

Sentence comprehension and structural priming in Czech toddlers and preschoolers; preferential looking and offline pointing compared

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Comprehending transitive sentences

- Who's doing what to whom?
 - Different linguistic devices encode event roles
 - Word order, case marking, semantic factors, intonation
 - May support each other, or be in conflict
- Word order vs. case marking
 - Languages with case marking usually have default word order
 - Canonical vs. noncanonical case marking
- How is event role assignment acquired?
 - English-speaking children shown to be sensitive to word order at 17 months (Hirsh-Paske, Golinkoff, 1987)
 - What happens if children have to deal with more than just word order

Issues in child research

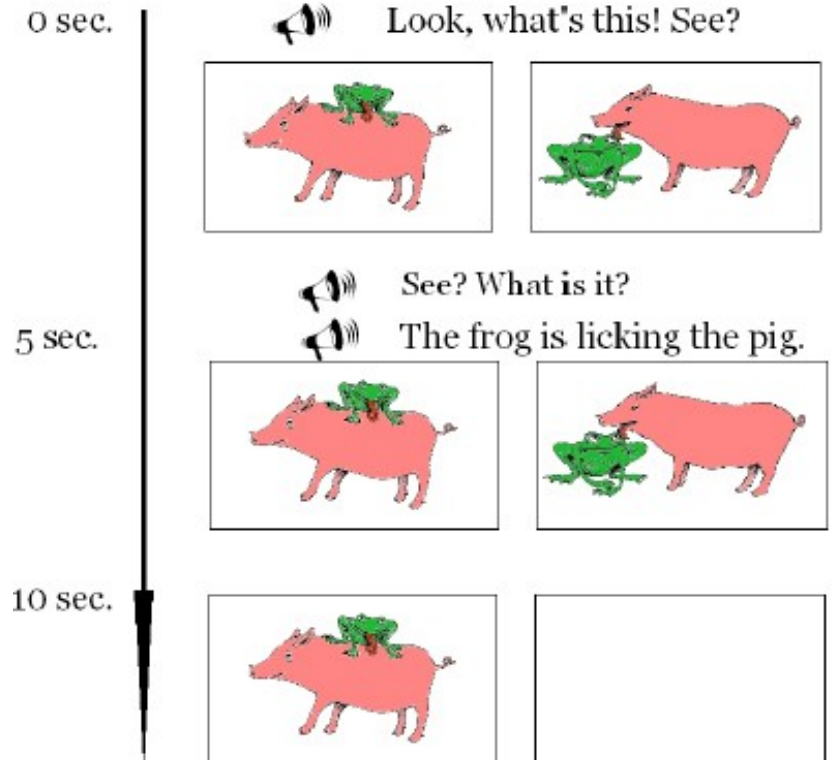
- When do children understand SVO?
 - Is comprehension lexically independent, abstract?
 - It is (e. g. Fisher, 2006)
- When do children understand noncanonical word orders?
 - Is OVS more difficult? Acquired later?
 - Mixed results
 - Weist (1983) no difference
 - Usually, OVS is shown to be more difficult, but the delay is estimated differently
 - Slobin, Bever (1982) in Croatian – comprehension around 4 years (cf. also Sokolov, 1988; MacWhinney, Pléh, Bates, 1985)
 - For German, comprehension reported after 5 years or later (Dittmar, Lieven, Tomasello, 2008; Schaner-Wolles, 1989, Lindner, 2003)
- Novel verbs – to use or not to use?

Study 1

- Questions
 - Do Czech children comprehend SVO/OVS sentences? When?
 - Is the representation lexically independent?
 - Is comprehension susceptible to syntactic priming?
- Method and materials
 - Preferential looking
 - Participants
 - Total of 62 children seen, 54 evaluated (side bias, noncooperation)
 - 28 3-year-olds (M=35.3 mo., 30 to 41)
 - 26 5-year-olds (M=58.1 mo., 50 to 67)

Study I method

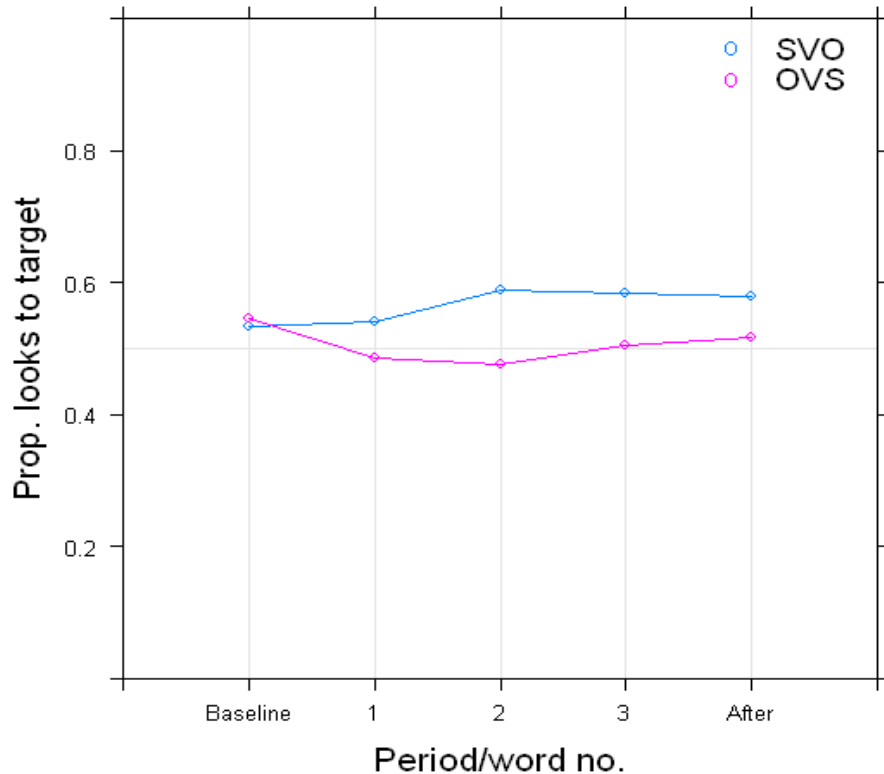
- Children saw 4 pairs of items
 - Item: picture pair, same participants, opposite roles
 - Sound referring to one picture
- Each item pair
 - first an unambiguous SVO/OVS sentence (2 each)
 - second temporarily ambig. SVO/OVS
 - first noun case-ambiguous
 - Between-subjects manipulation



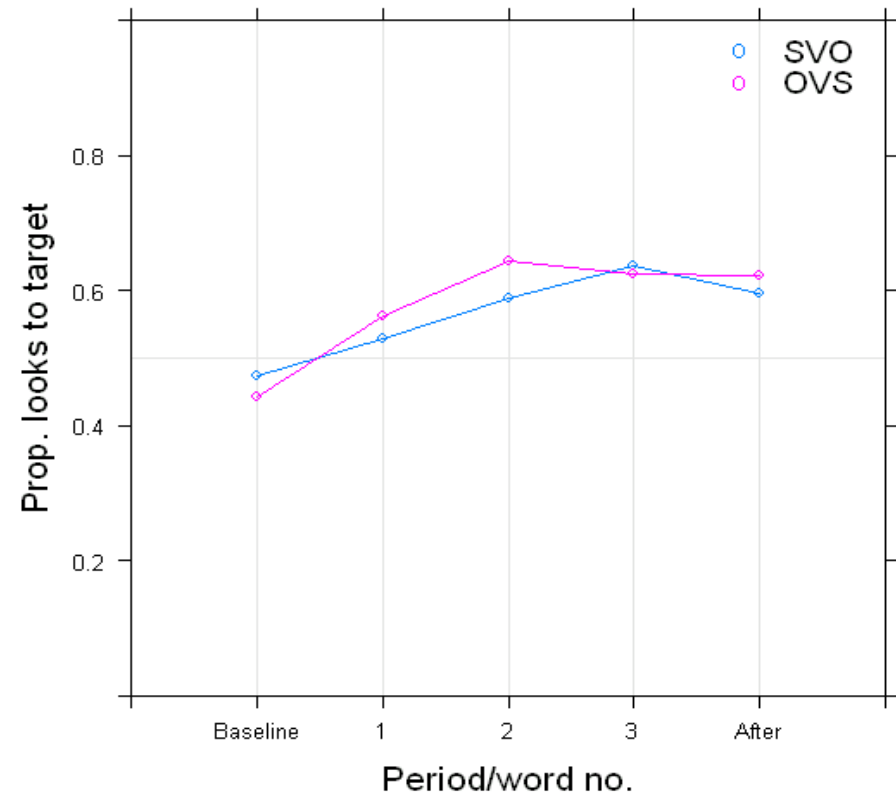
- Gaze direction recorded and coded
 - DV: time spent looking towards target during and after baseline

Study I results: primes

- Younger group
 - No effects, no looking towards the target



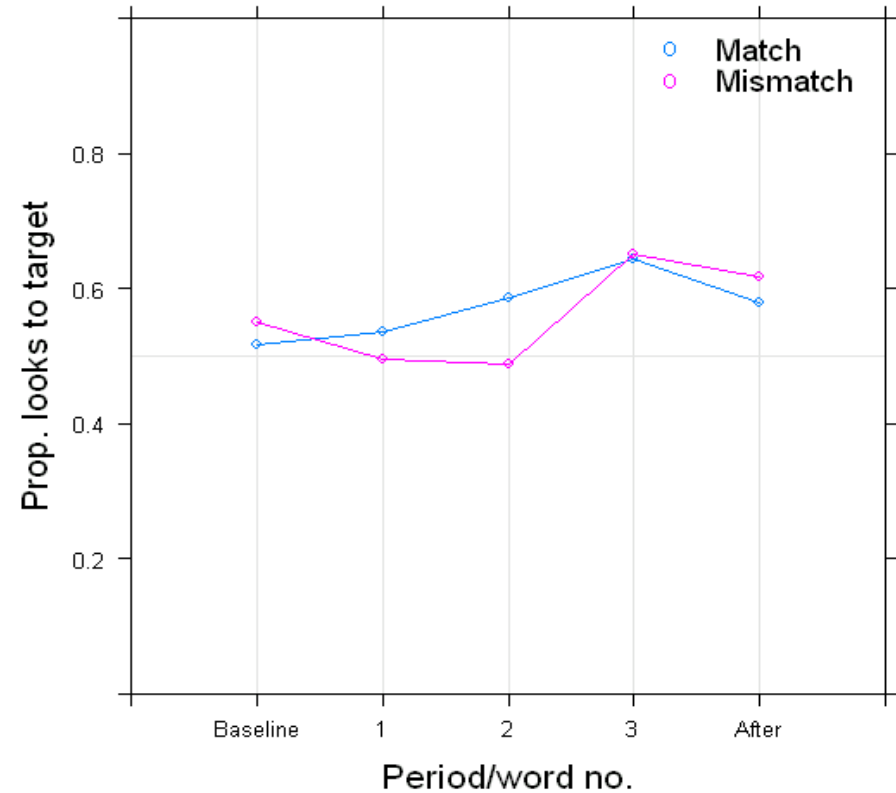
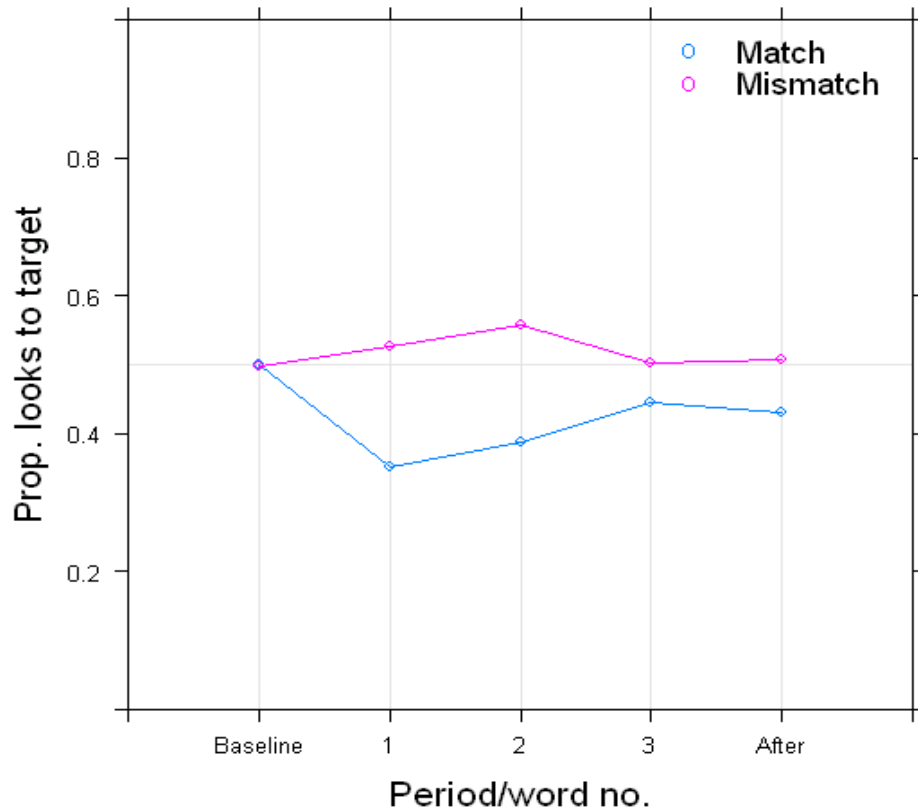
- Older group
 - Look towards targets
 - Sig. eff. on word 3
 - No SVO/OVS difference



Study I results: SVO targets

- Younger group
 - No significant effects

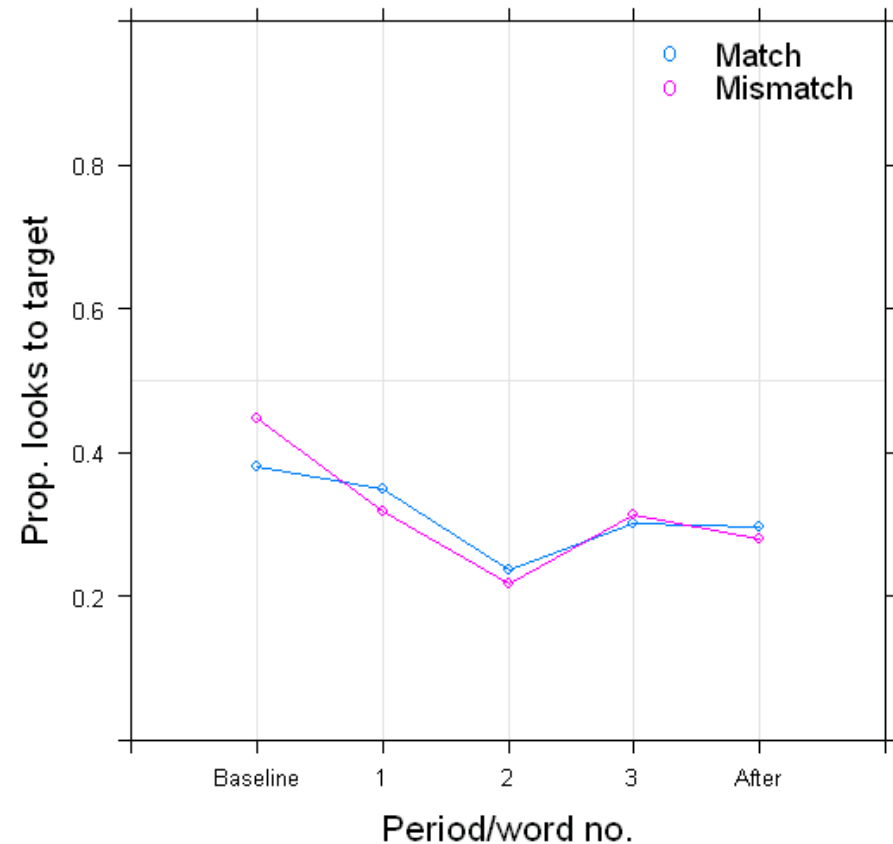
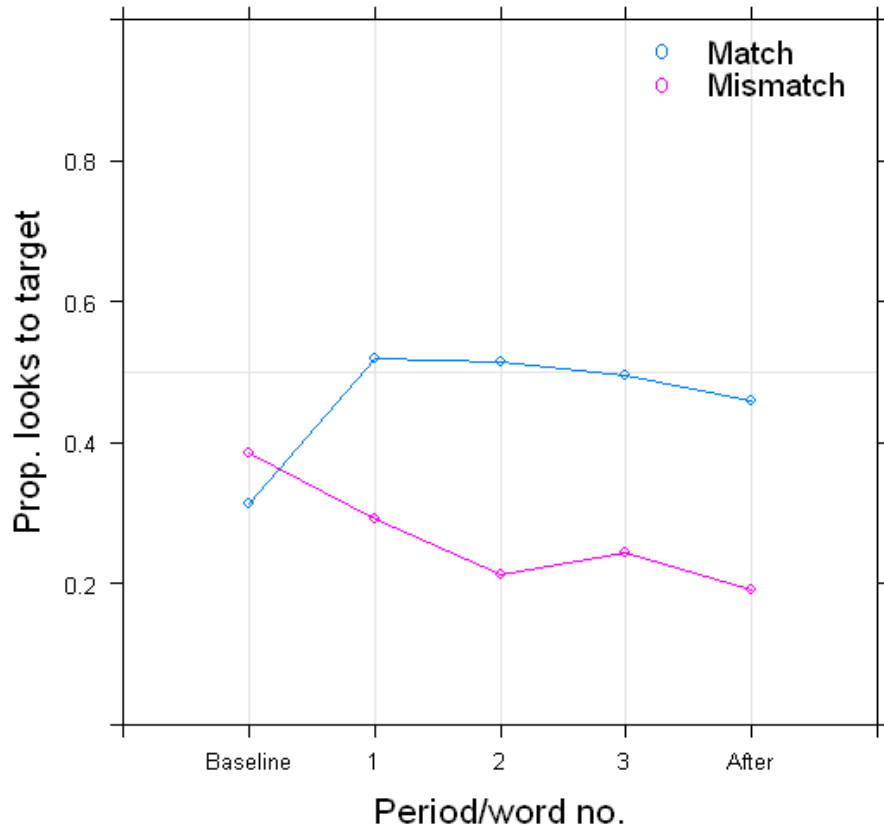
- Older group
 - No significant effects



Study I results: OVS targets

- Younger group
 - A robust priming effect
 - More looks to target after matching primes

- Older group
 - No significant effects



Study I discussion

- Not quite strong evidence of comprehending the primes
 - Perhaps only in the older group, no SVO/OVS difference
- No signs of comprehending SVO targets
- In OVS targets, the expected priming effect
 - Non-primed OVS sentences interpreted in the opposite way

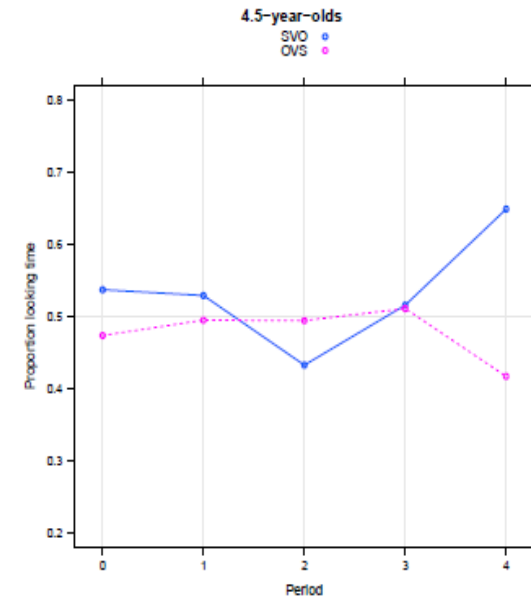
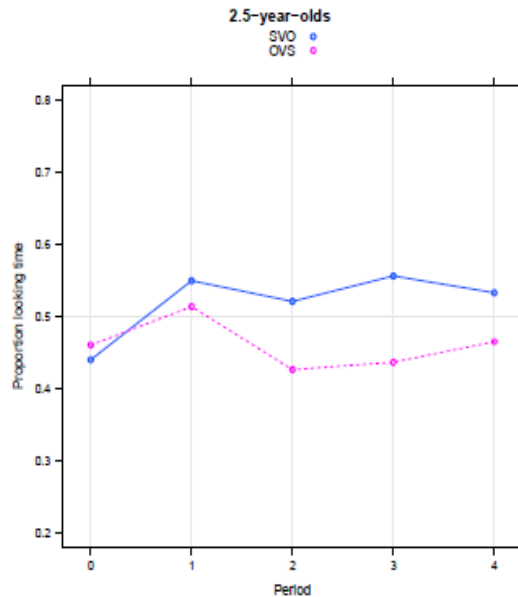
- Challenges
 - The results were not particularly strong
 - The between-subjects design may be an issue
 - → Study II

Study II

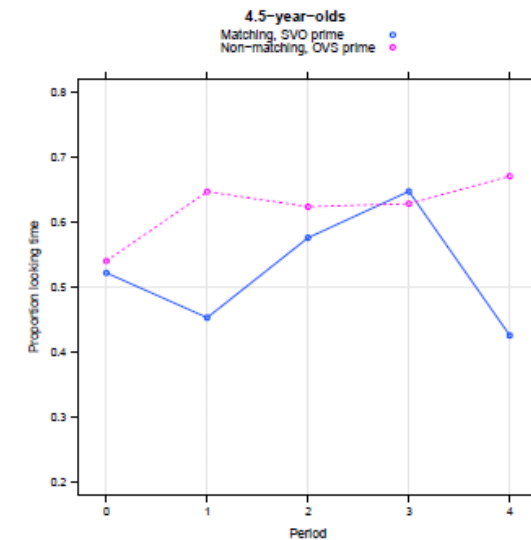
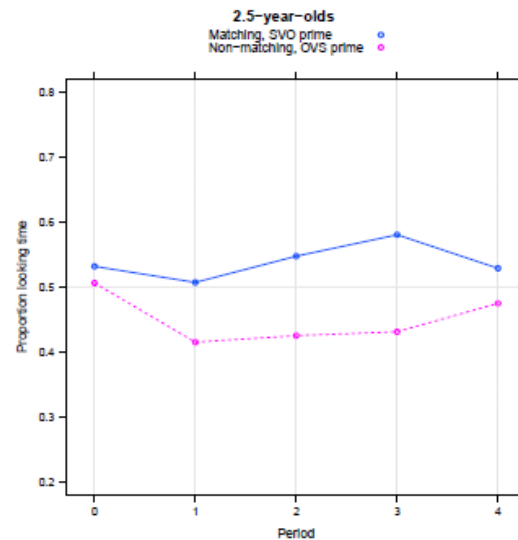
- Questions similar to Study I
- Similar design, but within-subjects
 - 4 pairs of items, first unambig. SVO/OVS, second temporarily ambig SVO/OVS
 - The target sentence repeated twice
- Offline task
 - Children also received a pointing task with 9 items and were asked to the picture corresponding to a simple transitive sentence
- Participants
 - 24 2,5-year-olds, 20 4,5-year-olds

Study II results

- Results for primes
 - No significant effects
 - no „comprehension“
 - Perhaps a tendency in older group after the sentence

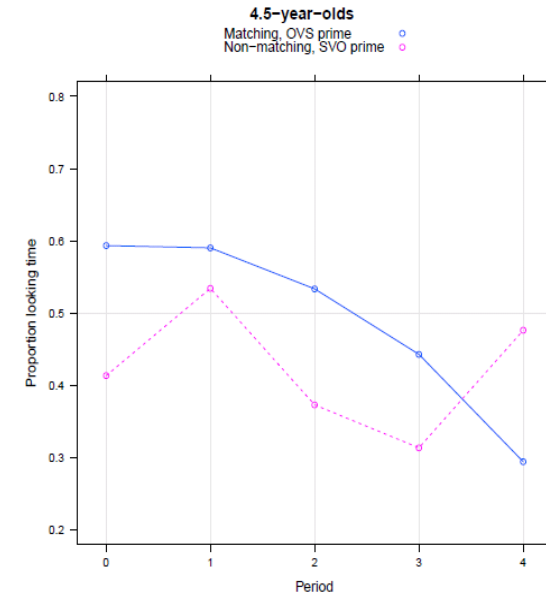
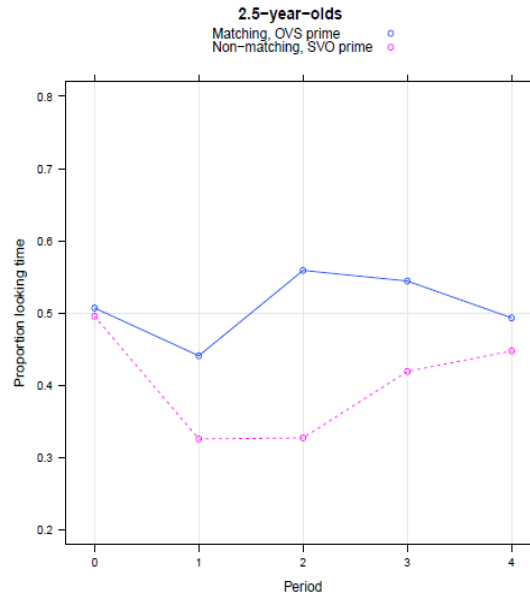


- Results SVO targets
 - No sig. effects.
 - no „comprehension“



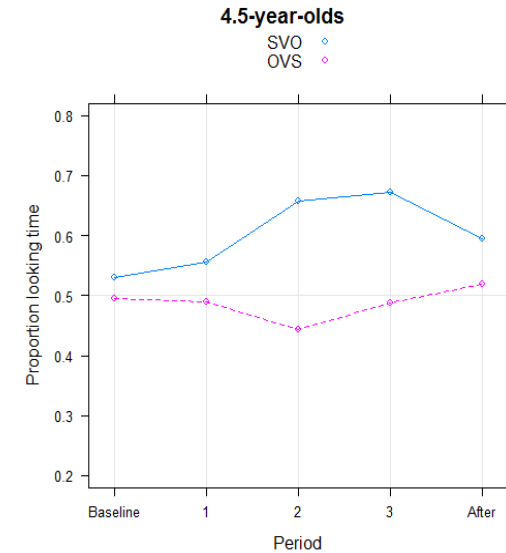
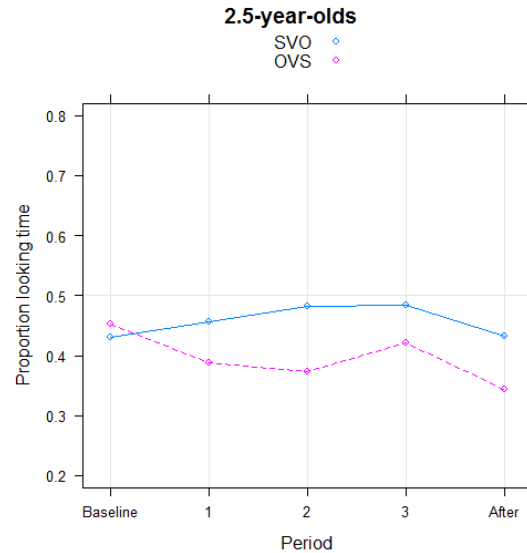
Study II results

- Results OVS target
 - Only significant is the unexpected effect in older children
 - OVS confusing, no priming

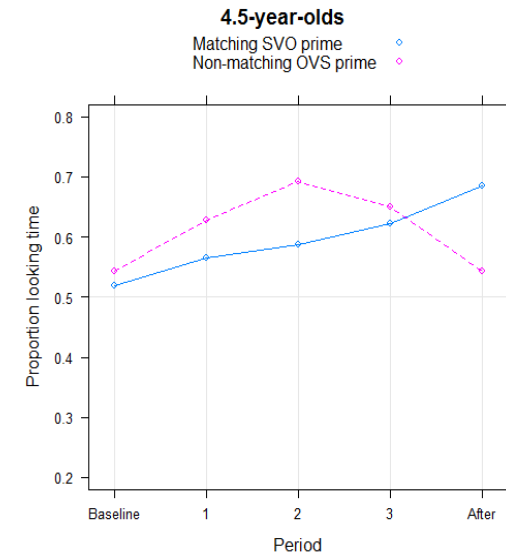
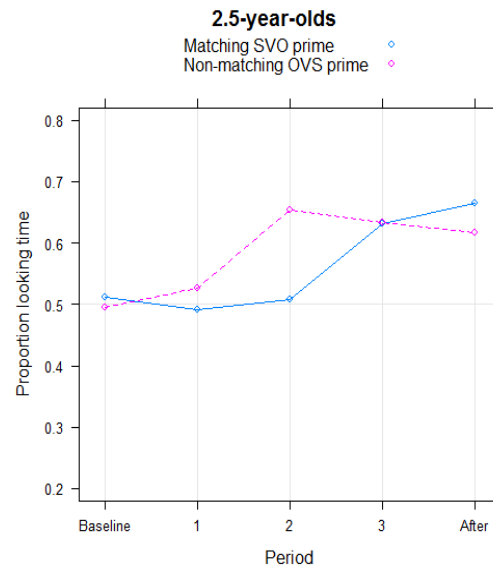


Study II results, second repetition

- Results for primes
 - No effects in young
 - Increased target looks in older on words 2, 3
 - Marginal interaction

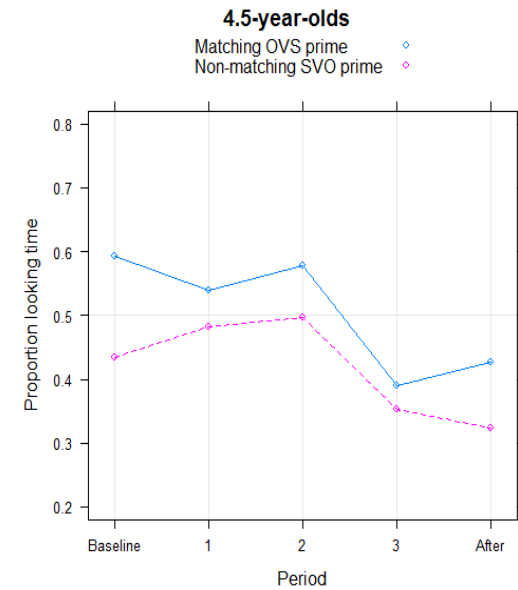
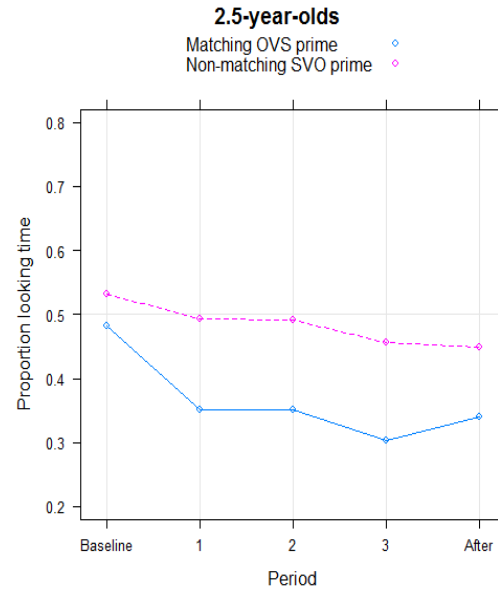


- Results SVO targets
 - Near-significant interaction on word 2 in younger
 - Unexpected direction



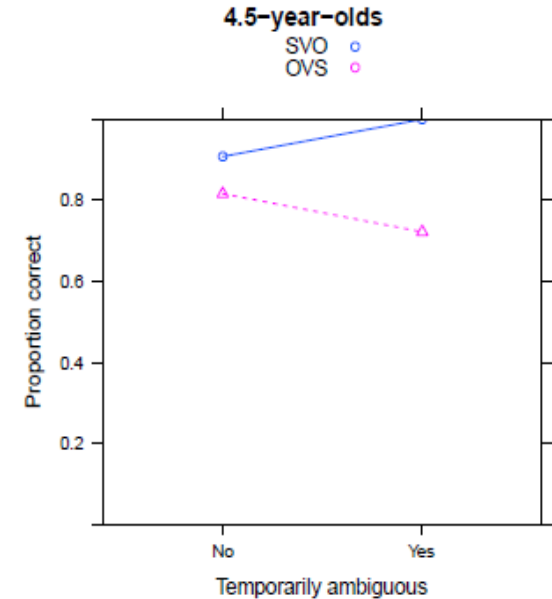
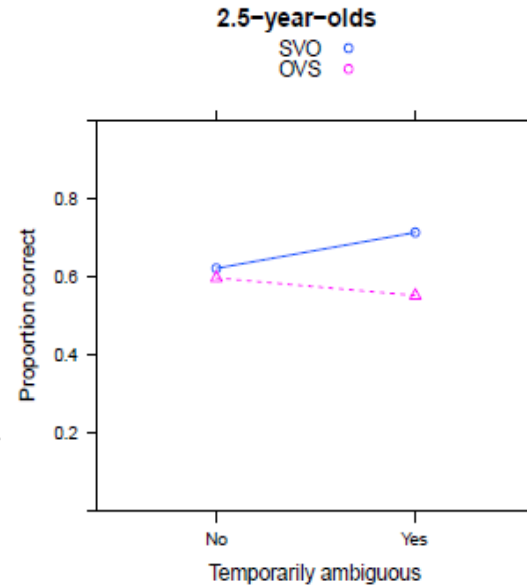
Study II results, second rep.

- Results OVS target
 - No significant effects
 - Perhaps a tendency in older group, word 3
 - OVS misinterpretation



Study II offline component

- All children were above chance in the offline task
 - Except for younger children in temporarily ambig. OVS sentences
 - Surprising is that SVO sentences led to better performance when temporarily ambiguous



Study III

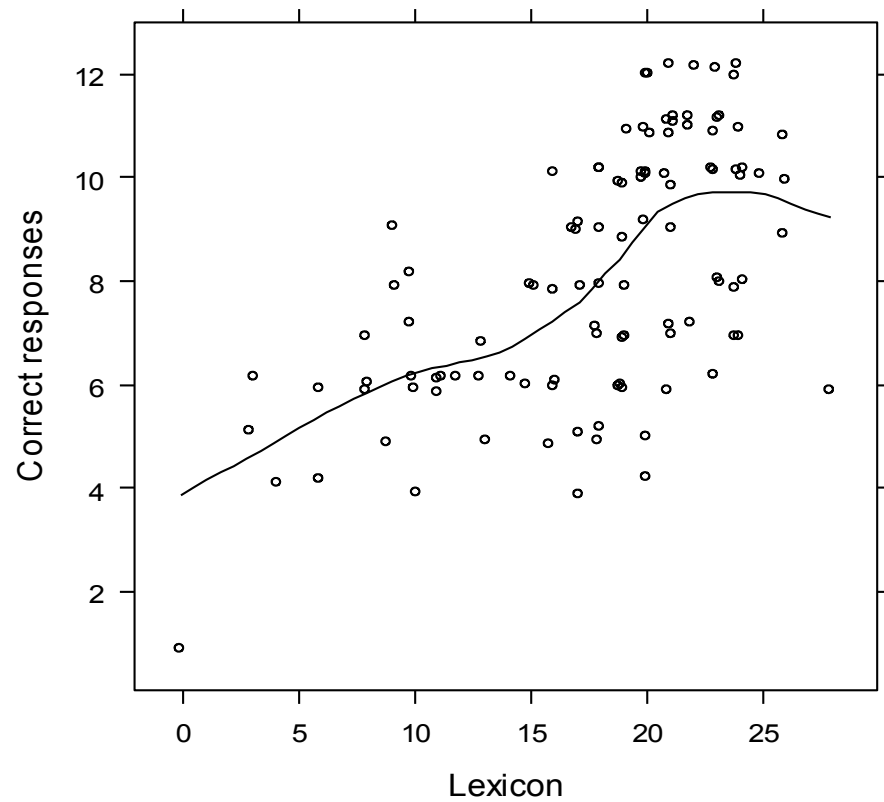
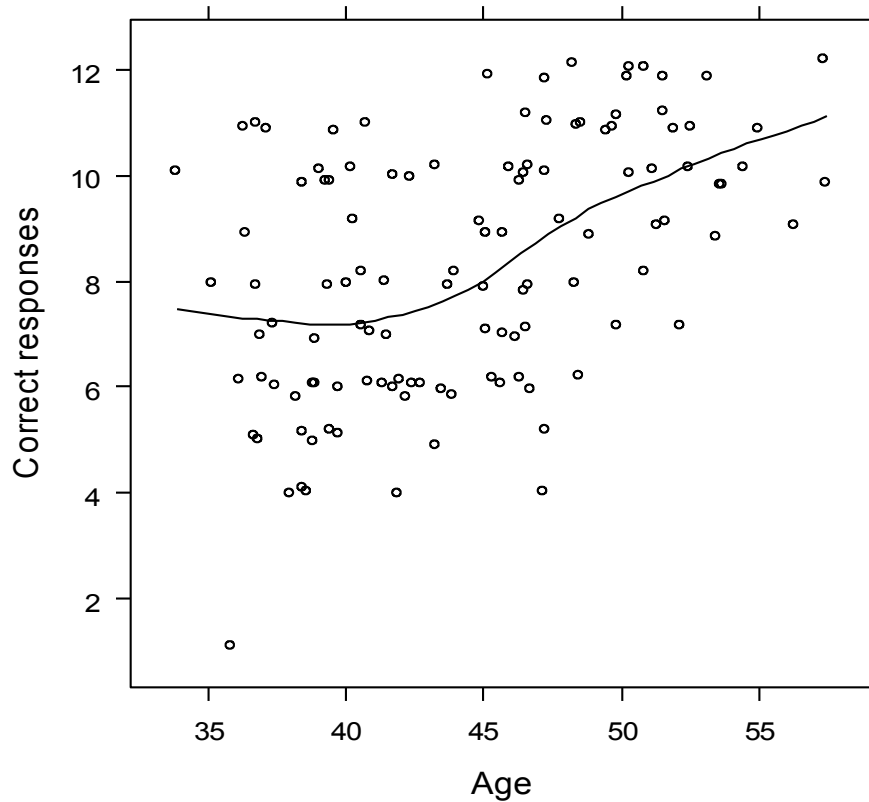
- Study II suggested that pointing task may show higher performance of children than the preferential looking task
 - Even though it requires more cooperation
 - However, the pointing task in Study II had design shortcomings
- To check how children do on SVO and OVS sentences in the pointing task, a separate study was performed
 - Looking at somewhat older children
 - Interaction between word order, case marking and information structure in sentence comprehension

Study III design

- 12 items
 - 2 pictures with same participants, opposing roles
 - Pre-recorded NVN sentence describing one picture
 - Sentence preceded by a short story that introduced one character as the given participant, mentioning it 3 times
 - Tested possible effects of information structure
 - Perhaps children initially use word order primarily to mark topic/focus
 - 2 x 2 design, i. e. 3 items per combination of conditions
 - Subject position – initial or final
 - Given noun placement – initial or final
- Receptive vocabulary task – to assess overall language
- Participants
 - 107 Czech children aged 2;9 to 4;7 (M=3;8, s=5;4)

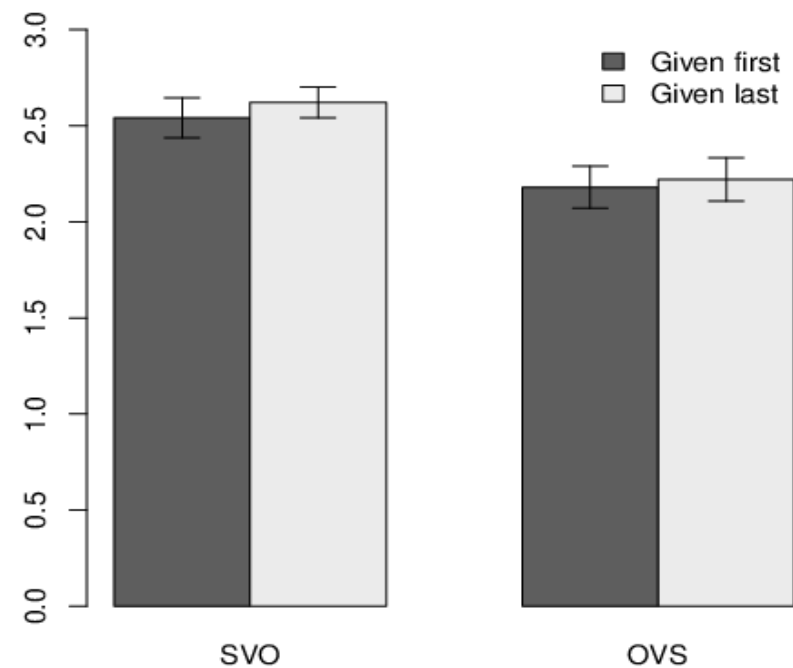
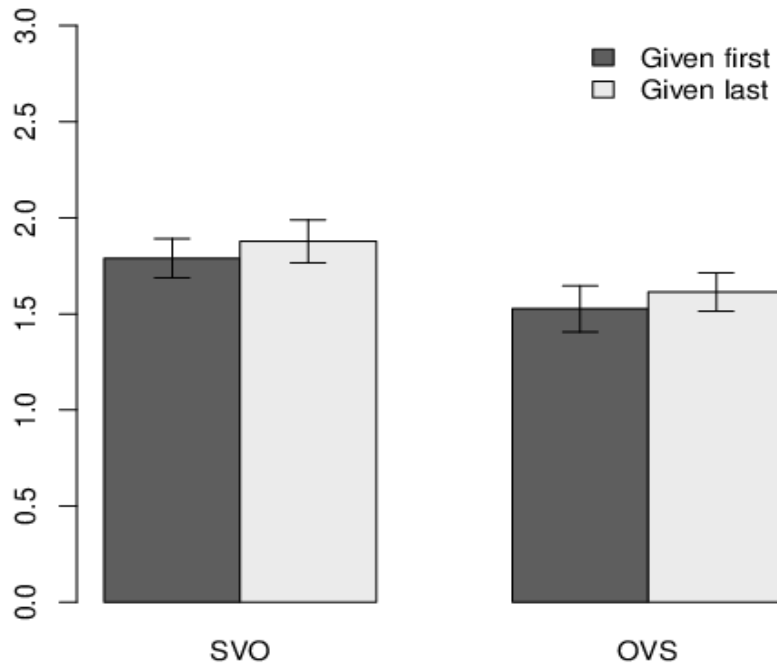
Study III results

- Age vs. lexicon as covariates
 - Age explained 4 pct., lexical score 19 pct. unique variance



Study III results

- Low- and high-vocabulary group analyzed separately
- No effect of information structure
 - SVO better than OVS in both groups
 - SVO above chance in both groups, OVS only in older



Study III discussion

- Confirmed some research from other languages
 - SVO comprehended before OVS
 - But OVS comprehended even before the age of 4
 - Similar to Croatian (Slobin, Bever, 1982), Polish (Weist, 1983)
 - But different from German
 - Perhaps because the Slavic case markers are local, bound on the nouns
 - No sign of inverted interpretation of OVS
 - Would suggest that children initially ignore case marking

General discussion

- Preferential looking studies may not be more sensitive than pointing studies
 - Useful to start with the simple behavioral tasks
 - Stimuli and procedure in preferential looking tasks need to be tested carefully
- Some evidence that case marking is processed from the early stages (esp. priming effect on OVS in Study I)
 - No inversion in OVS items in study III, above-chance performance in the offline task in Study II
- Tendency to inverse interpretation in temporarily ambiguous OVS sentences (garden-path effect)