Integrating contextual information in on-line alternative set construction
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The interpretation of focus-sensitive particles like *only* in (1a) is widely understood to depend on a set of alternatives which can replace the expression in focus [1]: (1a) implies that Lily didn’t eat any fruits besides apples. In constructing alternative sets (*alt-sets*) on-line, comprehenders are argued to use domain-general mechanisms to first activate a large cohort of expressions by spreading activation from the the focused expression to semantically associated ones. At a later stage, selection mechanisms distinguish contrastive, replaceable associates (*pears, mangoes*) from non-contrastive associates (*cider, orchard*) by deactivating non-contrastive ones [2-4].

But the relevant *alt-set* is also contextually determined: (1b) suggests Lily didn’t eat *any* food but apples. Visual world studies indeed show that together with associated alternatives, unrelated but explicitly mentioned alternatives are also facilitated [5]. Using on-line reading measures, this paper further investigates when comprehenders use different types of contextual information to correctly infer the *alt-set* in English: E1 replicated these findings in reading by showing that comprehenders quickly generate hypotheses about the *alt-set* based on contextual mention. E2 showed a delayed integration of more fine-grained contextual information which excludes expressions from the *alt-set* that are nevertheless salient and associated with the focus.

**Exp1** (n=48) investigated whether alternatives can be facilitated due to contextual salience through explicit mention. 48 items like (2) were created, in which a context sentence manipulated Givenness of an alternative by either explicitly mentioning it or not (+/-GIVEN). The target sentence manipulated semantic Association of the alternative to the focus such that the focus is either associated with the subsequent alternative or not (+/-ASSOC). Association was determined throughout using Latent Semantic Analysis [6], where similarity of alternatives and foci was >0.4 in the +ASSOC condition, and <0.18 in the -ASSOC condition. Target sentences were presented using the Maze task [7-8], and relative activation and/or ease of integration of an alternative was measured in RTs on the ROI (indicated with pipes): If an alternative (*cheese*) becomes activated due to a preceding focus (*only milk*), we’d expect this expression to yield shorter RTs than unexpected and/or non-activated expressions. Bayesian mixed effects regressions in brms were fit to both logRTs (reported here) and raw data (Table 1-3) on the ROI and surrounding regions [9]. Only effects reliable in both are reported. **Results** Models revealed a main effect of Givenness ($\beta=.12; \text{95CrI}=[.10, .14]$) and of Assoc($\beta=.03; \text{CrI}=[.01, .04]$) on ROIs.

**Exp2** investigated when contextual information about exclusion of alternatives from an *alt-set* is taken into consideration by crossing Association (+/-ASSOC) with Exclusion of alternatives (+/-EXCL). Two context sentences mentioned three alternatives but excluded one from the alt-set by ensuring that the presupposition of the matrix predicate in the target sentence (*remember to bring*) could not be satisfied and hence this alternative could not replace the focus. **E2a** (n=48) presented target sentences with short distances between focus and alternative using the Maze task, as in (3). **E2b** (n=48) uses identical materials but with a longer focus-alternative distance, as in (4). **Results** At the ROI, results of E2a only revealed a main effect of Association on log and raw RTs ($\beta=.03; \text{CrI}=[.015, .046]$), but the CrI for Exclusion included zero for logRTs ($\beta=.02; \text{CrI}=[-.001, .04]$). Results of E2b only revealed a main effect of Exclusion ($\beta=.03; \text{CrI}=[.016, .05]$), but not for Association. The CrI for the simple effect of Exclusion in +ASSOC conditions included zero in E2a but not in E2b ($\beta=.02; \text{CrI}=[.04, .001]$). **In sum,** E1 showed that unassociated alternatives were facilitated when explicitly mentioned, suggesting that the initial priming mechanism relies on contextual salience as well as semantic association. E2 showed that context can rule out alternatives as part of the relevant *alt-set* despite them being both salient and associated with the focus, but that this type of contextual information is only reliably taken into account at a delay from the focus itself. Results are thus partially in line with two-stage models: They suggest that early activation of associated alternatives may temporarily override finer-grained context-specific preferences. Future work should determine what mechanism is used to exclude these globally appropriate, but contextually inappropriate alternatives.
(1) a. Usually, Lily eats lots of fruit, but today she ate only an apple.
   → ...but not any other fruit.
   b. Usually Lily likes her mom’s cooking, but today she ate only an apple.
   → ...but not any of her mom’s food.

(2) a. **Context:** The corner store sells various items, such as {cheese and milk, cheese and cigarettes, cigarettes and milk, milk and cigarettes}.
   b. **Target:** Today they sold only {milk | cigarettes}, but no {cheese} even though...

(3) a. **Context:** The tourist asked for a variety of items, like some cheese and milk.
   There was already an ashtray on the table.
   **Target:** When the waiter returned, he remembered to bring only milk, but no cheese...
   +ASSOC SHORT
   b. **Context:** The tourist asked for a variety of items, like some cheese and an ashtray.
   There was already some milk on the table.
   **Target:** When the waiter returned, he remembered to bring only an ashtray, but no cheese...
   –ASSOC SHORT
   c. **Context:** The tourist asked for a variety of items, like an ashtray and some milk.
   There was already some cheese on the table.
   **Target:** When the waiter returned, he remembered to bring only milk, but no cheese...
   +ASSOC SHORT
   d. **Context:** The tourist asked for a variety of items, like some milk and an ashtray.
   There was already some cheese on the table.
   **Target:** When the waiter returned, he remembered to bring only an ashtray, but no cheese...
   +ASSOC SHORT

(4) **Target:** ...he remembered to bring only {milk | ashtray}, but he forgot to bring any cheese...

<table>
<thead>
<tr>
<th>Est</th>
<th>Error</th>
<th>95% CrI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>807.0</td>
<td>22.74 [753-860.2]</td>
</tr>
<tr>
<td>Assoc</td>
<td>68.5</td>
<td>30.07 [9.8-128.0]</td>
</tr>
<tr>
<td>Given</td>
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<td>36.03 [227-368.5]</td>
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<tr>
<td>Ass x Giv</td>
<td>2.6</td>
<td>49.28 [-92.9-99.91]</td>
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Table 1: brms results for raw RTs of Experiment 1

<table>
<thead>
<tr>
<th>Est</th>
<th>Error</th>
<th>95% CrI</th>
</tr>
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<tbody>
<tr>
<td>Intercept</td>
<td>1034.0</td>
<td>36.8 [960-1104]</td>
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<tr>
<td>Assoc</td>
<td>83.9</td>
<td>23.61 [37.1-130]</td>
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<tr>
<td>Given</td>
<td>92.0</td>
<td>24.1 [45.7-141]</td>
</tr>
<tr>
<td>Ass x Ex</td>
<td>33.7</td>
<td>36.7 [39-107.5]</td>
</tr>
</tbody>
</table>

Table 2: brms results for E2a