

## Comprehending the presupposition of *too*: the effects of distance and interference

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**Background** Anaphoric presupposition triggers such as *too* are thought to establish a dependency relation between the trigger and its presupposed content [1]. Like other dependencies, we hypothesize that establishing presuppositional dependencies relies on memory retrieval. Previous work suggests that the processing of presuppositions exhibits a locality bias, favoring linearly and hierarchically closer discourse content that can satisfy the presupposition [2], suggesting a **serial search** retrieval process. But it has also been reported that only the availability but not the speed of retrieval in the processing of *too* is affected by increased distance [3], suggesting a **direct access** retrieval process. These two proposals make different predictions regarding the retrieval behaviors of *too*: a serial search process is sensitive to the distance of licensed antecedents but avoids interference from structurally inaccessible antecedents, whereas a direct access process is *insensitive* to the distance of licensed antecedents but suffer interference from structurally inaccessible antecedents. Among the attempts to adjudicate between these two mechanisms, one concern that arises from previous work is that it fails to rule out the possibility that presupposed content may be **actively maintained** in focal attention as the presupposed content and the trigger were not always separated by a full clause [4,5]. The present studies address this concern by re-examining the distance effects while also examining the possibility of interference effects as signatures of different retrieval processes [6,7].

**Exp 1: Distance** We re-examined distance effects in the retrieval process of *too* with materials modified based on [3] in a binary-choice speeded acceptability judgement study (Stimuli Set 1; N=36, 60 items): Dependency Length between *too* and presupposed content was manipulated as either NODISTANCE or DISTANCE, while the more local clause containing the presupposed Content was either locally NEAR, Far, or a FAILURE (i.e. the presupposition is not satisfied).

Helmert-coded contrasts revealed a significant effect of Dependency Length on NEAR vs. FAR ( $z = 2.046$ ,  $p = .041$ ), replicating previous results. Distance worsened accessibility in the NEAR condition (9.3%,  $z = 1.853$ ,  $p = .064$ ) but not FAR (-1.7%,  $z = -0.444$ ,  $p = .657$ ), suggesting that having a single clause between the presupposed content and the trigger is enough to push that content out of focal attention and thus requiring memory retrieval. Once outside of focal attention, memory retrieval appears to be directly accessible, suggesting that interference effects should be expected from inaccessible antecedents that are incidentally retrieved.

**Exp 2: Interference** We examined whether retrieval of the presupposed content of *too* outside focal attention suffers from interference, another signature of direct access retrieval [5], using novel materials in a binary-choice speeded acceptability judgement study (Stimuli Set 2; N=32, 64 items). The potential presuppositional antecedent was either EMBEDDED or UNEMBEDDED with respect to negation, making it either structurally inaccessible or accessible, respectively. The manipulated clausal content either MATCHED or had NOMATCH with the requirements of *too*'s presupposition, with NOMATCH guaranteeing presupposition failure.

Sum-coded contrasts revealed a significant interaction of Embedding and Content ( $z = 3.772$ ,  $p < .001$ ) such that, while UNEMBEDDED MATCH and NOMATCH content were distinct (26.2%,  $z = 4.621$ ,  $p < .001$ ), EMBEDDED MATCH and NOMATCH were not significantly different (4.9%,  $z = 1.599$ ,  $p = .117$ ). This result runs counter to the predicted interference from inaccessible content in a direct access account; a surprising result if a direct access retrieval process is at play.

**Discussion** Taken together, our results suggest that the processing of *too* shows signatures of memory retrieval, but this retrieval of the presupposed content is not interference-prone. These results raise the question of how the presuppositional dependency established by *too* is different from other kinds of discourse-level anaphoric dependencies such as sluicing [6], and whether other presupposition triggers, e.g. *again*, show similar processing profiles.

## Stimuli Set 1: Distance Paradigm

|                    |   |
|--------------------|---|
| NODISTANCE_NEAR    | If the writer complained and the editor <b>resigned</b> , then the critics <u>resigned too</u> .  |
| NODISTANCE_FAR     | If the editor <b>resigned</b> and the writer complained, then the critics <u>resigned too</u> .   |
| NODISTANCE_FAILURE | #If the writer complained and the editor plagiarized, then the critics <u>resigned too</u> .  |
| DISTANCE_NEAR      | If the writer complained and the editor <b>resigned</b> , then [everyone at the publishing house would be shocked to hear that] the critics <u>resigned too</u> . |
| DISTANCE_FAR       | If the editor <b>resigned</b> and the writer complained, then [everyone at the publishing house would be shocked to hear that] the critics <u>resigned too</u> .  |
| DISTANCE_FAILURE   | #If the writer complained and the editor plagiarized, then [everyone at the publishing house would be shocked to hear that] the critics <u>resigned too</u> .     |

## Stimuli Set 2: Interference Paradigm

|                    |  |
|--------------------|--|
| UNEMBEDDED_MATCH   | If the editors <b>resigned</b> , then everyone at the publishing house would be shocked to learn that the critics <u>resigned too</u> .        |
| UNEMBEDDED_NOMATCH | #If the editors plagerized, then everyone at the publishing house would be shocked to learn that the critics <u>resigned too</u> .             |
| EMBEDDED_MATCH     | #If the editors <b>did not resign</b> , then everyone at the publishing house would be shocked to learn that the critics <u>resigned too</u> . |
| EMBEDDED_NOMATCH   | #If the editors did not plagerize, then everyone at the publishing house would be shocked to learn that the critics <u>resigned too</u> .      |

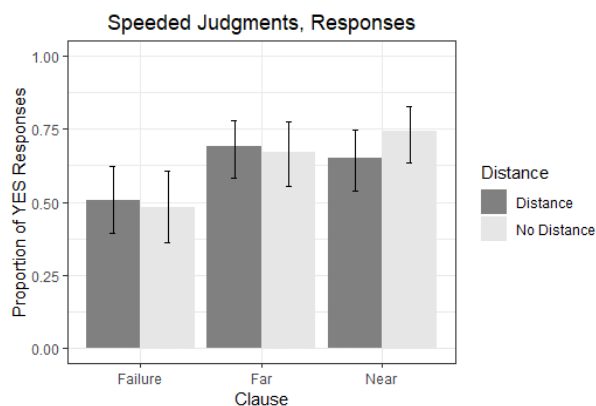


Fig 1: The distance paradigm

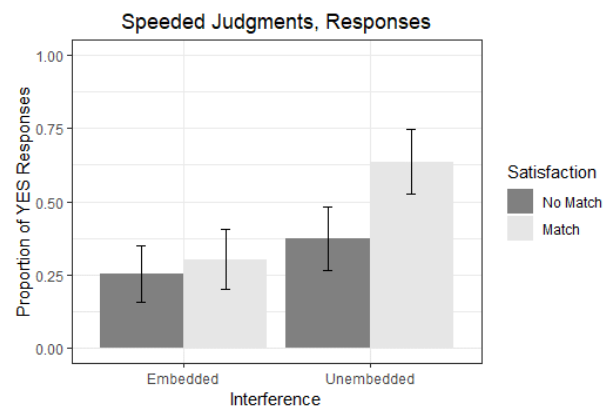


Fig 2: The interference paradigm

## Selected References:

- [1] van der Sandt, R. A. (1992). Presupposition projection as anaphora resolution. [2] Kim, C. S. (2014). Presupposition satisfaction, locality and discourse constituency. [3] Chen, S. Y. & Husband, E. M. (2018). Comprehending anaphoric presuppositions involves memory retrieval "too". [4] McElree, B. (2001). Working memory and focal attention. [5] Frazier, L. & Clifton, C. (2005) The syntax-discourse divide: Processing ellipsis. [6] Martin, A. E., & McElree, B. (2011). Direct-access retrieval during sentence comprehension: Evidence from sluicing. [7] Van Dyke, J. A., & McElree, B. (2006). Retrieval interference in sentence comprehension.