Reading resultative verb compounds in Chinese sentences: An eye-tracking study

Chinese resultative verb compounds (RVCs) are morphologically complex words composed of two verbal morphemes (i.e., V₁ V₂) that are involved in a causative/resultative relation (e.g., V₁ RESULTING IN V₂). Complex thematic mappings ensue from mapping the thematic roles associated with the two morphemes to the subject and object NPs and establishing a causative reading. An important issue in researching Chinese RVCs has been about how thematic and causative relations are correctly assigned so that all and only the possible semantic interpretations are obtained (Cheng & Huang, 1994; Li, 1990, 1995, 1999; Her, 2009). Take the thematic assignments of the well-known RVC 追累 zhui-lei for example. Three types of thematic and causative interpretations are possible:

   - (a) ‘I chased that fox causing myself to be tired.’
   - (b) ‘I chased that fox causing the fox to be tired.’
   - (c) ‘I made the fox chase me, causing it to be tired.’

2. The argument of a verb bearing the highest-ranked semantic role is its subject.

3. Agent > Instrument > Patient/Theme

4. Causative hierarchy:
   a. The argument in the subject position receives the CAUSER role from a resultative compound if it receives a theta role only from V_{cause}.
   b. The argument in the object position received the AFFECTEE role from a resultative compound if it receives a theta role at least from V_{cause}.

Cheng and Huang (1994) relied on the eventuality of V₁ and further classified RVCs into those that are unergative (1a & 5a) or transitive (1b & 5b) and those that are causative (1c & 6).

5. V₁Active [V₂State/Change-of-State]:
   a. <Agent> (unergative)
   b. <Agent, Theme> (transitive)

6. V₁Non-active [V₂State/Change-of-State]:
   <Causer, Theme/Experiencer/Causee> (causative)

The present study investigated how Chinese RVCs with the above three types of thematic and causative interpretations are processed in sentences. Three types of RVCs (corresponding to 1a (unergative), 1b (transitive) and 1c (causative)) were crossed with two syntactic structures in Chinese—the canonical N₁-V-N₂ (i.e., SVO) structure and the causative N₁ ba N₂ V (i.e., ba scrambling) structure where causativity is spelled out by the particle ba—in a sentence reading experiment tracking eye movements of participants (N = 49, native speakers of Mandarin Chinese, paid). Example materials are provided below in (7)-(8).
Focusing on the critical regions (including the RVC and its object NP), the reading results showed several significant effects. BA sentences overall had lower first pass regression probability than canonical sentences (p = .04), suggesting easier construction of causative interpretations when the causativity is spelled out. Within the ba condition, transitive RVCs (8b) had shorter first pass reading time, regression path duration, and total fixation times than both unergative and causative RVCs. Within the canonical SVO condition, causative RVCs had longer total fixation times than unergative RVCs (t=3.1), which further had longer total fixation time than transitive RVCs (t=3.3).

These reading patterns suggested that transitive RVCs, being the most common type of RVCs, were the least costly to process regardless of their greater thematic and word order complexities than unergative RVCs. Causative RVCs, as expected, were the most difficult to process in canonical sentences, corroborating the effect of greater processing cost associated with constructing causative readings (especially when they are derived from ergatives; e.g., upset in 7c meaning cause to be upset). This additional processing cost, however, disappeared when the causativity was spelled out by the light verb ba. These eye-tracking results have implications for understanding thematic and causative interpretations in relation to the frequency of VV constructions, and the interaction between the RVC construction and the overt causative (BA) structure in Mandarin Chinese.