Native-like strategies in English speakers' L2 processing of Chinese base-generated-topic sentences

Most studies in L2 sentence processing literature use filler-gap dependencies in either English relative clauses or English wh-questions in their investigations of L2 sentence processing, where the fronted wh-word is identified as a potential filler because of the morphological marking of -wh on the wh-word, and there is a gap which can potentially trigger trace-based antecedent reactivation in processing because of the subcategorization requirement. However, it is not clear from the L2 processing literature what strategies L2 parsers would adopt in processing any "gapless" structure in L2 sentence processing. In this presentation, we will report an empirical study investigating English speakers' L2 processing of Chinese base-generated-topic (BGT) sentences and provide evidence about how "gapless" structures are processed in L2 as well as L1 sentence processing. In Chinese, it is common to have sentences like (1), where the topic *Shuiguo* "fruits" is base-generated and is not a constituent derived from inside the sentence. Here, it would be interesting to see whether L1 and L2 parsers would initially process the first two NPs, i.e. *Shuiguo* "fruits" and *wo* "I", as the topic and the subject of the sentence respectively, and whether any restructuring of the initial analysis would have to take place. Another question is whether the syntactically identified topic would initally be processed by the parser as a potential filler for the object of the verb *chi* "eat", in spite of the fact that there is no gap in the sentence and that all subcategorization requirements in the sentence are met. A self-paced reading task (in conjunction with a grammaticality judgment test and a proficiency test) was administered to 44 highly proficient English-speaking learners of L2 Chinese and 23 native Chinese speakers to examine how they process the types of sentences as shown in Table 1. The results indicate that L2 learners pattern with native Chinese speakers in processing all critical regions and post-critical regions of the test sentences, as shown in Figures 1 and 2. It is found in both L1 and L2 processing, the first NP, which was originally analyzed as the subject of the sentence, has to vacate the subject position and be processed as the topic. The subject position thus vacated is then filled with the second NP. The L2 learners' sensitivity to the syntactic cues here poses a challenge to Clahsen and Felser's (2006a, b) Shallow Structure Hypothesis, where they argue that L2 learners' processing is shallower and that they do not rely on structure-based processing strategies when solving ambiguities in L2 sentence processing. Another finding is that both L1 and L2 parsers postulate a gap in working memory and immediately analyze the topic as the object of the verbal phrase as soon as the verbal phrase is processed, i.e. before the object of the verbal phrase in Region 5 is processed. When the object (i.e. Region 5) of the verbal phrase *ai chi* "love to eat" in Types A, B and C is processed, the parser is forced to revise its earlier analysis and re-analyze the topic in working memory as a base-generated topic rather than a topic derived from inside the sentence. The revision and re-analysis obviously require extra efforts, which explains the longer RTs of native Chinese speakers' and L2 Chinese learners' processing of Region 5 in Types A, B and C sentences than their RTs of the same regions in Type D sentences. Unlike the filler-gap dependencies in processing English relative clauses or English wh-questions, which can be morphologically and semantically triggered in a bottom-up fashion, in processing Chinese BGT sentences there is no semantic, morphological or pragmatic cues that the parser could rely on in processing the topic as a potential filler and store it as such in working memory. All this demonstrates that both L1 and L2 parsers are similarly sensitive to syntactic information in processing Chinese BGT sentences.

(1) *Shuiguo wo zui ai chi xiangjiao.*
fruit I most love eat banana
As for fruits, I like to eat bananas the most.

Table 1. Sample set of experimental stimuli[1]

	Regions								
Types	1	2	3	4	5	6	7	8	9
A. BGT sentence with S-H	水果	我	最	爱吃	香蕉	, 所以	我	经常	买香蕉。
	fruit	I	most	like eat	banana	so	I	often	buy banana
B.*BGT sentence with H-S	香蕉	我	最	爱吃	水果	, 所以	我	经常	买水果。
	banana	I	most	like eat	fruit	so	I	often	buy fruit
C. *BGT sentence with sisterhood	苹果	我	最	爱吃	香蕉	, 所以	我	经常	买香蕉。
	apple	I	most	like eat	banana	so	I	often	buy banana
D. Non-BGT sentence	以前	我	最	爱吃	香蕉	, 所以	我	经常	买香蕉。
	before	I	most	like eat	banana	so	I	often	buy banana

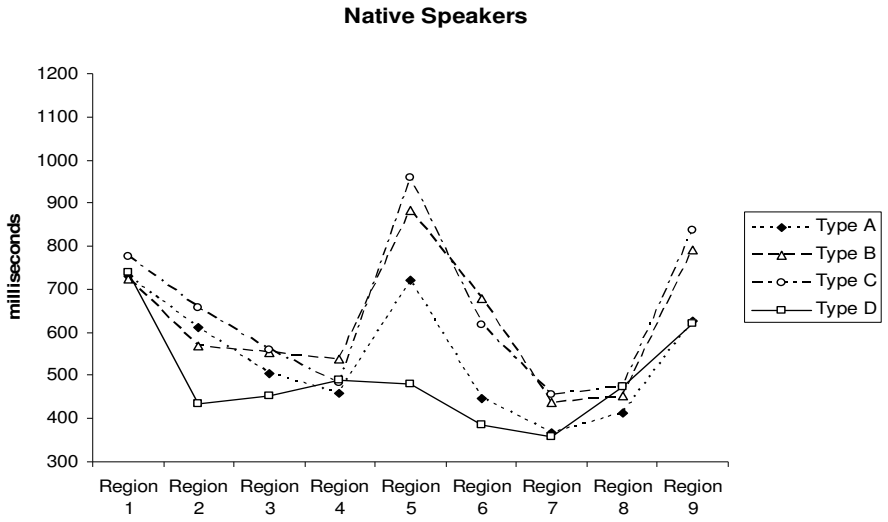

Figure 1. Native speakers' mean reading times for the regions in the 4 sentence types

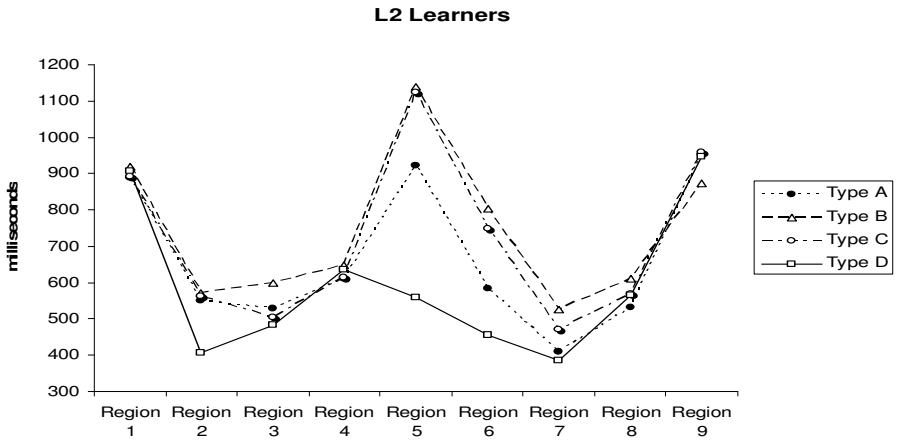

Figure 2. L2 learners' mean reading times for the regions in the 4 sentence types

[1] The English gloss is given here only for the reader of this abstact, and it was not available in the experiment.