Dynamics of referential demotion and promotion: Consequences for pronoun interpretation
Jina Song, Elsi Kaiser (University of Southern California)

Implicit causality (IC) research shows that some verbs bias subject-position pronouns to refer to preceding subjects, while other verbs bias reference to preceding objects (e.g.[1,2,3,5]). We use these IC verb effects, known to be associated with thematic roles, as a backdrop for new work testing how pronoun interpretation is guided by the referential dynamics of the transitions between clauses – i.e., the consequences of promoting vs. demoting referents to more or less salient positions. We consider grammatical and thematic roles, as both influence referent salience.

We test referential structure effects in the pronoun-containing clause: whether one or both referents from the preceding clause are re-mentioned. The Referential Structure Hypothesis states that a subject pronoun in clause 2 is more likely to refer to the clause 1 subject when both clause 1 referents are re-mentioned in clause 2 (2-pro), compared to only one (1-pro, ex.1-2).

This is based on the idea that demoting a higher-salience referent (clause 1 sub) to a less-privileged position (clause 2 obj), while promoting a lower-salience referent (clause 1 obj) to a privileged position (clause 2 sub), yields a less-coherent transition (Tbl2) (for related ideas, see [4]).

1) Exp 1 Exp-Stim/Stim-Exp verbs (all-male name items (50%), all-female name items (50%))
   a. Henry {surprised1 (SE) / respected2 (ES)} Kevin because he daxed him. [2-pro]
   b. Henry {surprised1 (SE) / respected2 (ES)} Kevin because he daxed Tom. [1-pro]

2) Exp 2 Agent-Patient verbs (all-male name items (50%), all-female name items (50%))
   a. Henry {cheated1 (AP1) / saluted2 (AP2)} Kevin because he daxed him. [2-pro]
   b. Henry {cheated1 (AP1) / saluted2 (AP2)} Kevin because he daxed Tom. [1-pro]

If we find referential structure effects, this would mean that models of pronoun interpretation need to incorporate more relational information about the transitions between clauses: specifically, not only the semantics of cross-clausal transitions [7], but also the referential properties of the transitions between clauses (Table 2). We report two studies testing the Referential Structure Hypothesis with IC1/IC2 verbs. We also test if thematic roles modulate referential structure effects, to better understand the relation between thematic roles and discourse salience.

Exp1 (n=40) tested Stimulus-Experiencer verbs whose IC biases change when the thematic role mapping changes: Stimsubj-Expobj verbs (e.g. surprise) elicit a subject bias (IC1); Expsubj-Stimobj verbs (e.g. respect) elicit an object bias (IC2) ([1,2,3,5]). Changes in IC bias are associated with a change in thematic roles. Exp2 (n=60) tested Agentsubj-Patientobj verbs. Some Ag-Pat verbs (e.g. cheat) elicit a subject bias (IC1); others (e.g. salute) elicit an object bias (IC2), ([1,3,5]). With this verb class, changes in IC bias do not involve any changes in thematic roles.

Method: Exp1-2 had 24 targets, 36 fillers. We manipulated (i) the referential structure of clause 2 (2-pro: He...him, 1-pro: He...Tom, ex.1-2) and (ii) the verb in clause 1 (IC1/IC2, Table 1). Nonsense verbs in clause 2 minimized semantic variability. We used a picture task (Fig.1): People typed the names in the boxes such that the picture matches the event of the underlined part.

Results: Exp1 (Stim-Exp, Fig.2) shows referential structure effects with both ES and SE verbs (more obj choices, less subj choices, in 1-pro than 2-pro, lmer, p<.001). SE conditions elicit fewer object choices than ES conditions (IC effect: p<.001). Strikingly, SE conditions show weaker effects of referential structure than ES (interaction, p<.01). This asymmetry may stem from Experiencers being inherently more topical than Stimuli (due to animacy, sentience, [8,9]): Demotion of Stimulus subjects (SE condition) may be less problematic than demotion of more salient Experiencer subjects (ES), yielding weaker referential structure effects with SE verbs.

Exp2 (Ag-Pat, Fig.2) replicates referential structure effects with both AP1 and AP2 verbs (p<.001), and IC effects (p<.05). Now, there is no interaction (p's>.3): Referential structure effects are equal with AP1 and AP2 verbs. Between-experiment analyses yield a marginal 3-way interaction (exp x IC1/2 x ref.str.: p=0.057), and effects of referential structure, IC1/2, exp, and interactions (ref.str. x IC1/2; IC1/2 x exp) (p's<.02). In sum: Exp1-2 support the Referential Structure Hypothesis, showing that (i) its effects generalize across verb classes and that (ii) thematic roles and their relative topicality also play a role by modulating discourse salience.
Table 1. IC bias of verb types used (All targets used ‘because’)

<table>
<thead>
<tr>
<th>Exp 1</th>
<th>Exp 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-biased Stim-Exp</td>
<td>O-biased Exp-Stim</td>
</tr>
<tr>
<td>IC bias</td>
<td>S bias: M=67.4%, sd=13.6</td>
</tr>
</tbody>
</table>

Table 2. Referential structure with 1 pronoun

Referential structure with 2 pronouns

Both (a) and (b) yield coherent transitions. (b’) yields a less coherent transition than (a’).

Selected references