Predictive Processing of Structural, Lexical, and Inherent Cases in L2 Russian

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GRADUATE CENTER

Research Questions

RQ1: Can L2 learners of Russian anticipate upcoming words in a low-demand task?

RQ2: Do L2 learners of Russian use case in sentence comprehension?

RQ3: Do L2 learners of Russian use case predictively in sentence comprehension?

Hypotheses

H1: Yes. L2 learners will demonstrate anticipatory eye movements using words learned in their L2.

H2: Yes. L2 learners of Russian will use case for sentence comprehension in their L2; the type of case will depend on proficiency level.

H3: No. L2 learners of Russian will not use case predictively in sentence comprehension, regardless of their proficiency level.

Features of Russian

Case
- 6 cases: Nom, Acc, Gen, Ins, Dat, Prep
- 3 sources: Structural, Lexical, Inherent [1]

Word Order (WO)
- Free WO but with Pragmatic consequences, such as Topic/Focus [2]
- **SVO**: the most common canonical WO [3]
- **OVS**: the most common non-canonical WO [3]

Cues for Comprehension
- Case is the strongest cue in Russian for comprehension [4, 5] while in English it is Word Order [6]

Example of SVO and OVS Word Orders:

	NP 1	V	NP 2
SVO	muzh-Ø	tseluet	zhen-u
	husband.NOM	*kisses*	*wife.ACC*
OVS	zhen-u	tseluet	muzh-Ø
	wife.ACC	*kisses*	*husband.NOM*

"The husband kisses his wife."

Background

L2 Case Acquisition
1. Structural Accusative is typically acquired by High-intermediate and advanced L2 learners of Russian [7]
2. Oblique cases (e.g., dative, instrumental) are typically acquired only by advanced learners [7, 8, 9]
3. The order of case acquisition varies across studies [8, 10]

L2 Word Order
1. Intermediate and advanced L2 learners of Russian use both canonical and non-canonical word orders, but show a statistically significant preference for canonical (SVO) word order [8]

Predictive Processing in Native Speakers
1. Native speakers use case marking (Nom, Acc, Dat) as a predictive cue [11, 12]

Predictive Processing in L2 Learners
1. L2 learners use gender, lexicosemantics, and real-world knowledge for predictive processing [11, 12, 13]
2. Case is generally not used predictively by L2 learners (e.g., in L2 German and Japanese) [11, 12]

No studies have examined predictive processing with case in L2 Russian using eye-tracking in the visual-world paradigm.

Participants

Group	N	Proficiency Level	Avg Score + (SD)	Age Range
L1	13	Level 4: High	94.4% (3.6)	23–46
L2	4	Level 3: Mid	55.8% (5.6)	22–37

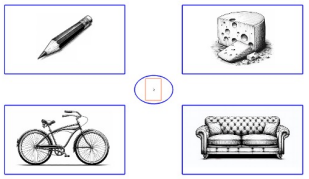
Goal: 30 participants per group

Baseline Task: Word Picture Matching

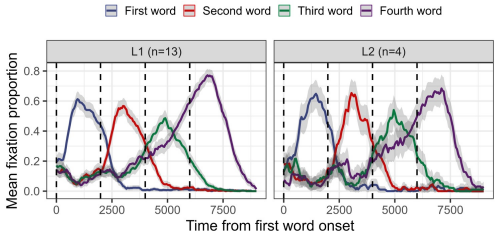
Stimuli: 32 inanimate mid- to high- frequency words in **24** sets of 4 semantically and phonologically unrelated words

Procedure:
1. Participants see 4 pictures on a screen
2. They hear 4 words, one at a time, with a 1 second pause between each
3. At the end of the audio, they click on the picture that matches the fourth word

Cheese + 1 sec + **Pencil** + 1 sec + **Couch** + 1 sec + **Bike**



Baseline Task: Preliminary Results



Accuracy for both L1 and L2 = 100%

Main Task: Sentence Picture Matching

Stimuli: 32 experimental and **32** filler sentences

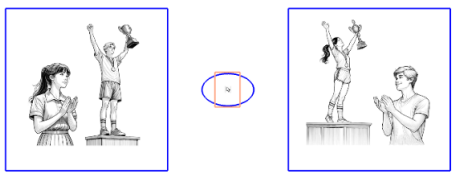
Conditions:
1. **Word Order:** Canonical/Non-canonical
2. **Case:** Structural Acc, Lexical Ins, Lexical Dat, Inherent Dat

Example Stimuli (Lexical Instrumental):

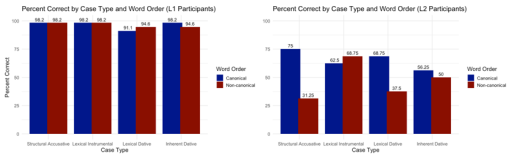
	NP 1	V	Temporal NP	NP 2	ADV
C	sestr-a	gorditsya	kazhdyj den'	brat-om	iskrenne
	sister.NOM	*is proud of*	*every day*	*brother.INS*	*sincerely*
NC	brat-om	gorditsya	kazhdyj den'	sestr-a	iskrenne
	brother.INS	*is proud of*	*every day*	*sister.NOM*	*sincerely*

"The sister is sincerely proud of her brother every day."

Procedure:
1. Participants see 2 pictures on a screen
2. They hear 1 sentence in Russian
3. At the end of the audio, they click on the picture that matches the sentence



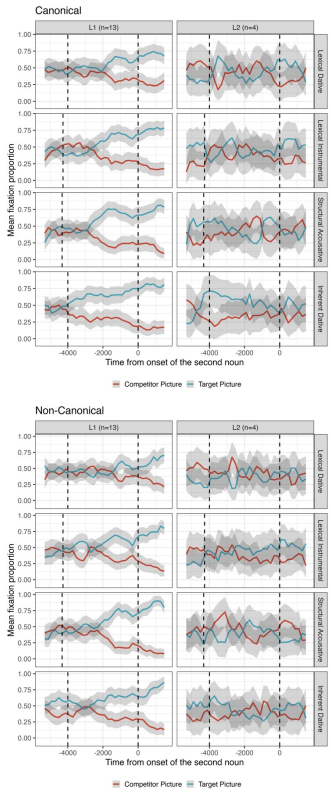
Main Task: Preliminary Results (Accuracy)



L2 Accuracy for the Filler sentences (non-semantically reversible):
- **Canonical** = 96.88%
- **Non-canonical** = 93.75%

L2 participants are paying attention to the task, but their performance is demonstrably lower for experimental sentences (semantically reversible).

Main Task: Preliminary Results



Conclusions on Preliminary Data

Baseline Task: Word Picture Matching (WPM)
1. Both L1 and L2 participants fixate on the correct picture shortly after hearing each word, indicating real-time lexical processing (e.g., fixations to Word 1 after hearing Word 1)
2. After hearing Word 3, participants show anticipatory eye movements towards Word 4

This suggests that when task demands are low, L2 learners use lexical information in their L2, along with cognitive strategies, like the process of elimination, to anticipate upcoming lexical items (Word 4).

Main Task: Sentence Picture Matching (SPM)
1. L1 NSs use case for prediction, regardless of the word order, case type, or case source
2. L2 learners are less accurate in non-canonical sentences and do not demonstrate prediction, regardless of the case or word order

These preliminary results align with previous research [11, 12] showing a lack of case-based predictive processing in L2 learners. Additional participants are needed in the Intermediate and Advanced proficiency groups to confirm these findings statistically.

Contact Information

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Study Website:

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