Syntactic bootstrapping with minimal verbal morphology:
Learning Mandarin Chinese attitude verb meanings

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Introduction Compared to other verbs, belief and desire verbs (e.g. "to think" and "to want") express events (mental states) that lack reliable physical correlates. Thus, while children successfully come to acquire the meaning of these attitude verbs, it is highly unlikely that they do so using situational context alone (see Gleitman et al. 2005). One hypothesis is that children learn about the differences between these two classes of verbs via syntactic bootstrapping, i.e., by using observed morphosyntactic cues, and exploiting principled links that relate these cues to their meaning (e.g. Gleitman 1990). In Romance and Germanic, belief and desire verbs are each associated with clausal complements with clearly distinct tense/mood morphology or word orders (Bolinger 1968, Scheffler 2009; White et al. 2016, a.o.), making syntactic bootstrapping plausible. Furthermore, while the form of the morphosyntactic cues vary across these two families of languages, they converge in that belief verbs take complements with syntactic hallmarks of declarative main clauses, while desire verbs do not (Dayal and Grimshaw 2009; Hacquard 2014; White et al. 2016).

Problem Syntactic bootstrapping presupposes the existence of reliable morphosyntactic cues. In a language with relatively little overt verbal morphology, such as Mandarin Chinese, it is less clear whether syntactic bootstrapping is a viable strategy for learning attitude verb meanings.

Proposal I argue that syntactic bootstrapping is in principle possible for learning meaning differences between Mandarin belief and desire verbs, even though Mandarin does not have overt tense/mood morphology.

First, there are syntactic properties that generally distinguish the clausal complements of belief verbs from those of desire verbs, including the presence of an overt subject (1) (but note that the desire verb *yao* "to want" can occur with an overt embedded subject (1b), and subjects can be omitted in context), modal auxiliaries (2) (after e.g. C.-T. J. Huang 1982, pace Hu et al. 2001), and A-not-A yes/no question morphology (3). I further argue that these properties support the "main clause syntax" hypothesis: the features that distinguish complements of belief verbs from those of desire verbs in a language correlate with the features observed in declarative main clauses.

(1) a. Lisi   renwei ta   chi-su.
        L   think   he   be-vegetarian
        'Lisi thinks that he is vegetarian.'

    b. Lisi {xiang (*ta) / yao   ta}   chi-su.
        L   want   he   want he   be-vegetarian
        Intended: 'Lisi wants him to be vegetarian.'

(2) a. Lisi   renwei   Zhangsan hui   chi-su.
        L   think   Z   will   eat-vegetarian
        'Lisi thinks that Zhangsan will become vegetarian.'

    b. Lisi {xiang / yao} (*hui / *yiding)   chi-su.
        L   want   want   will   necessary eat-vegetarian
        Intended: 'Lisi wants to be vegetarian (in the future) / In all worlds compatible with Lisi's desires, it is necessary that he is vegetarian.'

(3) a. Lisi   renwei   Zhangsan   chi-bu-chi-su?
        L   think   Z   eat-NEG-eat-vegetarian
        'Does Lisi think that Zhangsan is vegetarian, or does Lisi think that he is not?'

    b. * Lisi｛xiang /   yao｝ chi-bu-chi-su?
        L   want   want eat-NEG-eat-vegetarian
        Intended: 'Does Lisi want to be vegetarian, or does Lisi want to not be vegetarian?'

Second, I present initial findings from an ongoing Mandarin Chinese CHILDES corpus study, showing that these properties are distributed differently across belief and desire verbs in child-directed speech. For example, even though subjects can be omitted in the clausal complements of belief verbs, and an overt subject can appear in the clausal complement of the desire verb *yao*, the distribution of overt subjects in child-directed speech is different across the complements of belief verbs and those of desire verbs, including *yao*. I argue that the observed distributional differences can be used by the child to sort attitude verbs into two semantic classes, i.e. belief and desire verbs. Despite the relatively impoverished tense/mood/verbal morphology in Mandarin Chinese, there are arguably sufficient syntactic cues available for syntactic bootstrapping purposes.

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