Delayed Subject Advantages in Mandarin Sluicing Acquisition

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Background. Sluicing is an elliptical structure in which only a *wh*-phrase is overtly pronounced in an embedded CP. English sluices are argued to derive from *wh*-movement followed by TP-ellipsis [5] (as in (1)). Mateu et al. (2017) found that English-speaking children aged 3;0-6;11 perform significantly better on subject sluicing than on object sluicing (a *subject advantage*). This finding is consistent with the movement-ellipsis analysis and supports the *Intervention Hypothesis* [3] viz., children have difficulty with A'-dependencies that cross another potential A'-moving element (e.g., 'John' in 1b). However, the derivation of Mandarin sluices is not a settled issue, and competing analyses make different predictions for acquisition.

(1) a. Subject sluicing: Someone pushed John, but I don't know [$_{CP}$ who$_i$ [~~$_{TP}$ t_i pushed John~~]]

b. Object sluicing: John pushed someone, but I don't know [$_{CP}$ who$_i$ [~~$_{TP}$ John pushed t_i~~]]
intervener

Two competing analyses. Mandarin sluices with argument *wh*-remnants (e.g., *shei* 'who') require the presence of *shi,* a form that is ambiguous between a copula and a focus marker. This has led syntacticians to two competing analyses (as shown in (2)): The *pseudo-sluicing* analysis posits a silent *pro* as subject of the copula *shi* and involves neither movement nor ellipsis. The *movement-ellipsis* analysis derives sluices by focus movement, triggered by the focus marker *shi*, and TP ellipsis, parallel to the English *wh*-movement and TP ellipsis derivation. This analysis thus predicts that Mandarin-speaking children will show the same subject advantage as English-speaking children. By contrast, the pseudo-sluicing analysis, which posits no movement, predicts no intervention effects, hence no subject advantage in Mandarin-speaking children's comprehension of sluices.

(2) a. The pseudo-sluicing analysis[1] (no movement or ellipsis):
mouren$_i$ *tui-le* *Lisi* *dan* *wo* *bu* *zhidao* pro$_i$ **(shi)* *shei*
someone pushed Lisi but I not know be who
'Someone$_i$ pushed Lisi but I don't know who (*pro*$_i$ is).'

b. The movement-ellipsis analysis[2][6] (focus-movement followed by TP-ellipsis):
mouren *tui-le* *Lisi* *dan* *wo* *bu* *zhidao* **(shi)* *[$_{FocP}$ shei$_i$ [$_{Foc}$ ~~[$_{TP}$ t_i tui-le Lisi]~~]]*
someone pushed Lisi but I not know FM who < pushed Lisi >
'Someone pushed Lisi but I don't know who (pushed Lisi).' (FM = focus marker)

Design and procedure. Fifty-six native Mandarin-speaking children aged 3;0-6;11 (*M* = 5;7) were tested using a yes-no question task crossing Position (subject vs. object extraction) and Type (sluices vs. full *wh*-questions). Participants were shown pictures in which three characters performed the same action (e.g., *push* in Fig.1), and were asked to answer a question as in (3). A 'no' response in this case would mean the child interpreted *who* as referring to the partially hidden character in Fig. 1. If the child answered 'yes', s/he was then asked to point out who.

(3) *wo* *neng* *kanjian* *yige* *ren* *zai* *tui* *lvseyifu-de* *nanhai…*
I can see one person PROG push green.clothes-DE boy
'I can see that someone is pushing the boy in green…'

a. Sluiced wh-question: … *ni* *neng* *kanjian* *shi* *shei* *ma?*
you can see be who Q
'…can you see who?' (Q = question particle)

b. Full wh-question: … *ni* *neng* *kanjian* *shei* *zai* *tui* *lvseyifu-de* *nanhai* *ma?*
you can see who PROG push green.clothes-DE boy Q
'…can you see who is pushing the boy in green?'

Figure 1. Test image for 'push'.

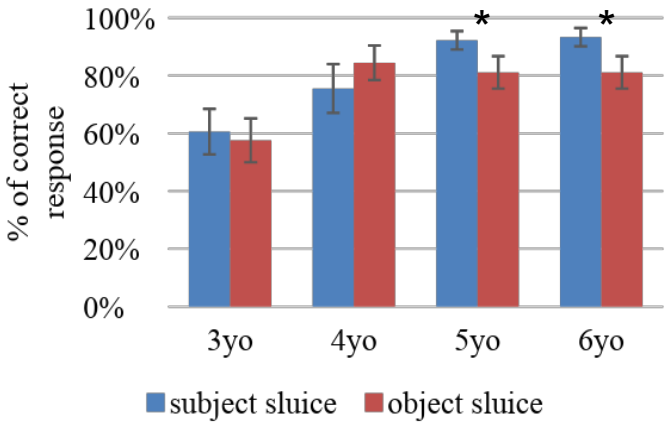

Figure 2. Comprehension results by age and sluice type.

Results. A mixed-effects logistic regression modelled the dependency of correct responses to Position and Type, with Verb and Subject as random effects. Children performed significantly better on full *wh*-question controls than on sluices ($p < 0.001$). For the full *wh*-question controls, our results show no subject advantage in any age group ($p = 0.87, 0.93, 0.55, 0.14$ for performance on subject vs. object full *wh*-questions in each age group). By contrast, Position effects in the comprehension of sluices vary by age (Fig. 2): The two younger age groups performed equally poorly on subject and object sluices ($p = 0.67$ and 0.10 for 3- and 4-year olds), while the two older groups show a significant subject advantage ($p = 0.03$ and 0.02 for 5- and 6-year olds).

Discussion. In contrast to English-speaking children, who show a subject advantage from ages 3 to 5 and become adult-like by age 6 (viz. no S/O asymmetry in offline tasks) [4], Mandarin-speaking children exhibit a 'delay' in that the subject advantage is observed only in 5- and 6-year olds but not in the younger age groups. We believe that this cross-linguistic difference is due to the copula/focus marker lexical ambiguity of *shi* in Mandarin sluices, an issue that does not arise in English sluices. We propose that Mandarin-speaking children initially (mis-)analyze *shi* as a copula (as in (2a)), hence provide a simpler, pseudo-sluicing derivation, and only later (age 5-6) fully acquire the focus properties of *shi*. At that point, the movement-ellipsis derivation becomes available, and a subject advantage emerges as an effect of intervention [3].

A follow-up CHILDES corpus study ($N = 457$, ages 0;8-6;11) shows that, Mandarin-speaking children only produce copula *shi* prior to age 4;3, and produce focus marker *shi* very infrequently thereafter (only 10/6235 tokens of *shi* are focus markers), supporting our hypothesis of delayed acquisition of the focus marker *shi* and the (adultlike) movement-ellipsis derivation.

Selected References. [1] Adams, P. W. (2004). The structure of sluicing in Mandarin Chinese. In *Penn Working Papers in Linguistics,* 10.1: 1-16. University of Pennsylvania. **[2]** Chiu, L. L. (2007). A Focus-movement account on Chinese multiple sluicing. *Nanzan Linguistics: Special Issue*, *1*, 23-31. **[3]** Friedmann, N., A. Belletti, & L. Rizzi. (2009). Relativized relatives: Types of intervention in the acquisition of A-bar dependencies. *Lingua* 119. 67-88. **[4]** Mateu, V., N. Hyams & L. Winans (2017). Intervention effects in early grammar: Evidence from sluicing. Talk presented at BUCLD 42. **[5]** Merchant, J. (2001). *The syntax of silence: sluicing, islands, and the theory of ellipsis.* Oxford: Oxford University Press. **[6]** Wang, C. A. A., & Wu, H. H. I. (2006). Sluicing and focus movement in wh-in-situ languages. *University of Pennsylvania Working Papers in Linguistics*, *12*(1), 30.