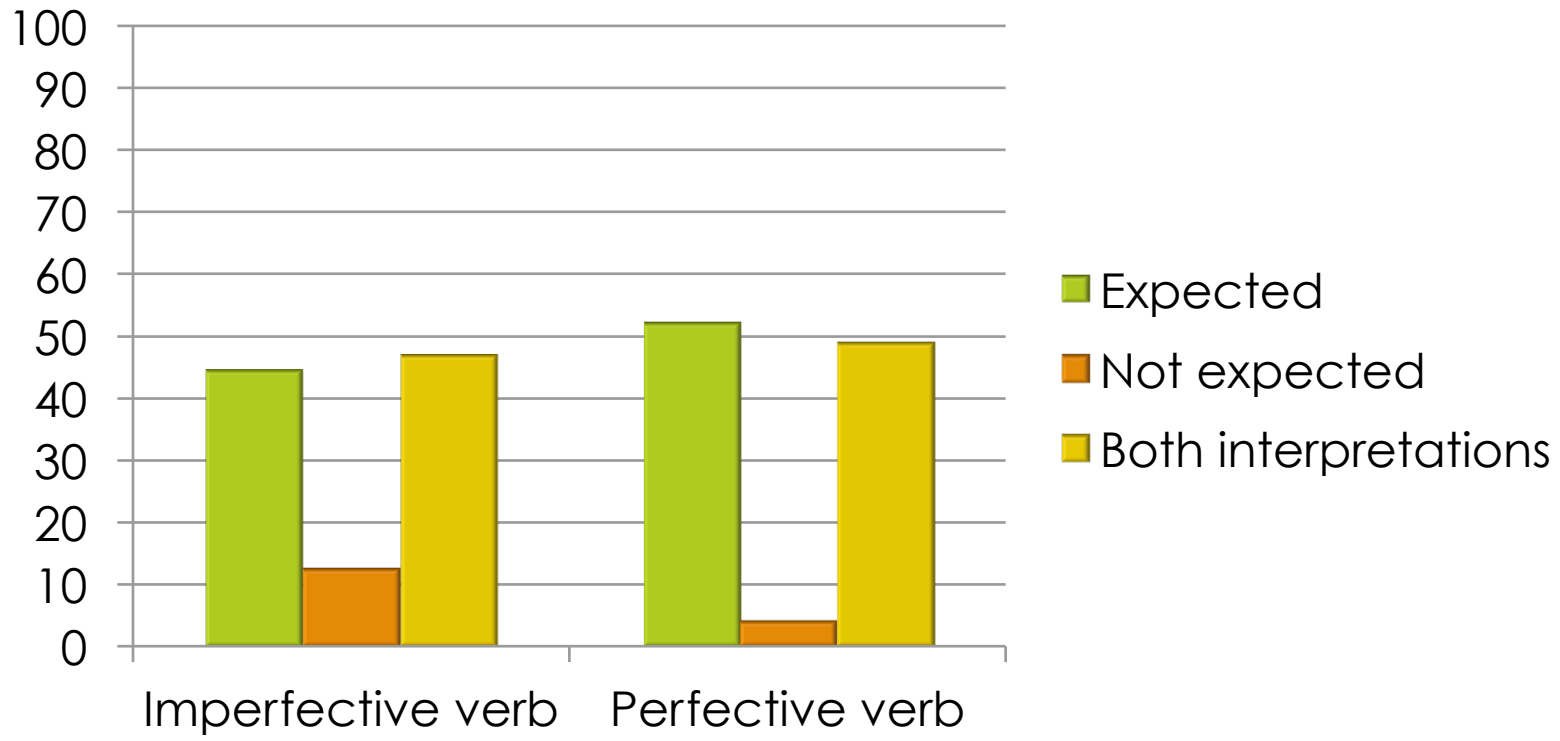
- **A.** voobšče odeždu. ⇐ **also possible**
  in general clothes
- **B.** vsyu odeždu kotoraja nuždalas' v stirke.
  all clothes which needed washing
- **C**. oba A and B vozmožny. ⇐ **best answer**
  both A and B possible

Non-quantized object interpretation

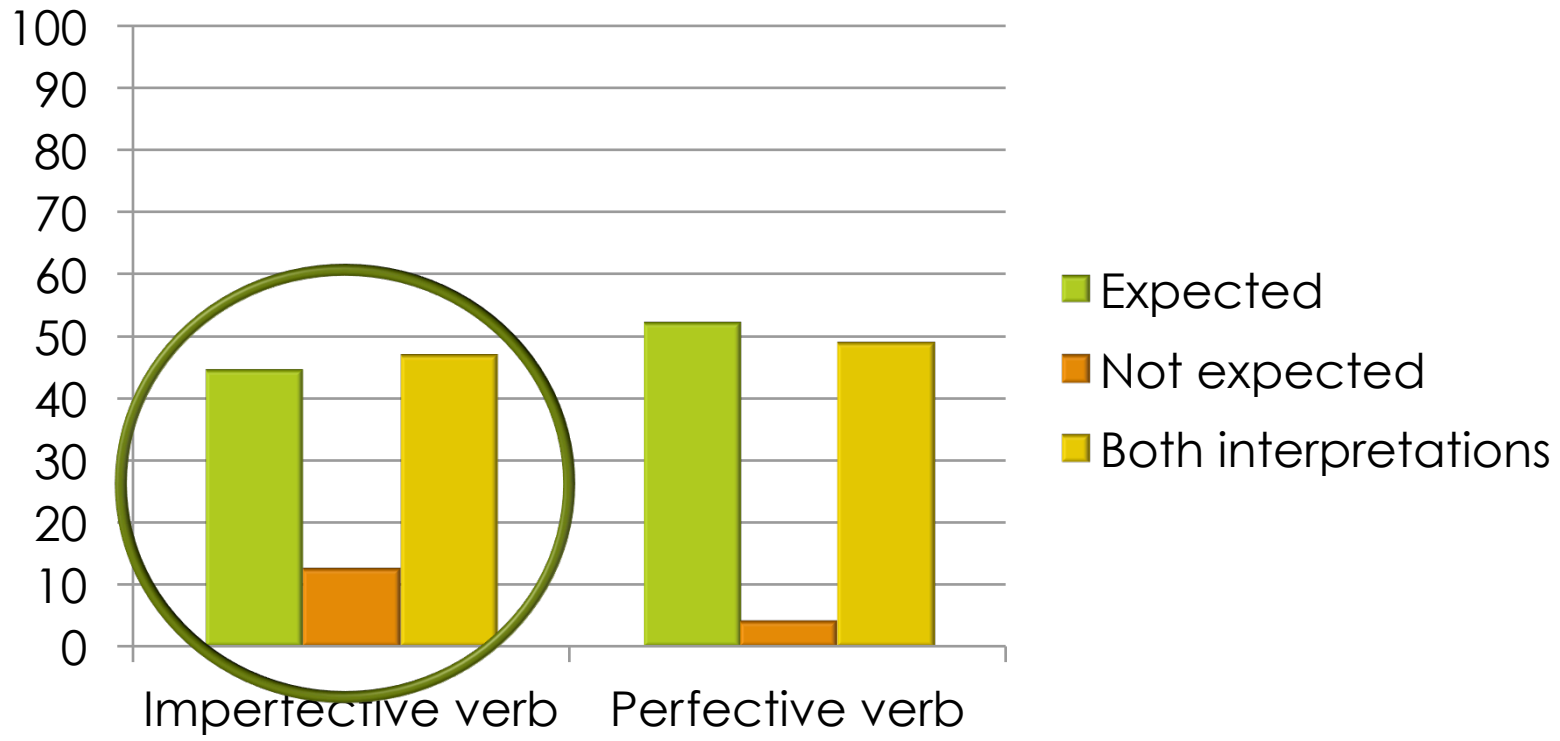
Anya **po-stirala** odeždu…,
Anya PERF-washed (the) clothes

- **A.** voobšče odeždu.
  in general clothes
- **B.** vsyu odeždu kotoraja nuždalas' v stirke. ⇐ **expected**
  all clothes which needed washing
- **C**. oba A and B vozmožny.
  both A and B possible

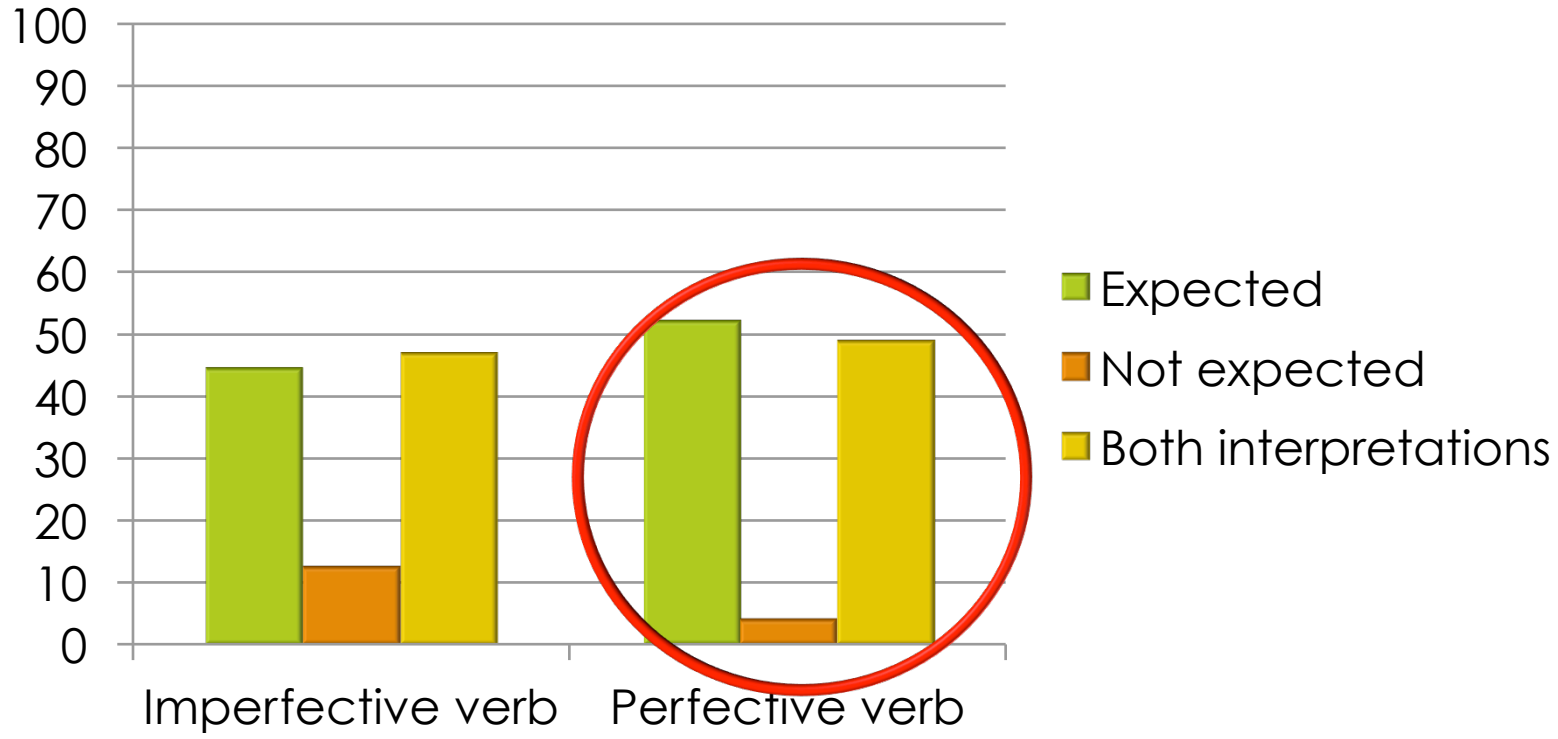
Actual choices (in percent)



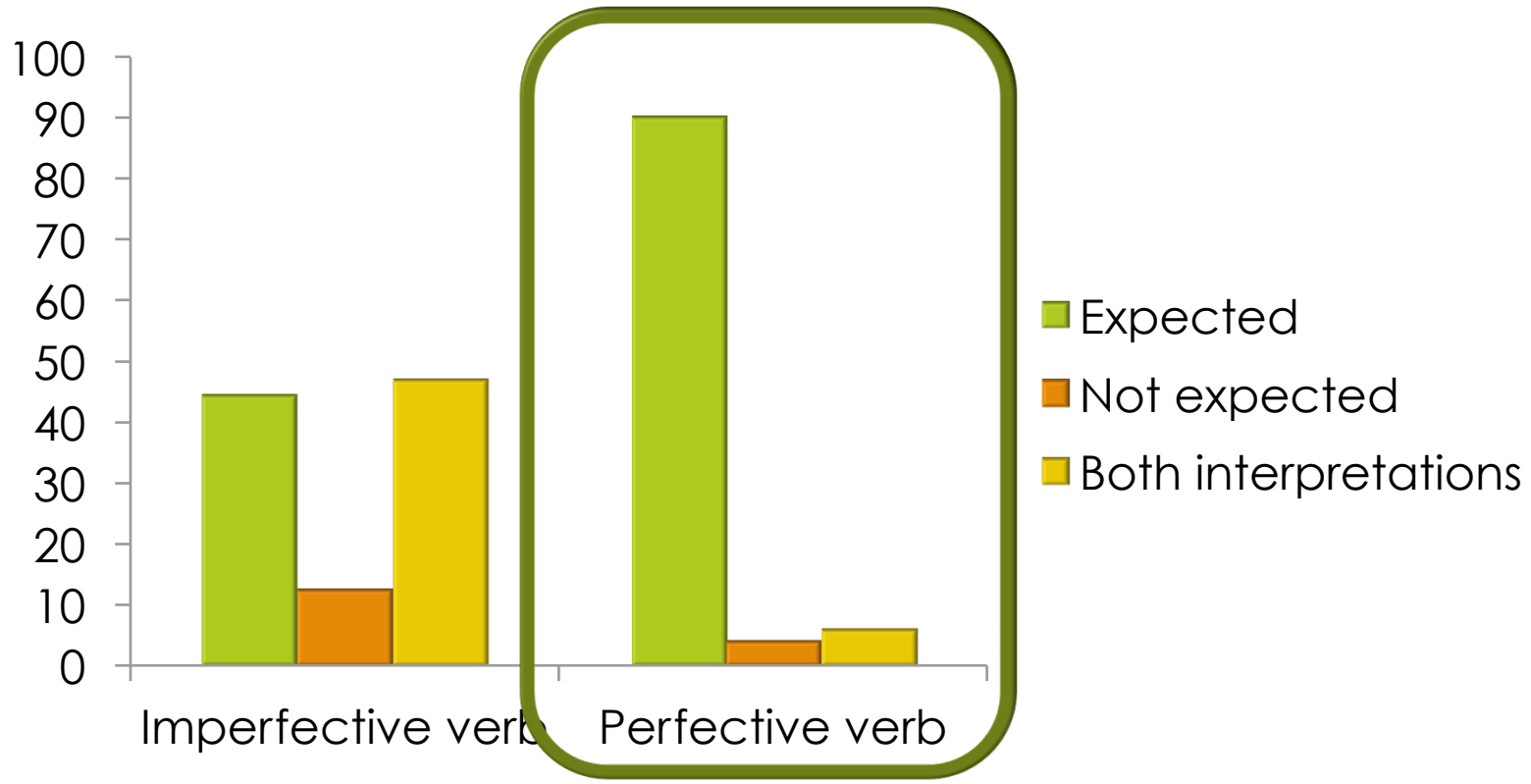
Actual choices (in percent)



Actual choices (in percent)



Ideal choices (in percent)



Interpretation of results

- Russian speakers (N = 45) behave in the expected way in interpreting the telicity, or completion of the events in simple sentences, based on the perfectivity of the verb.
- They choose completed construals for perfective sentences, with roughly 8% optional choices (both interpretations are possible), which is the wrong choice for perfective sentences.

Interpretation of results

- However, this relatively high accuracy, which supports the effectiveness of the test, is not replicated for the object construal condition.
- Russian speakers do not significantly demonstrate that they interpret bare plural or mass objects as specific quantity/quantized or not, depending on the perfectivity of the verb.
- Importantly, their behavior on the event construal and on the object construal diverge.
- Why?

Comparison with English

- Is it possible to have a perfective verb in the clause, but still treat the unmarked, non-quantized object as possibly generic, such as "clothes in general"?
- Let's think of English:

  She washed clothes (for a living).

  ??She finished washing clothes.

- Not true for Russian?

The effect of Word Order

In Russian, the relatively free word order, or scrambling, gives rise to different discourse information structures.

- The preverbal position is normally related to Topic, or old information, and
- the postverbal position is related to Focus, or new information (see Yokoyama, 1986; King, 1993; Bailyn, 1995 for more discussion).

The effect of Word Order

(1) Koška v-bežala v komnatu
cat-NOM PERF-run-PAST into room-ACC
'The cat ran into the room.'

(2) V komnatu v-bežala koška
into room-ACC PERF-run-PAST cat-NOM
'A cat ran into the room.'

The effect of Word Order

(3) Lena pročla (kakuju-to) knigu.
Lena PERF-read-PAST (some) book-ACC
Ja ne znaju kakuju.
I not know which
'Lena read some book. I don't know what.'

Indefinite non-specific objects also appear postverbally. (The examples are from Ionin, 2003: 111-112).

A clash between perfectivity and word order?

All sentences testing the object-event homomorphism in this experimental study had SVO word order.

On the one hand, the mass and bare plural objects were in the scope of a perfective prefix, which would purportedly give rise to a quantized interpretation.

On the other hand, the objects were in postverbal position, which would normally lead to an indefinite specific as well as non-specific interpretations, depending on the context.

A clash between perfectivity and word order?

It is perhaps this clash of **two sources of semantic information** that makes Russian native speakers accept both quantized and non-quantized object construals in perfective sentences.

Case Study 2

Definiteness, Topicalization and Word Order

Definiteness

- Definiteness is not a simple concept: it consists of a number of semantic components such as familiarity, presupposition of existence, and uniqueness (Heim, 1991).
- We assumed an informal definition of definiteness based on presupposition: a nominal is definite when there is a presupposition of its referent being unique in the domain of discourse, where uniqueness can be established through previous mention or world knowledge.
- This is true for singular nouns only, for plural nouns there is a presupposition of maximality, that is all members of a specified set.

Relationship between definiteness, topic/focus and word order

1. Na stole [+def/T] stoja-la lampa [–def/F].
   on desk stand-Past lamp
   'A lamp was on the desk / there was a lamp on the desk.'

2. Lampa [+def/T] stoja-la na stole [–def/F].
   lamp stand-Past on desk
   'The lamp was on a/the desk.'

3. Na stole [+def/T] lampa [+def/T] STOJA-LA (a ne leža-la).
   on desk lamp stand-Past (but not lie-Past)
   'The lamp was standing on the desk (it was not lying).'

King (1995: 78)

Geist (2010)

However, Geist shows that if the familiarity condition is met, a DP receives a definite interpretation regardless of word order position.

1. Na tom stole ležala **kniga** i gazeta. Anja vzjala **knigu**.
   on that table lie book and newspaper. Anja took book
   'A book and a newspaper were lying on that table. Ann took the book.'

Correlation between word order and Given–new status of the object in Russian, from Sirotinina (1965)

	Given object/Topic	New object/Focus
VO	166 (39%)	206 (59.7%)
OV	259 (60.9%)	139 (40.3%)

Cho and Slabakova (2014)

Our study looked at how second language learners interpret DPs in Russian in terms of definiteness, in two different constructions. One had to do with the type of adjectival and nominal possessors (not discussed), and the other had to do with word order.

Fifty-seven native speakers of Russian participated, all tested in Moscow.

Cho and Slabakova (2014)

[+def]/Topic object in preverbal position (**OVS** should be accepted) (n = 6)

Oleg and his brothers Sergei and Aleksei always help their mom make dinner. Today they made mushroom soup, baked potatoes and beet salad. When their dad came home and tried the soup, he asked: kto svaril takoj' vkusnij' sup? ('Who made such delicious soup?')

a. Sup svaril Oleg. 1 2 3 4 **5**
   soup boiled Oleg
b. Ego svaril Oleg. 1 2 3 4 **5**
   it bolied Oleg

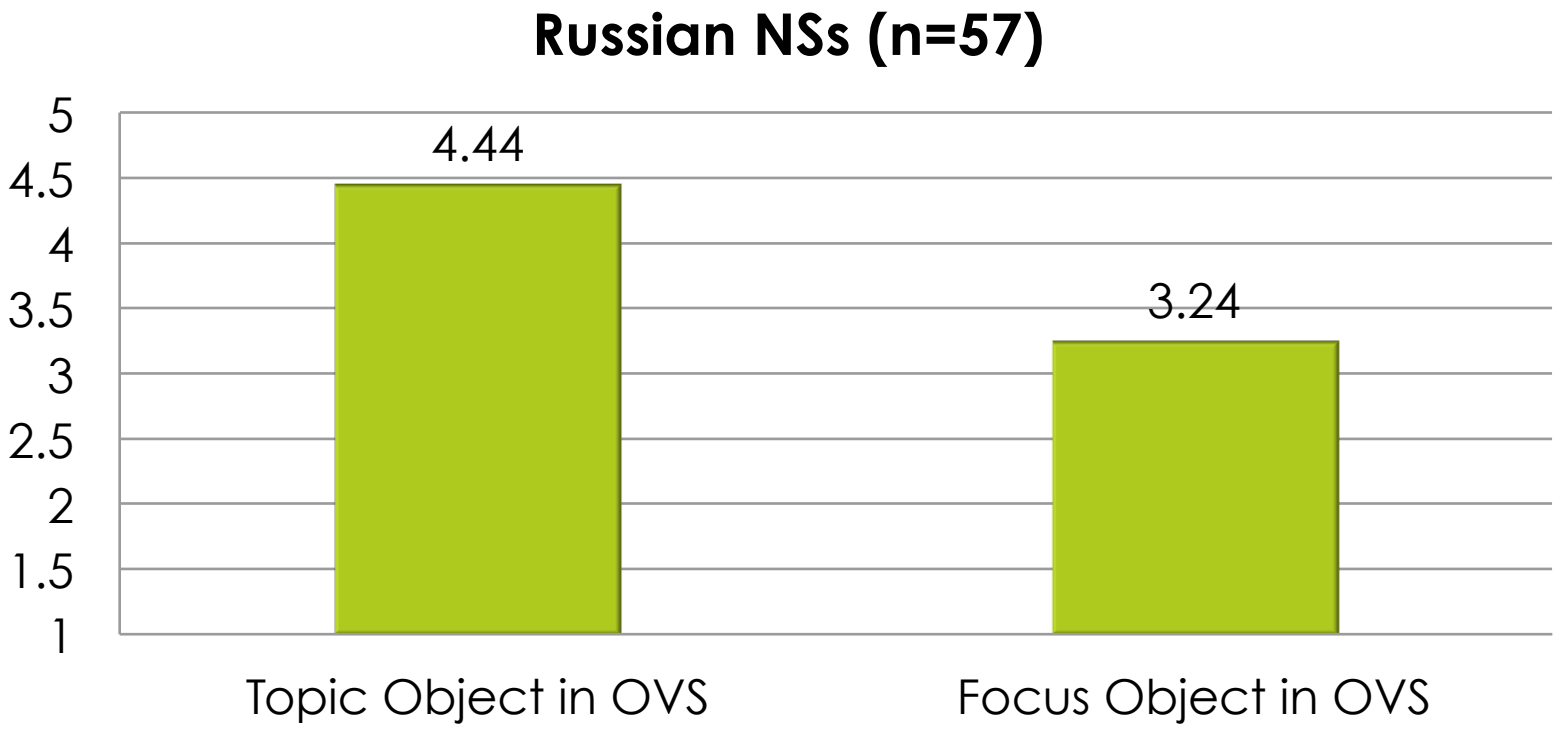
Cho and Slabakova (2014)

[–def]/Focused object in preverbal position (OVS should be rejected) (n = 6)

I was watching TV when Aunt Galya called. She wanted to talk to Mom. I told her that Mom is busy cooking. Aunt Galya asked: Što gotovit tvoja mama? ('What is your mom cooking?')

a. Sup gotovit mama.
   soup cooks Mom
   1 2 3 4 5
b. Sup gotovit ona.
   soup cooks she
   1 2 3 4 5

Cho and Slabakova findings



Cho and Slabakova individual results

- The group results showed that there was a significant difference between the ratings of the purportedly acceptable and unacceptable sentences.
- However, on an individual level, only **33 (58.93%)** participants made a statistically significant distinction.
- In addition, there is quite a lot of variation in the Russian native ratings.

Taking stock of Study 1 and Study 2

- In study 1, speakers were asked about construal without context, and they did not show that they obeyed the event-object homomorphism. Perfective verbs did not impose a quantized construal on Incremental Theme objects.
- In study 2, speakers were asked about acceptability of preverbal objects (OVS) in clear context (answer to *wh*-question). Again, there was a lot of variation, and overacceptance of Focused objects in OVS.

Anything goes in Russian grammar?

- Obviously not, but we have just seen that some categorical claims in the literature, like the event-object homomorphism, and the Topic–Word Order mapping, are not 100%, and that variation is pervasive.
- What kind of concept of the grammar, or more specifically, of the syntax-semantics interface, do findings such as these support?

Ramchand and Svenonius (2008)

- All languages have the same formal syntax (syn/sem) and Conceptual-Intentional systems (Chomsky, 2004), or Conceptual Structure (Jackendoff, 2002).
- All languages can express all (grammatical) meanings.
- Thus, language variation lies only in the way languages express the universal meanings.

Ramchand and Svenonius (2008)

- However, Ramchand and Svenonius (2008: 225) also argue against identical syn/sem (or LF) representations in all languages.
- All languages have a DP projection so that nominals can be interpreted as arguments; however, some languages have overt morphophonological material in the D head while others have null D heads.

Underspecification?

First person plural and dual pronouns

	Syn/Sem	Conceptual-Intentional
Northern Sámi:	mii	"I and others"
	moai	"I and one other"
English:	we	"I and others"
	we	"I and one other"

Underspecification

Underspecified English system:

	Syn/Sem	Conceptual-Intentional
Northern Sámi:	mii	"I and others"
	moai	"I and one other"
English:	we	"I and one or more others"

Ramchand and Svenonius (2008)

- More concretely, English has two distinct D elements (a, the) of type <<e, t>, e>, making the whole DP to be of type <e> (mapping a predicate to an individual), each of which carries different information as to the familiarity of the NP referent.
- Russian has an underspecified null D whose concrete interpretation is filled in each discourse situation by the C-I system.

Parametric variation in encoding nominal features

Meanings	Norwegian	English	Lillooet Salish	Russian
Argument-hood	syn/sem	syn/sem	syn/sem	syn/sem
Definiteness	syn/sem	syn/sem	C-I	C-I
Specificity	syn/sem	C-I	syn/sem	C-I*
Argument tracking	C-I	C-I	C-I	C-I

Experimental methods

- If this concept of the grammar is on the right track, the implication for psycholinguistic methodology is clear.
- If a lot of grammatical meanings in Russian are underspecified, and dependent on context, lexical items, word order, Information Structure, and possibly other factors, then our elicitation methods will have to take this fact into account.

Experimental methods

- For example, the newer methods such as ERPs and eye tracking cannot get a good reading of speaker construals, because speakers are aware of a multitude of possible meanings and strings.
- ERPs and eye tracking depend on sharp contrasts and minimally distinct baseline and experimental test items. They would not be appropriate for testing fluid, flexible meanings.

Take Home Message?

- Research needs to pay a lot more attention to a multitude of LINGUISTIC factors: grammatical, contextual and lexical but also
- Psycholinguistic variables such as the type of task, presentation, order, of tasks, fillers, etc.
- Sociolinguistic variables such as amount of proficiency of native speakers, exposure to type of language, education levels and SES.

Take Home Message?

- If we are aware of the pitfalls to our experimental research, we are half-way to meaningful solutions.

- At the same time, we should not be so petrified by the factors that bring variance into our experiments, so that we STOP making experiments.

THANK YOU!