

On the interaction of implicit verb causality and topic continuation

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We investigate the interaction of two factors, each of which is known to affect discourse coherence: (i) the continuation bias induced by processing an implicit causality verb and (ii) sentence transitions distinguished within Centering theory. As regards (i), we use implicit causality verbs involving a stimulus *s* and an experiencer *e*. Sentences with implicit causality verbs often trigger explanations in terms of the stimulus *s* and hence are continued more likely with *s* rather than *e*. As there are *se*-verbs (*s* is subject, as in (1a)) as well as *es*-verbs (*s* is object, as in (1b)), continuations with *s* involve an anaphoric relation to the subject antecedent with an *se*-verb but to the object antecedent with an *es*-verb. As regards (ii), we compare center continuations (C-CONTINUATION) with center shifts (C-SHIFT). Centering predicts that after a C-CONTINUATION from U_{i-1} to U_i , a C-CONTINUATION from U_i to U_{i+1} is more likely to occur (Grosz et al., 1995) than a C-SHIFT.

- (1) a. *Sie_s/Nina_s störte Ferdinand_e immer mehr.* pretarget sentence with *se*-verb
,She_s/Nina_s bothered Ferdinand_e more and more.‘
- b. *Sie_s/Nina_e hasste Ferdinand_s immer mehr.* pretarget sentence with *es*-verb
,She_s/Nina_e hated Ferdinand_s more and more.‘

In our Main study, participants continue pretarget sentences with a preceding context (cf. 2). The context establishes the subject of a pretarget sentence U_i as the backward looking center C_b and the preferred forward looking center C_p by means of a preceding context. Centering predicts that a continuation with a target sentence U_{i+1} more likely refers back to C_p of U_i (the subject) than to a C_b other than C_p (here: the object). Since the verb of the pretarget sentence U_i will be an implicit causality verb, we predict that the preferred C-CONTINUATION strengthens the verb bias of an *se*-verb but weakens the verb bias of an *es*-verb, because the stimulus is the C_p of U_i in the former but not in the latter case. Strengthening and weakening of the verb bias is determined relative to a Baseline study in which participants continue the pretarget sentences without a preceding context. The pronoun in the subject position of pretarget sentence if presented with context was replaced by a proper name if presented without context.

- (2) *Weil weder Nina noch Ferdinand genug Geld für die Miete hatten, beschlossen sie, sich die Wohnung zu teilen. Nina fiel es nicht leicht, sich mit der Situation anzufreunden. Immerhin konnte sie die meiste Zeit tun, wonach ihre der Sinn stand. Nicht schätzte sie mehr als diese Freiheit.*

‘Since neither Nina nor Ferdinand had enough money to pay the rent on their own, they decided to share the apartment. It wasn’t easy for Nina to get used to the situation. At least she could do whatever she wanted most of the time. She didn’t appreciate anything more than this freedom.’

In addition to the context effect on continuations of pretarget sentences, we are interested in whether C-SHIFTS induced by the verb bias are local, i.e., followed by a re-shift to *s*, the C_p of U_i , or persist, i.e., they are continued further with *e*. To this end we added target sentences to our stimuli. Target sentences were (i) congruent (*s* continued) or incongruent (*e* continued) with the verb bias and they realized (ii) a C-CONTINUATION (continued with subject) or a C-SHIFT (continued with object). Participants in the Persistence study continued the full stimuli: context + pretarget sentence U_i + target sentence U_{i+1} . Samples of target sentences in all four conditions are shown in (3).

- (3) a. C-CONTINUATION / CONGRUENT with *se*-verb
Sie hatte nämlich damit begonnen, unentwegt Dudelsack zu üben.
‘For she had begun to constantly practice the bagpipes.’
- b. C-SHIFT/CONGRUENT with *es*-verb
Er hatte nämlich damit begonnen, unentwegt Dudelsack zu üben.
‘For he had begun to constantly practice the bagpipes’

- c. C-CONTINUATION/INCONGRUENT with *es*-verb
Sie hatte nämlich die Nase voll davon, dass Ferdinand unentwegt Dudelsack übte.
 ‚For she was annoyed that Ferdinand constantly practiced the bagpipes.’
- d. C-SHIFT / INCONGRUENT with *se*-verb
Er hatte nämlich die Nase voll davon, dass Nina unentwegt Dudelsack übte.
 ‚For he was annoyed that Nina constantly practiced the bagpipes.’

Results

1185 continuations in the Baseline study showed a strong verb bias: *se*-verbs triggered 88% *s*-continuations (i.e., continuation mentions stimulus first with or without a subsequently mentioned experiencer) whereas *es*-verbs triggered 8% *s*-continuations (92% *e*-continuations). The supplemented contexts in the Main study (1218 continuations) exerted the opposite effect as predicted. Instead of a strengthened *se*-verb bias and a weakened *es*-verb bias, we observed a weakened *se*-verb bias (72% *s*-continuations) and an unaffected *es*-verb bias (92% *e*-continuations). Inferential statistics confirmed an interaction of verb bias (*se*- vs. *es*-verb) with experiment (Baseline vs. Main), hence the *se*-verb bias is weakened significantly by the contexts.

The Persistence study (841 continuations up to now) primarily showed a preference to continue target sentences with *e*-continuations (i.e., continuation mentions experiencer first with or without a subsequently mentioned stimulus). This preference is significantly stronger if the pretarget contains an *es*-verb rather than an *se*-verb (79 and 68%, respectively). The transition instantiated by the target does not matter much (*se*-verbs: 64 and 72% *e*-continuations if pre-target was continued with *s* or *e* in targets, respectively; *es*-verbs: 81 and 76% *e*-continuations if pre-target was continued with *s* or *e* in targets, respectively). Although the overall pattern differs from the predicted one, we consider the context effect (here: whether pretargets are continued with a C-SHIFT or a C-CONTINUATION) to be local as the Cp of the target U_{i+1} is not preferably be chosen as Cb in the subsequent continuation U_{i+2} .

We are looking forward to propose our attempt to make sense of the findings to the audience of the workshop and discuss this proposal with them.