Participant Sharing in Chinese Resultatives
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Introduction: Chinese resultatives take the form of verb compounds V₁-V₂, V₁ denoting an activity e₁ and V₂ its resultant state e₂. An example is given in (1). Following the literature, I call these compounds Resultative Verb Compounds (RVCs) and I use S+V₁-V₂+O as a general schema to represent sentences containing RVCs (S is RVC’s subjects, while O is its object).

Thesis: This talk is mainly about the relations between O and the two verbs V₁, V₂. I will claim: although the direct object O is only an argument of V₂, not V₁, it has semantic relations both to V₁ and V₂. I then use thematic relations to model this semantic relation and propose a semantic constraint—Participant Sharing—to ensure the required relations. Finally, I implement the participant-sharing idea by adding into the semantic rule of resultative formation a conjunct \[ [O] \in \Theta (e₁), \] which requires the argument of V₂ must also receive a thematic role from V₁.

(1) Zhāngsān kān-diào le shuǐyè
    Zhangsan hack-fall PERF leaves
    Zhangsan hacked the leaves and the leaves fell off.

Problem with Argument Sharing: Since there are two verbs but only two argument positions S and O, assuming both individual verbs have their own theta roles to assign, it is natural to ask: where does the additional theta role go if V₁ is transitive? It is easy to show an Argument Sharing idea (Li 1990) cannot be right. Look at (2): (2) is an example of unergative verbs being V₁, in which case, the O is not an argument of V₁ and Argument Sharing cannot be satisfied.

(2) Zhāngsān kā-shī le shōupā (Unergative V₁)
    Zhangsan cry-wet PERF handkerchief
    Zhangsan was crying and his handkerchief got wet as a result.

Worse still, there are transitive V₁ but without argument sharing; following Lin (2004), I call these cases unselective transitive V₁, see (3).

(3) Zhāngsān kān- dūn le fū-zǐ (Unselective transitive V₁)
    Zhangsan hack-blunt PERF axe
    Zhangsan hacked something and the axe got blunt.

A comparison between (1) and (3) shows we will never know when Argument Sharing is to be applied. Thus, such a theory makes no prediction and is unattractive.

Problem with Pragmatic Association: Based on examples like (2) and (3), Williams (to appear) proposes another analysis, which I call Pragmatic Association. In this theory, a thematic relation between V₂ and O is always present, but there is no thematic relation between V₁ and O. Any understood relation of O to V₁ is pragmatically inferred or obtained by world knowledge. Take (3) as an example. In a Pragmatic Association analysis, it means ‘Zhangsan hacked something, and the axe got blunt as a result’ and pragmatics tells us that the axe is the instrument of hacking.

However, this analysis cannot be right either. It over-generates interpretations that are not possible. Again, take (1) as an example (this argument is adopted from Lin 2004), the pragmatic association will predict it can either have (4a) or (4b) as its interpretations. But (4b) is impossible, as can be shown by the contradiction in (5). In other words, the O in (1) has to be interpreted as the patient of hacking. Notice, this problem cannot be solved by Kratzer’s (2005) (citing Bittner 1999) Direct Causation either, since Mandarin Chinese has many RVCs that do not involve Causation, e.g. xie-cuo (write-wrong), shui-xing (sleep-awake)

(4) Zhāngsān kān-diào le shuǐyè
    Zhangsan hack-fall PERF leaves
    Zhangsan hacked the leaves and the leaves fell off.
a. Meaning: Zhangsan hacked the leaves, and the leaves fell.
b. **Impossible**: Zhangsan hacked the tree and the leaves fell.

(5) #Zhāngsān kǎn-diào le shùè, dàn tā méi kǎn shùè
Zhangsan hack-fall PERF leaves, but he not hack leaves

a. #Zhangsan hacked the leaves and the leaves fell off, but Zhangsan did not hack the leaves.
b. **Impossible**: Zhangsan hacked something and the leaves fell off, but Zhangsan did not hack the leaves.

**Participant Sharing**: In view of the above failures, a new constraint I call Participant Sharing is proposed. The Participant Sharing constraint says (6) and it actually treads a middle ground between the two earlier proposals—it enforces a grammatical relation between $V_1$ and $O$ (unlike the Pragmatic Association approach), but it denies an Verb-Argument relation between $V_1$ and $O$ (contra Argument Sharing) and by doing this it leaves open what the precise relation will be.

(6) **Participant Sharing**: To combine two verbs $V_1$, $V_2$ into an RVC $V_1$-$V_2$, the event introduced by $V_1$ and the event introduced by $V_2$ have to share at least one participant.

(6), together with the common (Lin 2004, Kratzer 2005, Williams 2011) assumption as is in (7), gives the correct results to (1), (2) and (3). Notice (7) is at least motivated by (2) and (3).

(7) **Antipassive Assumption**: $O$ is never an argument of $V_1$;

*First*, (7) solves the problem faced by Argument Sharing by directly denying the principle. But crucially, the effects of Argument Sharing are preserved by the new constraint. Specifically, in (1)-type cases, although the $O$ leaves is interpreted as the patient of hack, it is not an argument of it; the patient relation between leaves and hack is instead enforced by the participant sharing constraint (6). Likewise, in (2) participant sharing is satisfied by letting $O$ the handkerchief receive an locative role from the $V_1$ cry; in (3) the participant sharing condition is also met by allowing the axe to receive a instrument role from the $V_1$ hack. *Second*, (6) solves the over-generation problem faced by Pragmatic Association, by excluding any sentence/interpretation whose $O$ does not receive a theta role from $V_1$ of the RVC. Specifically, in (4b), the tree received the patient role from the $V_1$ hack, putting leaves in a situation where it can receive no imaginable thematic role, violating the Participant Sharing constraint.

**Implementation**: Below, I try to formalize the ideas discussed above using Davidsonian event semantics (Davidson 1967). Two points need to be mentioned for this formalization. *First*, existentially binding of the internal argument of $V_1$ represents the idea that $O$ is never an argument of $V_1$; *second*, the participant sharing idea is modeled by the conjunct in the semantic representation $x \in \Theta (e_1)$. While $[\Theta] = \lambda e \lambda x (x$ bears a theta role to $e)$.

(8) shows the relevant RVC-formation rule. Notice, $e$ and $s$ are eventuality variables, $C$ might either be a Causal relation (Kratzer 2005) or Temporal relation (Rothstein 2004) between eventualities. Finally, $x \in \Theta (e_1)$ leaves room for pragmatics to play. Pragmatics will be the actual factor to determine which element from the set $\Theta (e_1)$ is to be selected by $x$.

(8) a. Transitive $V_1$: $\lambda x, y, e.[P (x)(y)(e)) + \lambda x, y, s.[Q (x)(s))]$

$=\lambda x, y, e.\exists z \exists s.[C(e)(s) \land P(z)(y)(e) \land Q(x)(s) \land x \in \Theta (e)]]$

b. Intransitive $V_1$: $\lambda x, e.[P (x)(e)) + \lambda x, s.[Q (x)(s))]$

$=\lambda x, y, e.\exists z \exists s.[C(e)(s) \land P(y)(e) \land Q(x)(s) \land x \in \Theta (e)]]$


Blackwell. Williams, A. (to appear). Objects in resultatives. Accepted with minor revisions to NLLT.