

Very early parameter setting: Evidence from Mandarin

Much work on language acquisition has been driven by the hypothesis that any disparity between adult and child grammar is due to the mis-setting of parameters. On the other hand, much evidence gathered during the 90s already indicates that children have set the parameters of their target language by the earliest productive stage (as stated in VEPS, Wexler 1998). If this second view is correct, an empirical issue to address is: at which point do we have evidence for parameter setting in infants? Relatively new experimental techniques such as eye-tracking allow us to address this question. Here we consider the acquisition of word order in infants raised in Mandarin-speaking environments.

In our experiment, modelled on an experiment by Lassotta et al. (2014) for infant comprehension of French, we test comprehension of canonical SVO sentences (1) and sentences with left-dislocated objects and the *ba* construction (2a,b). Twenty-four typically-developing Mandarin infants with a mean age of 17.5 months ($SD = 2.2$) participated in the study. Children were shown two simultaneous videos while their eye fixation times were measured: in one video, the target causative event was depicted, while the other screen illustrated the same event with theta-role reversal. Each pair of videos included four windows: (i) a baseline window with a recorded sentence of the type *Look! What is happening?* and (ii) three consecutive presentations of the experimental sentence, starting at 5, 10, and 15 seconds (S1, S2, S3 in figure 1). Pseudo-verbs were used in all experimental sentences.

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|-----|-----------------------------|-------------|----------|-----------------|-------------|----------|----------|
| (1) | 小兔子 | tuān | | 了 | | 小鸭子。 | (SVO) |
| | the rabbit | PSEUDO-VERB | | PERF | | the duck | |
| (2) | a. 小兔子 | 把 | 小鸭子 | tuān | | 了。 | (SbaOV) |
| | the rabbit | BA | the duck | PSEUDO-VERB | PERF | | |
| | b. 小鸭子 | 小兔子 | 把 | 它 | tuān | 了。 | (OSbaOV) |
| | the duck _i | the rabbit | BA | it _i | PSEUDO-VERB | PERF | |
| | ‘The rabbit V-ed the duck.’ | | | | | | |

The results in table 1 show that, in all conditions, infants looked significantly longer at the target video than at the reverse video, as expected if children are attuned to the language they are acquiring. No significant difference was found in the baseline window. One might venture that infants are simply adhering to an AGENT-first strategy (as postulated by Bever 1970, and more recently Lidz et al. 2001); however, that was not the case, since, in the OSbaOV condition (2b), they looked longer at the scene with the first NP as THEME during the first ($t(23) = 3.35, p = .003, d = .65$) and the second presentation ($t(23) = 2.08, p = .049, d = .57$), reflecting target interpretation (see fig.1). This sentence type involves raising of the object to the inner topic position and further raising to a left-peripheral position, leaving a resumptive clitic in preverbal position. This is in sharp contrast with a result from a previous experiment, replicating Franck et al. (2011), which showed that children cannot parse an ungrammatical SOV structure (exemplified in (3)) – results given in table 2.

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|-----|------------|----------|-------------|------|-----|--|----|
| (3) | *小兔子 | | 小鸭子 | | nuí | | 了。 |
| | The rabbit | the duck | PSEUDO-VERB | PERF | | | |

This indicates that infants exposed to Mandarin are sensitive to the presence of functional heads (like *ba*) from 17 months and they can use this knowledge to parse a sentence, a result similar to that of Lassotta et al. (2014) for French Clitic Left dislocation. To the extent that these results can only be accounted for if grammatical, language-specific knowledge is available, they constitute evidence for very early parameter setting.

	SVO		SbaOV		OSbaOV	
	Target	Reverse	Target	Reverse	Target	Reverse
BS	1299(589)	1410(820)	1931(852)	1659(746)	1394(665)	1163(715)
S1	1511(916)	1451(853)	2273(1103)	1829(957)	1867(986)**	1289(785)**
S2	1660(837)*	1139(890)*	1944(1193)*	1396(933)*	1888(1102)*	1323(868)*
S3	1523(865)***	1026(628)***	1595(1079)	1900(1204)	1364(1060)	1290(825)

Table 1. Mean looking times across the four critical areas of interest in three conditions.
 * $p < .05$, ** $p < .01$, *** $p < .001$ (in bold)

	*SOV	
	Causative	Non-caus.
BS	1394(818)	1138(439)
S1	1198(779)	1072(569)
S2	974(680)	1041(1012)
S3	1153(1021)	876(779)

Table 2. Mean looking times in the ungrammatical SOV condition.

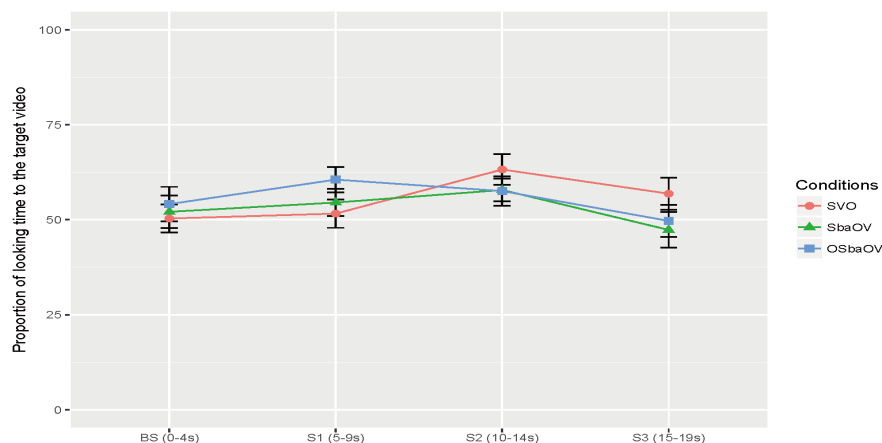


Fig.1 Proportion of looking time to the target video during the four critical Aols in the three conditions.

Franck, J., Millotte, S., Posada, A. & Rizzi, L. 2011. Abstract knowledge of word order by 19 months: an eye-tracking study. *Applied Psycholinguistics* 34(2): 323–336.

Lassotta, R., Omaki, A., & Franck, J. 2014. Abstract knowledge of non-canonical word order by 21 month olds. Paper presented at BUCLD 39, Nov. 9.