

A study on infant word order in Finnish: Does Case make a difference?

One notable finding of recent research in child language acquisition is that infants are highly sensitive to the basic word order of their target language at a very early stage. The study we report has its antecedents in the work of Franck et al. (2011), which combined the preferential looking paradigm with the use of pseudo-verbs and the weird word order paradigm (Akhtar 1999); the results of the study showed that children were able to parse grammatical French sentences at 19 months. Gavarró et al. (2015) also showed word order sensitivity in 19-month-old infants, in a head-final language, Hindi-Urdu. Apart from word order, there is another language property at variance between French and Hindi-Urdu: French presents no overt Case marking and Hindi-Urdu does. In line with this background and in order to address this issue experimentally applying eye-tracking, we consider Finnish, an SVO language with overt Case marking. (The fourth option, left for future research, is that of an SOV language without overt Case marking, a language combination that is uncommon in the languages of the world.) As in previous studies, we combined the preferential looking paradigm, the use of pseudo-verbs, and the weird word order paradigm in order to test comprehension. We measured the gaze duration to a causative vs. reflexive video (with both videos played simultaneously) when the infants heard a grammatical or ungrammatical sentence, produced three times after a baseline window. By hypothesis, if an infant is able to parse the sentence, s/he will look longer at the causative event than at the reflexive event, since the input sentence is transitive. The sentences in (1) and (2) illustrate the two conditions in the experiment: (1) is grammatical, while (2) is ungrammatical, and both present the target overt Case markers.

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|-----|-----------|-----------|-----------|-----|
| (1) | Leijona | täkee | hevosen. | SVO |
| | lion-NOM | V | horse-ACC | |
| (2) | *Lammas | hevosen | raistaa. | SOV |
| | sheep-NOM | horse-ACC | V | |

15 infants (Mean age = 17.67) and 11 adults were tested in Oulu. We ran linear mixed-effects models on gaze duration for each time window using the lme4 package from R (v3.5.2, R Development Core Team, 2015). In this model, Scene (causative and reflexive) and Condition (grammatical and ungrammatical) are fixed effects, with random intercept and slope for participants and items.

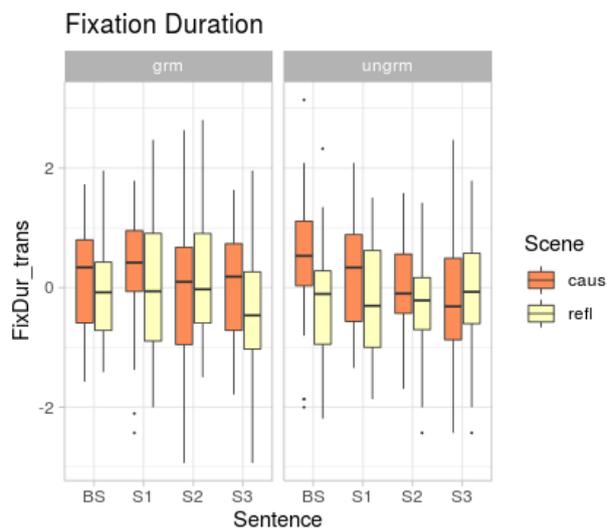
The results of the analysis are given in Table 1 and Figure 1. The results show no effect of (un)grammaticality in windows 1 and 2, i.e. the first and second exposures to the test sentences, but a significant interaction between Condition and Scene in window 3 ($\beta = 1.01$, $t = 3.30$, $p = .001$). We explored the effect in window 3 further. The successful model was only found in the grammatical condition with a negative coefficient in the reflexive scene ($\beta = -.63$, $t = -2.62$, $p = .01$). This reveals the significant preference for the causative scene in the grammatical condition and null results in the ungrammatical condition. At that point, the infants looked significantly longer at the causative than at the reflexive event, but only when exposed to the grammatical, SVO, sentences. When they were exposed to ungrammatical, SOV, sentences, their gaze was distributed randomly between the causative and the reflexive events. We interpret these results as indicating that children are able to parse the grammatical sentence, but not the ungrammatical. This result is consistent with previous results from French and Hindi-Urdu, in that children appear to ignore sequences that do not conform to their native language and from this we infer that the word order parameters of the target language have been set. This is so whether the target language is SOV or SVO. The puzzle remains as to the reason why Finnish children are delayed (to the third window) in their fixation to the target video when we compare these new results to those of French and Hindi-Urdu. The contribution of this study

is that overt Case marking, as we find in Finnish, does not make a difference in comprehension at age 17 months.

	Grammatical		Ungrammatical	
	Causative	Reflexive	Causative	Reflexive
Baseline	2290 (1390)	1840 (1190)	2720 (1340)	1710 (1350)
Sentence 1	2590 (1380)	2030 (1510)	2340 (1480)	1810 (1480)
Sentence 2	1990 (1460)	2180 (1460)	1940 (1230)	1590 (1160)
Sentence 3	2070 (1360)**	1460 (1260)**	1730 (1370)	2010 (1350)

Table 1. Mean looking times (in ms, standard deviations in parentheses), across the four critical windows of analysis in infants ** $p < .01$ (in bold)

Figure 1



References

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