

The effect of variation and frequency on lexical learning in Chinese-speaking children

It has been suggested that not only perceptual salience but also linguistic salience have influence on early verb learning (Maguire et al. 2006). For instance, Brown (1998) and Tardif (2006) suggested specificity of meaning can facilitate early verb learning. Tardif also argued that this might be the reason why Mandarin verbs occupy higher proportion in early vocabulary when compared to English verbs. On the other hand, it has been suggested that frequency of input also plays a role in language development. Casenhiser and Goldberg (2005) reported that high frequency of occurrence of a particular verb can facilitate learning of construction since children might need a frequent word as a template to acquire the meaning of novel construction.

Despite the contribution made in previous studies, very few studies experimentally investigate the interplay between semantic specificity and input frequency on word learning. In this ongoing study, we explore the effect of specificity, through controlling the variation of linguistic stimuli among exemplars and the frequency of a particular label on vocabulary learning. Four- to five-year-old children were asked to fast-map novel verbs and their intended meanings. In the training trials, participants were shown several actions came with novel labels (See Appendix 2). There are two conditions of training trials for each novel word: the general condition and the specific condition (See Appendix 1). Across these conditions, the number of exemplars is controlled and the visual stimuli are identical. The major difference between conditions lies in the variations among the labels for the novel actions. In the specific condition, two distinct but related actions will be mapped onto two different novel verbs whereas in the general condition they will be mapped onto one novel verb. A participant who is assigned to the specific condition while learning the two words for the X action will be assigned to the general condition while learning the word for the Y action, and vice versa. Therefore, the number of novel words to be learned for each participant is the same. Moreover, in this design, the input frequency of a given type of linguistic stimulus in the general condition is lower than that in the specific condition. Test trials include comprehension tests that require participants not only to choose the video clip that matches the meaning of a particular novel word from three clips but to act out what the word labels, and production tests that require participant to answer the experimenter what an action is.

Better performance in the specific condition may not only support the specificity hypothesis but also imply that the mechanism of learning word meaning is similar to that of learning meanings of a construction reported by Casenhiser and Goldberg (2005). Higher frequency of linguistic instances for an action eases word learning since this particular linguistic stimulus can serve as a template for children to learn a novel word. In contrast, better performance in the general condition might imply that children need more variation to analyze and capture word meaning. In other words, variation among visual instances for a label has a more facilitative effect on verb learning than frequency. In conclusion, this study can shed light on how frequency and variation affect early vocabulary development.

Reference

- Brown, P. (1998). Children's first verbs in Tzeltal: Evidence for an early verb category. *Linguistics*, 36(4), 713-753.
- Casenhiser, D. & Goldberg, A. E. (2005) Fast mapping between a phrasal form and meaning, *Developmental Science*, 8:6.
- Maguire, M. J., Hirsh-Pasek, K., & Golinkoff, R. M. (2006). A unified theory of word learning: Putting verb acquisition in context. In K. Hirsh-Pasek & R. M. Golinkoff (Eds.), *Action meets word: How children learn verbs* (pp. 364-391). New York, NY: Oxford University Press.

Tardif, T. (2006). The importance of verbs in Chinese. In P. Li, L. H. Tan, E. Bates & O. J. L. Tzeng (Eds.), *The handbook of East Asian psycholinguistics Volume 1: Chinese*. New York: Cambridge University Press.

Appendix 1. The frequency of visual and linguistic stimuli in the conditions

A: General				B: Specific			
Visual stimuli & Frequency		Linguistic stimuli & Frequency		Visual stimuli & Frequency		Linguistic stimuli & Frequency	
X1	6	V _{X1}	18	X1	6	V _{X1}	18
Test 1				Test 1			
X2	3	V _{X1}	18	X2	3	V _{X2}	9
X1	3			X1	3	V _{X1}	9
Test 2				Test 2			
Y1	6	V _{Y1}	18	Y1	6	V _{Y1}	18
Test 1				Test 1			
Y2	3	V _{Y1}	18	Y2	3	V _{Y2}	9
Y1	3			Y1	3	V _{Y1}	9
Test 2				Test 2			

Appendix 2. Two groups of actions

Actions		Features encoded	Function
X Carry something (with a part of head)	X1	With nose	
	X2	With ear	
Y Break something (with a part of head)	Y1	With nose	break it into pieces
	Y2	With ear	break it into two parts