Processing spatial linguistic constructions by monolingual and bilingual speakers of Russian

Olga Dragoy, Anna Chrabaszcz

Neurolinguistics Lab, National Research University Higher School of Economics, Russia

1. Introduction

- The embodied cognition framework assumes that processing linguistic forms may be guided by speakers' interaction with the environment and their sensorimotor experience (Barsalou, 2008, 2010)

- Children interpret spatial constructions («put object A on/in/under object B»), based on extralinguisitc factors and relying on the knowledge about physical properties and functions of objects (Clark, 1973, 2004; Cook 1978; Hespos & Baillargeon, 2001; Meints, et al., 2002)

- Individuals with aphasia compensate for language processing difficulties by reliance on motor stereotypes (Dragoy et al., 2016; Luria, 1962)

- A motor stereotype is a prototypical, the most natural and frequent sequence of interactions with real-world objects (Dragoy et al., 2016)

2. Research questions

- Is reliance on motor stereotypes a universal processing strategy?

  or

- Is it a compensatory strategy characteristic for language-atypical populations?

3. Participants

Group	n	Sex (m/f)
monolingual	36	11/25
bilingual	36	16/20

- Russian-American bilingual speakers resided in the U.S. and had at least one Russian parent
- Each completed a cloze test (max score 25). Mean score = 20.36 (~Intermediate High level of ACTFL)
- Two subgroups: with higher (≥ 21) and lower (< 21) Russian proficiency

4. Materials and Procedure

Cond	Example	MS	WO	Construction
1	The boy is putting the bag into the box	direct	direct	prepositional
2	The boy is putting into the box the bag	indirect	indirect	prepositional
3	The grandmother is covering the hat with the scarf	indirect	direct	instrumental
4	The grandmother is covering with the scarf the hat	direct	indirect	instrumental

- 48 reversible sentences, 24 irreversible fillers
- 24 prepositional, 24 instrumental constructions
- 2 lists
- Sentence-picture matching
- Presentation in DMDX

1-2

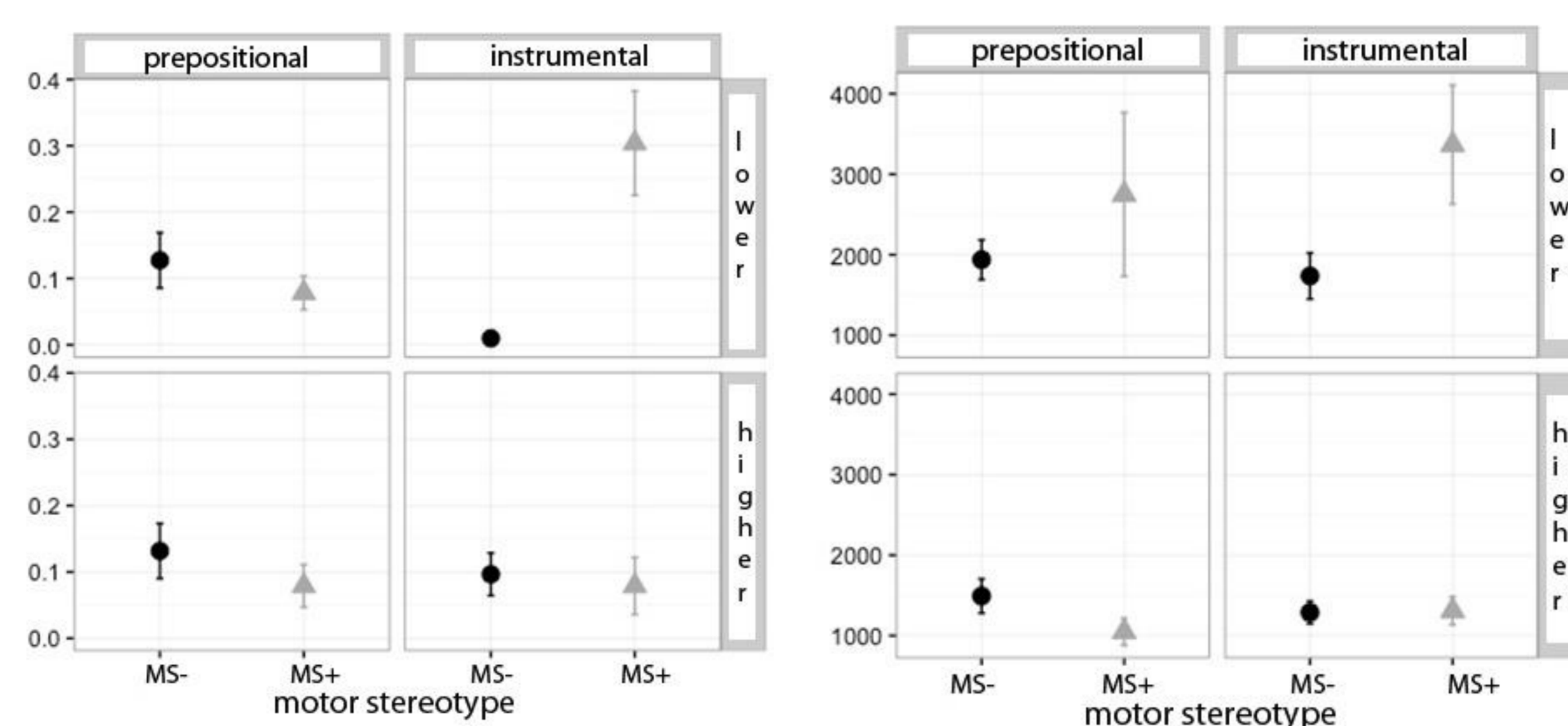3-4
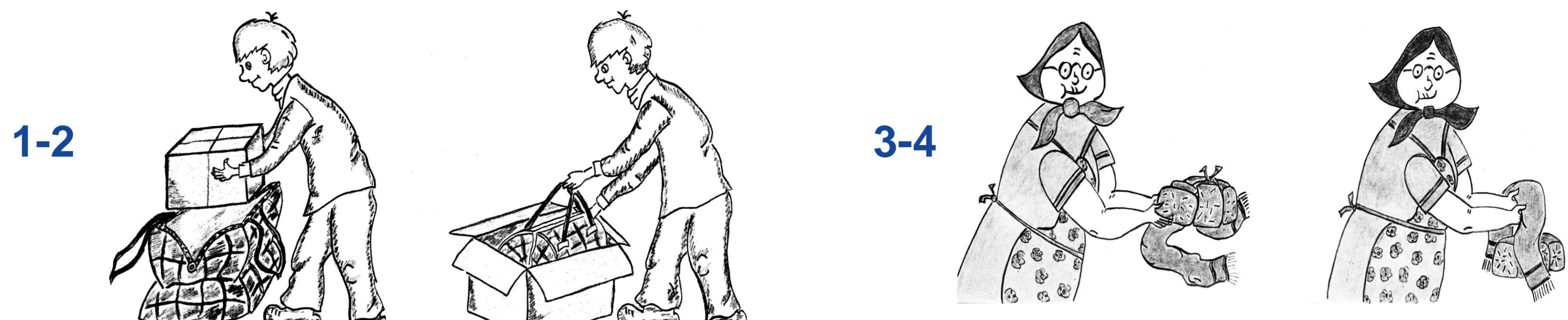
5. Results

A. Monolingual group

Acc

RTs
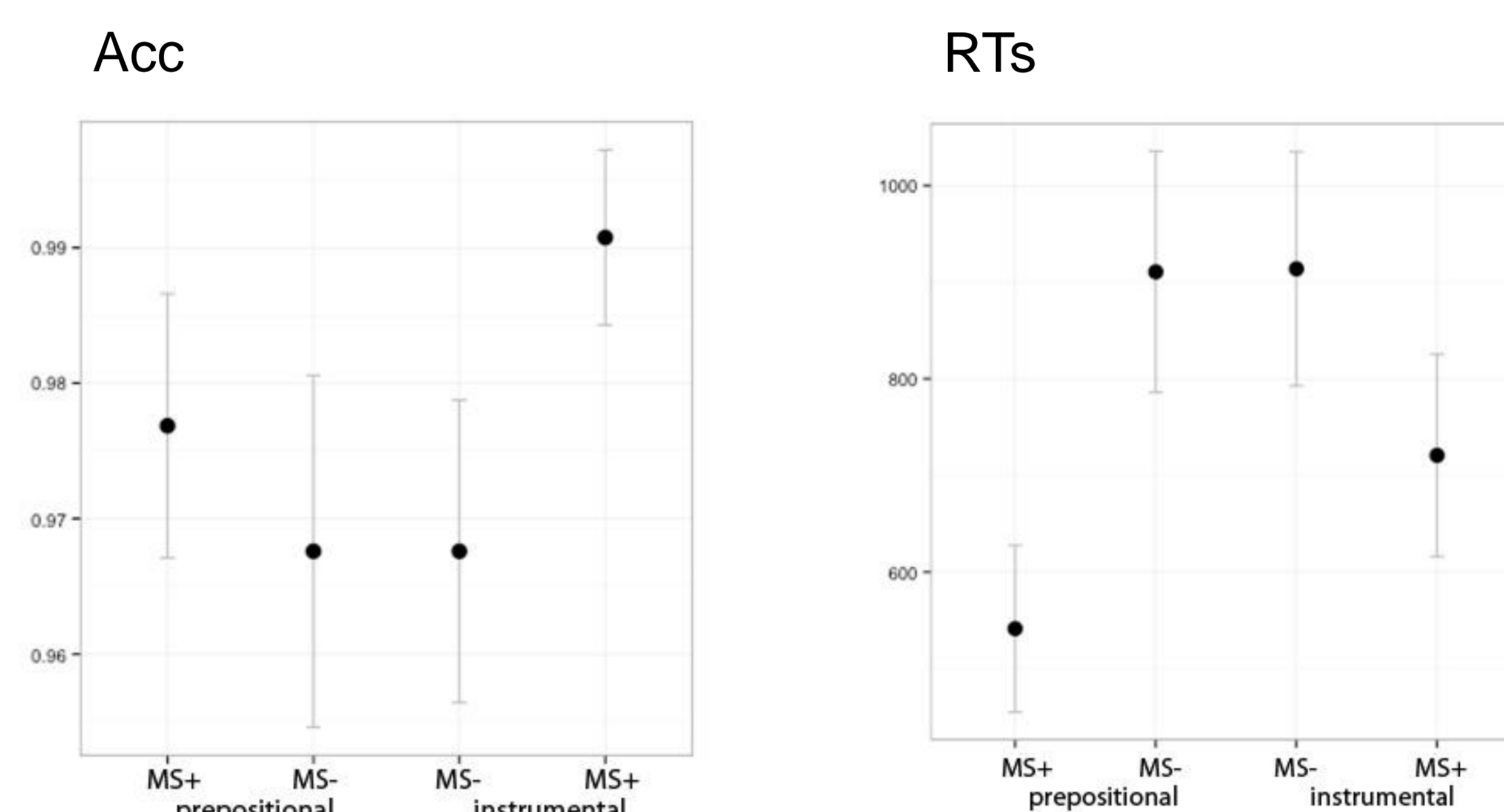
- Accuracy was at ceiling (95%), no difference among conditions
- Significant difference was found in RTs:

monolingual speakers processed prepositional constructions with direct WO (1) and instrumental constructions with indirect WO (4) significantly faster than the other two kinds of sentences – (2) and (3)

B. Bilingual group

- Accuracy effects:

bilingual speakers made more errors in prepositional sentences with indirect WO (MS-), and speakers with lower Russian proficiency – also in instrumental sentences with indirect WO (MS+)

- Lower proficiency group was overall slower than higher proficiency group

6. Conclusions

- **The sentences following motor stereotypes got processing advantage in monolingual speakers. In contrast, bilingual speakers demonstrated a significant WO effect.**
- **These results suggest that linguistic processing can be shaped by sensorimotor experience during monolingual acquisition if a language makes contrast between the sensorimotor and the reversed scenarios (such as Russian). But this pattern can be abandoned or not emerged under the influence of a more dominant language, which does not encode the difference (such as English).**