

Resolving interface mismatches: number in native and heritage Russian

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Main questions

- What is the division of labor between conceptual semantics and surface form in grammatical expressions?
- Do native speakers and heritage speakers approach this division in the same way?
 - Yes but heritage speakers are “rustier”
 - No, the two groups are qualitatively different

Where can we look?

Mismatches between conceptual and formal features

- Main data point: inflectional forms combining number and case in Russian

Today's agenda

Mismatches at the interface:

What do native speakers pay more attention to, conceptual semantics or morphological form?

- If they pay attention equally to both, what is the time course of the processing?
- If they pay more attention to only one, why?

Today's agenda

Mismatches at the interface:

Do heritage speakers have the same sensitivity to the interface mismatches as native speakers?

- “Ignore Morphology” Hypothesis (IMH): heritage speakers lose sensitivity to formal morphological distinctions (Polinsky 2006, Sekerina 2007)

Russian genitive singular

- Obligatory form with some negative existential predicates:

net mal'čik-a/*mal'čik 'there is no boy'
no boy-**gen.sg**/nom.sg

- Assigned by prepositions:

da/u/bez/za mal'čik-a 'to/by/without/for boy'
to/by/without/for boy-**gen.sg**

- Possessive

sobaka mal'čik-a 'boy's dog'
dog boy-**gen.sg**

- Partitive

nemnogo spirt-a 'some alcohol'
some alcohol-**gen.sg**

Russian genitive singular

- The form of Russian genitive singular does not entail any special numerical value
- However, because of diachronic change, it is used with some plural numerals as a count form: “*gen.sg.*”

Counting in Russian

- 1 mal'čik/apel' sin
1 boy.nom.sg/orange.nom.sg
- 3 mal'čik-a/apel' sin-a
3 boy-gen.sg/orange-gen.sg
- 6 mal'čik-ov/apel' sin-ov
6 boy-gen.pl/orange-gen.pl

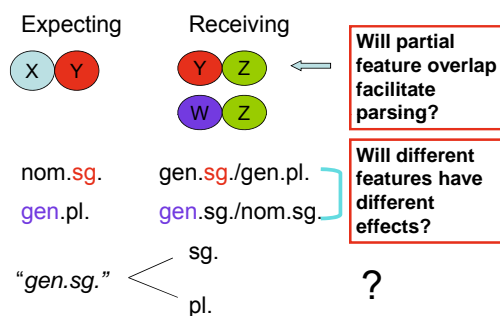
(we will consider masculine nouns only, because case distinctions are more transparent there)

Explaining the mismatch

Three logical possibilities for “*gen. sg.*”:

- It is indeed **singular**; the mismatch can be derived in a more principled manner (Pesetsky 2007)
- It is actually **non-singular**, but just accidentally looks singular (Baylin & Nevins 2007, Rappaport 2002)
- It represents a separate category, whose **number is unspecified** (Zaliznjak 1968: 2.8)

Using mismatches to study the mismatch



Using mismatches to study the mismatch

9 conditions:

	nom. sg.	gen. sg.	gen.pl.
One (1) (nom.sg.)	✓	✗	✗
Small N (2-4) (“ gen.sg. ”)	✗	✓	✗
Big N (5+) (gen.pl.)	✗	✗	✓

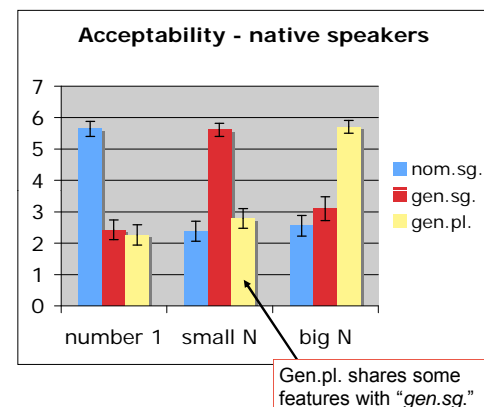
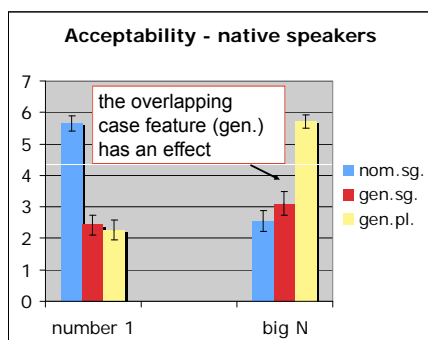
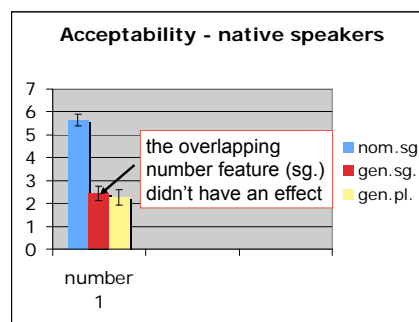
An example of the stimuli

PP	NUMERAL	ADJECTIVE	NOUN	PP	VERB	PP
v xore in choir	odin one.NOM	malen'kii little.SG.NOM	mal'čik (boy.SG.NOM)	v očkax in glasses	stojal stood.3SG	vpered'i vsex in front of all
			* mal'čika (boy.SG.GEN)			
			* mal'čikov (boy.PL.GEN)			
	tri three.NOM	malen'kix little.PL.GEN	* mal'čik (boy.SG.NOM)			
			* mal'čika (boy.SG.GEN)			
			* mal'čikov (boy.PL.GEN)			
	pjat' five.NOM	malen'kix little.PL.GEN	* mal'čik (boy.SG.NOM)		stojali stood.3PL	
			* mal'čika (boy.SG.GEN)			
			mal'čikov (boy.PL.GEN)			

'In the choir one/three/five boy's in glasses stood in front of everyone.'

Expt. 1 - acceptability judgments

- 1-7 scale (7 is the best)
- 60 items
- 108 fillers
- 24 native speakers



Summary of the acceptability experiment

- The overlapping case feature (gen.) has an effect
 - gen.sg. and gen. pl. pattern together
- The overlapping number feature (sg.) doesn't seem to have an effect
- “*gen.sg.*” and gen. pl. pattern together
 - they are both genitive
 - “*gen.sg.*” is interpreted as plural

Experiment 2: self-paced reading

- 60 items
- 108 fillers
- 26 native speakers

A demo for self-paced reading

The bills will become law.

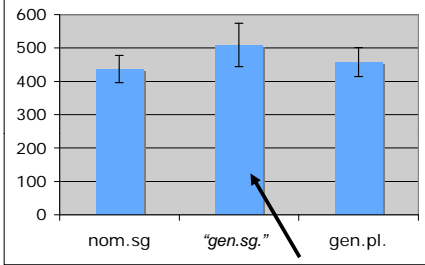
A reminder of the conditions

... one boy- $\begin{cases} \text{nom.sg.} \\ \text{gen.sg.} \\ \text{gen.pl.} \end{cases}$ in glasses

... three boy- $\begin{cases} \text{nom.sg.} \\ \text{gen.sg.} \\ \text{gen.pl.} \end{cases}$ in glasses

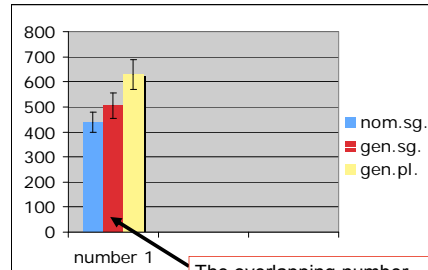
... six boy- $\begin{cases} \text{nom.sg.} \\ \text{gen.sg.} \\ \text{gen.pl.} \end{cases}$ in glasses

RT for the three endings



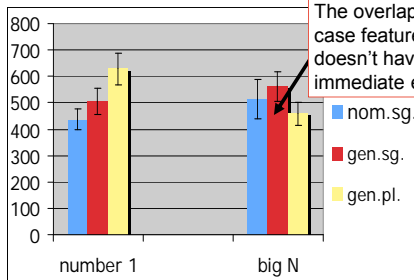
"gen.sg." is difficult for native speakers

Critical N - native speakers



The overlapping number feature (sg.) has an immediate effect

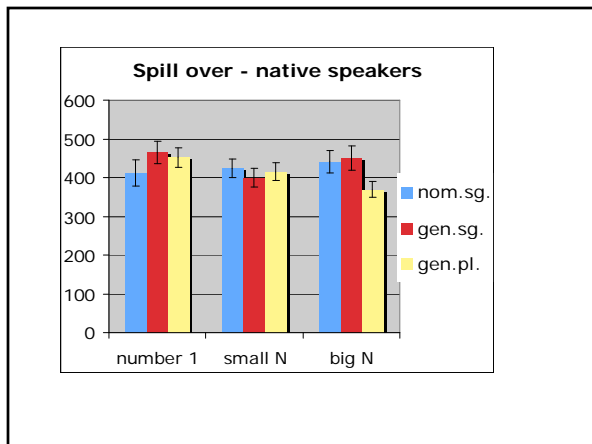
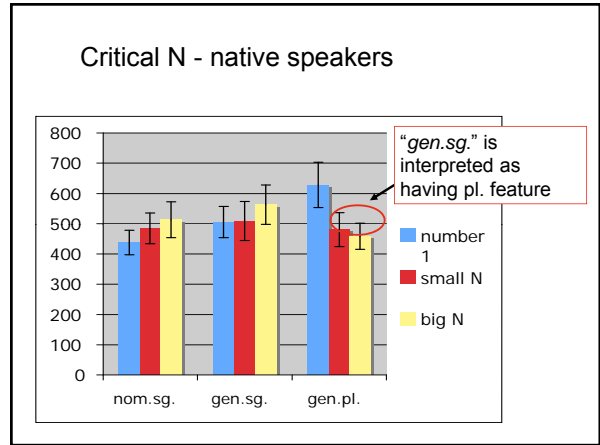
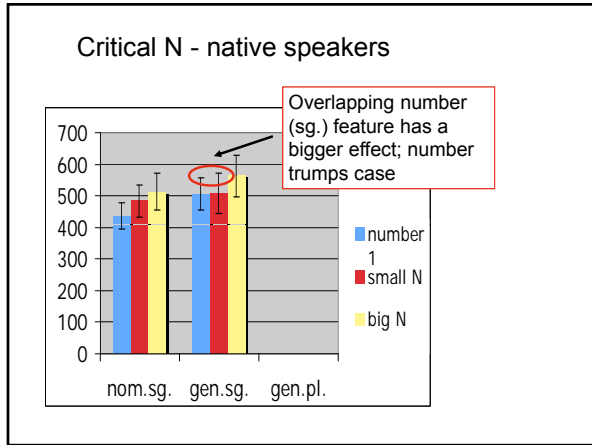
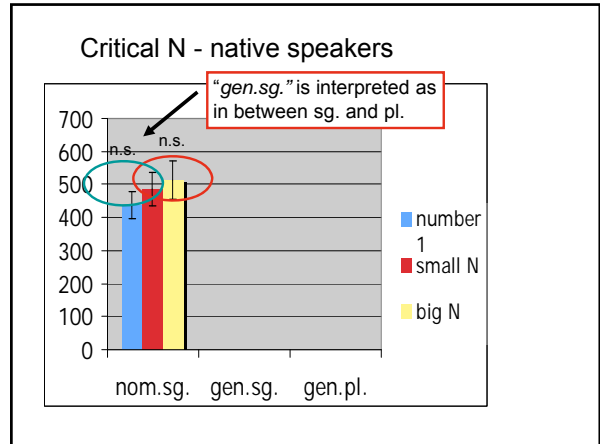
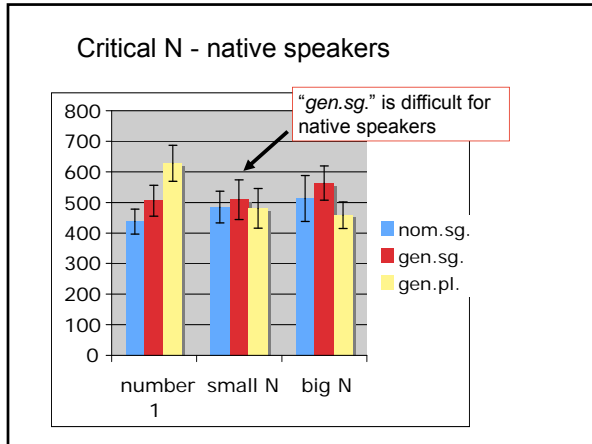
Critical N - native speakers



The overlapping case feature (gen.) doesn't have an immediate effect

Data recap

- The overlapping number feature has an immediate facilitating effect, but the overlapping case feature does not.
- The different effect of overlapping number and case features is turned around in offline judgment data



- ## Summary
- Online:
- Morphological features are processed rapidly
 - Immediate effect at the critical word
 - Speakers seem to value the number feature more prominently than the case feature
 - Only the overlapping number feature has an immediate facilitating effect
 - "gen. sg." is treated as in between sg. and pl.
 - "gen. sg." takes longer time to process, possibly because of its ambiguity

Summary

Offline:

- The overlapping case feature (gen.) has an effect
- “*gen.sg.*” is leaning slightly towards gen.pl:
 - because both are genitive
 - because “*gen.sg.*” is interpreted as plural

Linguistic implications

- The three logical possibilities: is “*gen.sg.*” singular, plural, or **in between?**
- The conceptual/formal divide in parsing
 - Definitely approached the formal marking
 - The conceptual semantics of non-singularity still plays a role

Heritage speakers

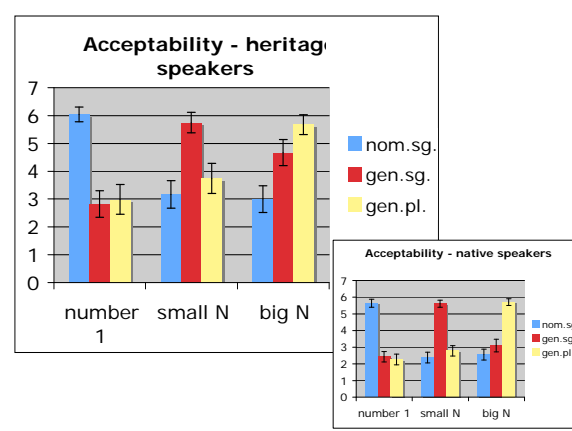
- Do native speakers and heritage speakers approach this division in the same way?
 - Yes but heritage speakers are “rustier”
 - No, the two groups are qualitatively different

Biographical data

- 6 males, 10 females
- age ranges between 19-38 (average 23)
- age moving to the States:
 - born here - 1
 - 7 years or below - 6
 - 7 years above - 9

Expt. 3: acceptability judgments in heritage speakers

- Offline 1-7 scale (7 is the best)
- 60 items
- 108 fillers
- 16 heritage speakers

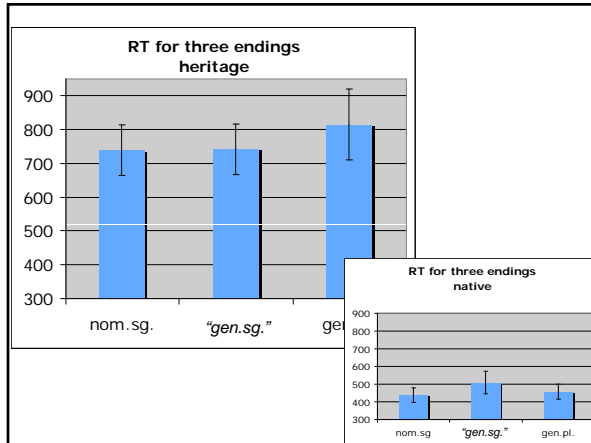


Heritage speakers: Judgment task

- Heritage speakers show similar patterns as native speakers, but the overlapping case feature (gen.) has a much stronger effect than for native speakers.
- Possible reason: main distinction for HS is between cases (nom. vs. non-nom.)

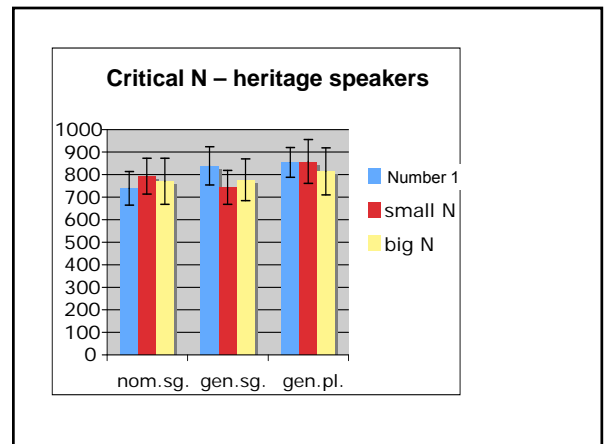
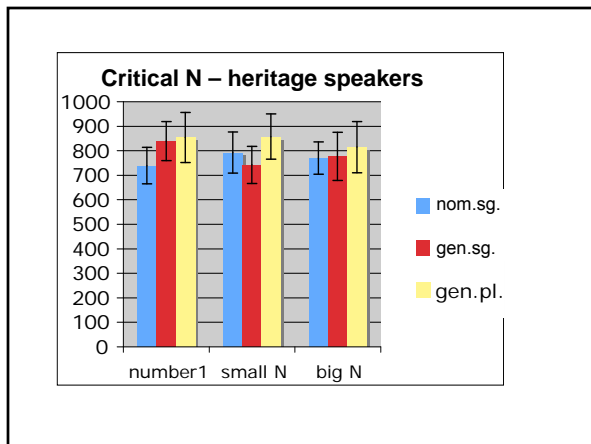
Expt 4: self-paced reading: heritage speakers

- 60 items
- 108 fillers
- 16 heritage speakers



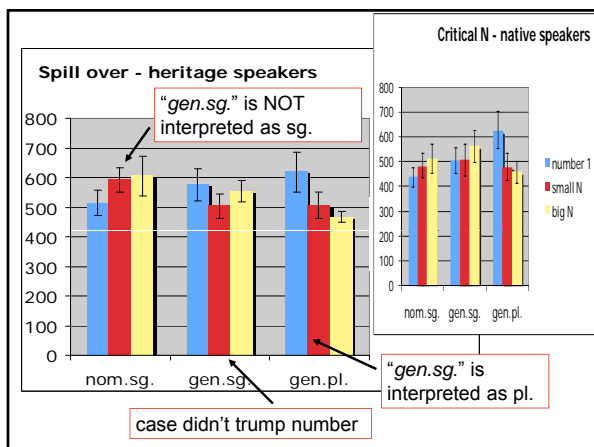
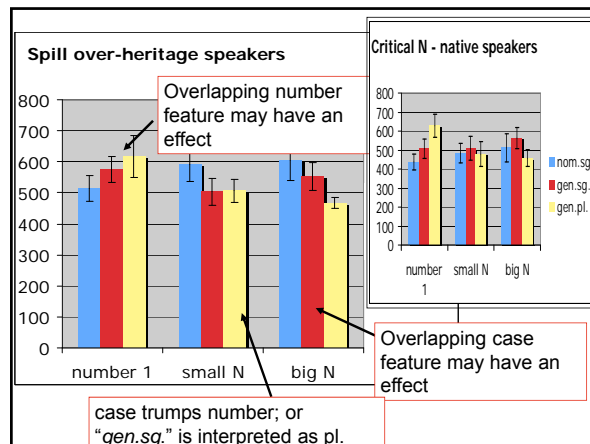
Data recap

- "gen.sg." is special for native speakers and takes longer to process, but it has no special status for heritage speakers
- gen.pl. takes longer for HS.



No immediate effect for HS

- Variability within the group
- Longer time in lexical access and evaluation



Summary for HS

- They do not completely ignore morphology, but morphological feature processing occurs relatively late (spill over vs. the critical N) (c.f. Sekerina 2008)
- Both number and case features are treated as equally prominent
- “gen.sg.” Is NOT interpreted as sg., it is likely to be valued as pl.
- “gen.sg.” does not take longer to process than other endings.

Native speakers vs heritage speakers in online processing

	the time course of morphological feature processing	different features play an equal role	“gen.sg.” is special	the number feature of “gen.sg.”
NS	early	No (number trumps case)	yes, it takes longer time to process	both sg. and pl. are accessed on “gen.sg.”
HS	late	yes	no, it doesn't take longer than others	more inclined to treat it as pl.

A note on methodology

- Offline results show only quantitative difference between the two groups
- Online data, however, show qualitative difference between the two groups

Tentative conclusions

- Confronted with the mismatch at the morphological-conceptual interface, native speakers pay attention to morphological features, while heritage speakers rely more on conceptual features
- In general, although heritage speakers also have some control over morphological features, their processing is delayed, and they do not have the same fine grained details as the native speakers.

Outstanding questions

- Variability within the HS group
- Comparison between advanced and lower level HS
- The nature of the Russian count form