The Real-Time Processing of Chinese and English Classifiers

English speakers use classifiers and measure words to refer to mass nouns, as in "three pints of ice cream," "a reel of film," and "that round of tennis." These lexical items intuitively quantify and contain mass nouns and seem linked to our representation of those entities and events. In Chinese, speakers must use classifiers to enumerate both mass and count nouns. Many analogues to English measure words exist, but Chinese also has a closed class of words that classify individual nouns like "car," "dog," or "debate." In these latter cases, where no containment or measurement is required to identify discrete units of these entities, it is unclear how much semantic information the classifier provides the language user. We present eye-tracking data that address three questions: Do English speakers use the lexical semantics of classifiers during referential selection of mass nouns? What happens in a language like Chinese where classifiers are grammaticized? And if effects exist, are they different for classified mass and count nouns?

Experiment One investigates whether classifier information facilitates referential selection of English mass nouns and "massified" count nouns. Participants' eye-movements were recorded with a head-mounted eye-tracking device while they viewed four groups of pictures on a computer monitor and were asked to select a token of one of the groups. The 14 critical displays had a target group (packs of cigarettes), as well as a phonological cohort group (boxes of cigars), a classifier competitor group (packs of wolves), and an unrelated group (piles of wood). Participants either heard a generic classifier instruction, such as, "Choose a picture of cigarettes," or a specific classifier instruction, "Choose a pack of cigarettes." In the generic instruction, the point of disambiguation (POD), at which time the participant could determine the target, occurs when "cigarettes" phonetically diverges from "cigars." However, in the specific instruction, if comprehenders rapidly use lexical information from the classifier, "wolves" should be the competitor for "cigarettes" rather than "cigars," since "a pack of..." is consistent with either "wolves" or "cigarettes," but inconsistent with "cigars." This is indeed what Experiment One shows: when the classifier is relatively generic, we see a cohort effect, where participants' looks are split between the two phonologically similar pictures, but when the classifier is specific, the cohort effect is diminished and we find instead a large classifier competitor effect.

Experiment Two replicates Experiment One, but with Chinese count nouns. For the generic condition, we used the Chinese classifier "ge", which can be paired with a large number of Chinese nouns from a range of conceptual categories. For the specific condition, 14 distinct individual classifiers were used (e.g. "jia"), and as in Experiment One, there was a target group ("gangqin," piano), a cohort group ("gangbi," fountain pen), and a classifier competitor group ("feiji," airplane). As in Experiment One, we found a phonological cohort effect when the generic classifier "ge" was used in the instruction: "gangqin" and "gangbi" were in competition until the phonetic POD, or about 400 ms after onset of the noun. In the specific classifier instruction, however, "gangqin" and "feiji" were competitors during the region up to 400 ms after noun onset, since "jia" is the appropriate classifier for both nouns. This provides evidence that even highly grammaticized classifiers for nouns that require no individuation provide information comprehenders can rapidly use during language processing. One possible concern is that this effect is superficial, and that use of a specific classifier merely shifts the set of phonological competitors (for example, as though the specific classifier were a prefix creating new cohorts "jiagangqin" and "jiafeiji"). To rule out this sort of explanation, we included another picture group, ("jiashiyuan," pilot) instead of a fourth unrelated group. This classifier cohort group attracted fewer looks than any other group during the region of interest, which suggests that comprehenders use structural and conceptual information from the classifier online during referential selection. Graphs of Experiment Two are presented below.

Experiment Three, which is currently underway, uses this paradigm to examine potential differences between the processing of mass and count nouns in Chinese.
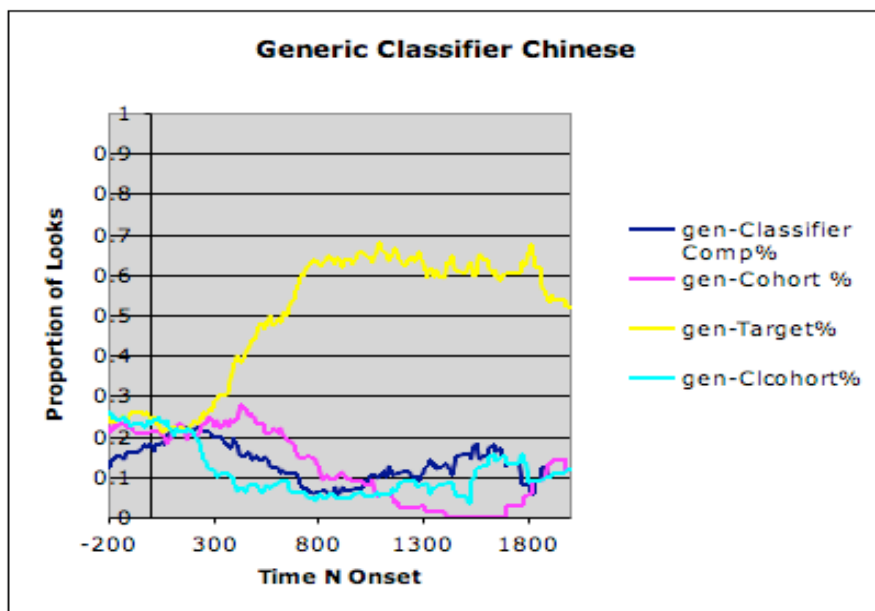
Figure 1: Proportion of looks to items over time in the generic classifier condition, aligned to onset of the target noun.
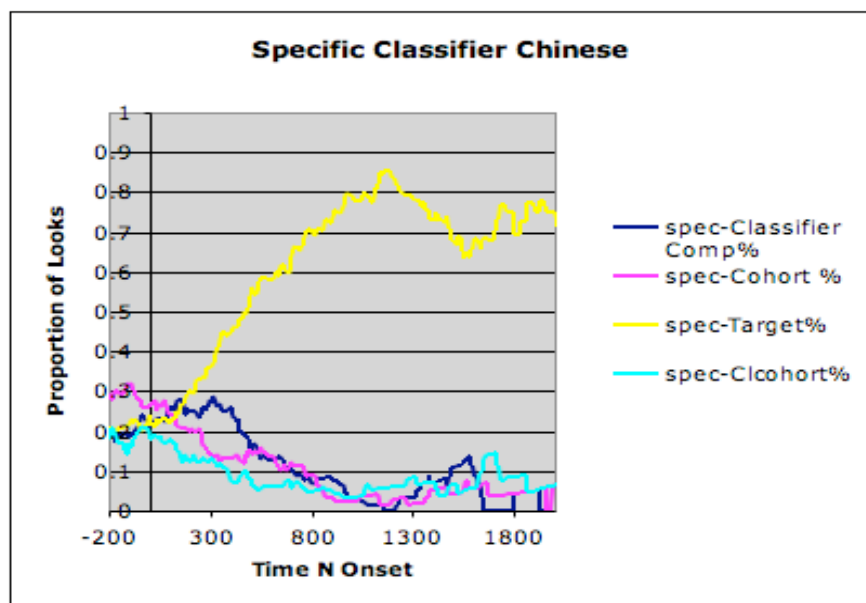

Figure 2: Proportion of looks to items over time in the specific classifier condition, aligned to onset of the target noun.

References

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