Cheng, W., & Almor, A. (2017). Referent Predictability is Affected by Syntactic Structure: Evidence from Chinese. *Journal of Psycholinguistic Research*, *46*(1), 157–174. https://doi.org/10.1007/s10936-016-9430-6

A. Summary

       In this study, Cheng & Almor investigate the influence of syntactic structure on referent predictability. Referent predictability refers to the perceived likelihood of a referent to be rementioned, with a higher likelihood corresponding with higher predictability. The authors also discuss reference accessibility, as some previous work has suggested that its underlying mechanisms are identical to those of referent predictability. Accessibility refers to how activated a certain referent is. Previous work has established that semantic factors such as the prominence of theta roles assigned to referents influence both predictability and accessibility, though previous accounts of predictability disagree on whether syntactic factors are involved.
       The authors test the influence of syntax on referent predictability using three types of Mandarin sentences (1-3). Their phrase structures are given in Figure 1.

Active canonical

(1) Zhangsan   jinu-le   Lisi
     Zhangsan   anger-ASP   Lisi
'Zhangsan angered Lisi'

Passive

(3) Zhangsan   bei   Lisi   jinu-le
     Zhangsan   bei   Lisi   anger-ASP
'Zhangsan was angered by Lisi'

Active *ba*

(2) Zhangsan   ba   Lisi   jinu-le
     Zhangsan   ba   Lisi   anger-ASP
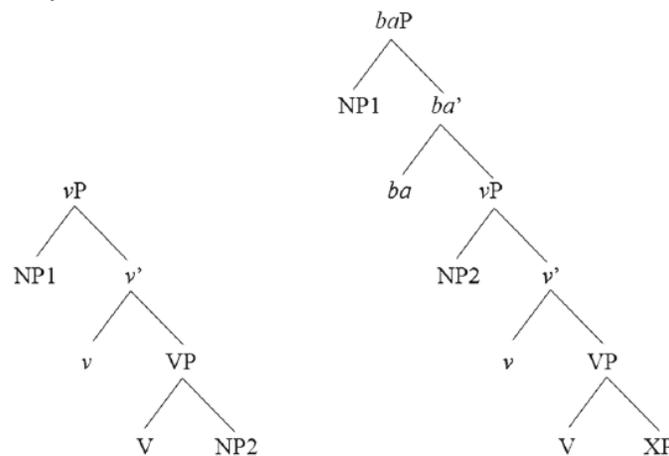'Zhangsan angered Lisi'

Figure 1. Phrase structures for the active canonical (left) and active *ba* (right) sentences.

       Each sentence was followed with *yinwei* (because) in Experiment 1 and 2, and also with *yinci* (because of this) in Experiment 2. Native Mandarin participants were then asked to complete this new sentence. Their responses were coded as referencing either the stimulus or the experiencer; completions with ambiguous or other referents were discarded. Cheng & Almor found that *yinwei* (because) influenced participants to respond by referring to the stimulus, while *yinci* (because of this) influenced them to refer to the experiencer. They also found differences

between the types of sentences used. Active canonical sentences resulted in statistically significantly higher references to the stimulus compared to active *ba* sentences and passives. The stimulus was referred to more often in active *ba* sentences than passives, but this difference was not found to be significant.

Cheng & Almor conclude that the observed difference is due to a syntax-semantic mismatch, an interpretation shared by other studies of predictability. They suggest that there is evidence that the experiencer role is semantically more prominent than the stimulus role, and higher syntactic positions are more prominent than lower syntactic positions. By the syntax-semantic mismatch account, in active canonical sentences, the semantically prominent experiencer is in a syntactically low position, while the semantically less prominent stimulus is in a syntactically higher position. Thus, the mismatch causes reference to the experiencer to be more predictable. As there is no mismatch in the passive sentences, reference to the stimulus is more predictable. Cheng & Almor explain the lack of significant difference between active *ba* and passive sentences by suggesting that since the stimulus is syntactically higher in the active *ba* sentences, it causes less of a mismatch or no mismatch.

B. Analysis

The present study's conclusions are based heavily on an analysis of *ba* as the head of a maximal functional projection (Huang, Li, & Li, 2009). However, other theoretical accounts have suggested that *ba* is actually a verb (Bender, 2000; S. Ding, 1993; S. P. Ding, 2000). Although the present study was not designed to test for the syntax of *ba*, its results and conclusions may provide slightly stronger support for an analysis of *ba* as a functional head than for *ba* as a verb, and the study's results and conclusions indirectly suggest methods for further probing *ba*'s syntactic and pragmatic properties.

Cheng & Almor suggest that the lesser degree of syntactic mismatch in active *ba* sentences relative to active canonical sentences is due to the stimulus being higher in the phrase structure of active *ba* sentences. Figure 2 shows a verbal analysis of *ba* similar to Ding's (1993). Compared to the active canonical structure in Figure 1, NP2 is slightly higher. Thus, a verbal analysis of *ba* allows for a similar conclusion to an analysis of a functional *ba*. However, the NP2 in the phrase structure given by Cheng & Almor is higher still than the one in Figure 2. This account can more strongly their conclusion that the active *ba* sentences show less of a mismatch effect, as the NP1 (stimulus) and NP2 (experiencer) are separated by one phrasal projection in the original phrase structure, but by two projections in the verbal tree.
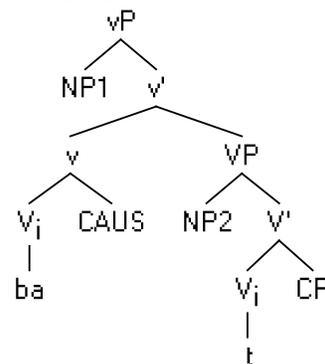

Figure 2. A verbal analysis of *ba*.

The present study gives no indication of how much or little distance in a phrase structure tree is necessary to trigger a syntax-semantic mismatch effect, which makes it hard to decide between an account of *ba* as a verb and an account of it as a functional head. In fact, it is not clear from the study whether the mismatch effect is entirely eliminated by the lesser difference in syntactic prominence between experiencer and stimulus. To confirm this, a replication of the study with a larger sample or more statistically powerful design would be necessary.

Taking the present study's results and conclusions at face value, a similar experiment with different materials could provide a clearer answer to the question of *ba*'s syntactic properties, and might also yield insight into the degree of difference necessary to cause a syntax-semantic mismatch effect of the sort found here. A slightly different type of the causative sentences mentioned here can be phrased either with *ba* (3), with a causative verb such as *rang* (4), or with neither (5)[1]. All sentences have the same interpretation.

(3) Lisi-de xiaohua ba Linyi xiao de duzi teng.
      Lisi-de joke   ba Linyi laugh de belly hurt
   'Lisi's jokes made Linyi laugh so much that his belly hurt.'

(4) Lisi-de xiaohua rang Linyi xiao de duzi teng.
      Lisi-de joke   make Linyi laugh de belly hurt
   'Lisi's jokes made Linyi laugh so much that his belly hurt.'

(5) Lisi-de xiaohua xiao de Linyi duzi teng.
      Lisi-de joke   laugh de Linyi belly hurt
   'Lisi's jokes made Linyi laugh so much that his belly hurt.'

Sentences of type (4) use a causative verb whose syntactic structure should be essentially identical to that of a putatively verbal *ba*. Sentences of type (5) use neither *ba* nor a causal verb; rather, *xiao* is intransitive in (4) and transitive in (5) (Huang et al., 2009). Testing for a difference between pronoun remention in (3) and (4) would provide experimental evidence to support either a theory of *ba* as a verb or as a functional head, while including a comparison between (3) and (5) would (theoretically) replicate the reviewed study's results. The basic syntactic structure of (4) should be identical to that of *ba* if *ba* is a verb (both following the outline in Figure 2), so finding a significant difference of pronoun remention between sentences like (3) and (4) would be strong evidence against a verbal account of *ba*, following Cheng & Almor's conclusions regarding syntax-semantic mismatch. The structure which Chen & Almor assume *ba* to have predicts such a difference in pronoun remention based on the different degrees of syntax-semantic mismatch, as the NP2 is higher in Chen & Almor's illustration of *ba*'s phrase structure than in the structure for a sentence such as (4). A lack of such a difference would not necessarily provide evidence for a verbal account of *ba*, though, as such a result could be due to insufficiently sensitive testing mechanisms. Additionally, *ba* can appear in a variety of constructions (S. Ding, 1993; Zou, 1995) and could theoretically have different syntax depending on the construction it is used in (i.e. it may have multiple lexical entries). However, to my knowledge, almost all accounts of *ba* have attempted to unite its constructions under one lexical entry (Bender, 2000; S. Ding, 1993; Huang et al., 2009; Zou, 1995), and all have attempted to argue that it consistently belongs to one syntactic category.

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[1] Sentence (1) and (3) are taken from (Huang et al., 2009). Sentence (2) was invented by the nonnative author of this review, though internet searches confirm that similar syntactic structures are attested.

While Chen & Almor have found evidence of syntactic influence on predictability, they conclude that discourse prominence has no effect on referent prediction. They maintain that it likely still influences referent accessibility, however. Virtually all work on *ba* indicates that it has some pragmatic function involving disposal, affectedness, or a relation to topic-hood which lend pragmatic or discourse prominence to the object that proceeds it (Bender, 2000; S. Ding, 1993; Huang et al., 2009). However, these studies rarely confirm this experimentally. Thus, Cheng & Almor's suggestion that referent accessibility will show an influence of discourse prominence indicates an avenue for confirming the prominence that various authors have intuited. The same classes of stimuli mentioned earlier, especially (1) and (4), could be placed in an appropriate context with a pronoun of ambiguous reference. If *ba* does indeed make the object proceeding it prominent in discourse, then it should be highly accessible and participants should be more likely to interpret a pronoun as referring to the object in a *ba* sentence than a sentence without *ba*. As the matrix subject is still analyzed as the matrix topic however (Bender, 2000; S. Ding, 1993), we should expect that subject to be the most accessible referent.

The present study gives little indication as to the syntax or syntactic category of *ba*, but it does indicate that tests of referent accessibility and predictability can be influenced by syntactic and pragmatic phenomena. This review has therefore suggested ways that future research might clarify the syntax and pragmatics of *ba* by investigating such influences.

C. Other references

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