

## Do reflexives always find a grammatical antecedent for themselves?

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**Summary.** A lively debate has emerged around whether locality constraints on argument reflexives [1,2,cf.12] are immediately enforced in comprehension [3-7]. In an associative memory [8,9], structurally-inappropriate but feature-compatible constituents can intrude during retrieval of prior constituents. While some relations routinely show evidence of this (agreement [6,10], subject verb attachment [11]), evidence of interference with reflexives has been more equivocal [con: 3,4,5,6; pro: 4,7]. But existing studies have focused on reflexives in very narrow syntactic contexts: usually direct objects linearly adjacent to the verb (1). Predicate-adjacent reflexives constitute a poor test for retrieval interference as the verb itself likely indexes information about its co-arguments [2]. Should this information persist in the focus of attention [8], it could block interference-generating retrieval events. Here we offer a stronger test: reflexives in prepositional object positions, (2), which are temporally separated from the verb they combine with as an argument. In an eye-tracking study with a gender match design [5], we contrasted verb-adjacent and non-adjacent reflexives. We find that verb-adjacent reflexives do not activate grammatically-inaccessible antecedents, replicating [3,5,6]. However, argument reflexives in prepositional object position do show evidence of activating the inaccessible antecedent.

**Design & Results.** We crossed the (stereotypical) gender match of an ACCESSIBLE antecedent, gender match of an INACCESSIBLE antecedent, and the POSITION of the reflexive in a  $2 \times 2 \times 2$  design: (3)-(4). 32 items featured verbs with NP-PP/NP-NP alternations; thus the same verbs occurred in both Position levels. We counterbalanced whether the non-Theme argument was a Recipient or a Benefactive, with anaphors of both argument types requiring a local antecedent [2]. Gender stereotyping was normed to our local participant population. Theme head nouns were chosen carefully to avoid VP/NP attachment ambiguities in POSITION:NONADJACENT. Target items were combined with 96 fillers, all followed by Y/N comprehension questions. There were 48 participants. We first observed effects of gender in first-pass times on the reflexive. For POSITION:ADJACENT conditions, there was only an effect of ACCESSIBLE antecedents, with readers slowing down to mismatches ( $p < .05$ ). However, for POSITION:NONADJACENT conditions, there was a reliable ACCESSIBLE $\times$ INACCESSIBLE interaction ( $p < .005$ ): readers slowed to mismatching Accessible antecedents only when the Inaccessible antecedent matched the reflexive. For INACCESSIBLE:MISMATCH antecedents, this slow-down was neutralized.

**Conclusion.** Argument reflexives separated from the verb clearly behaved differently from reflexives adjacent to it. For the latter, reading times were sensitive to accessible antecedents alone, a pattern which extended to re-reading time [6,cf.5]. However, non-adjacent reflexives were sensitive to inaccessible antecedents. In [6]'s ACT-R simulation, incorrect antecedents were retrieved most often in INACCESSIBLE:MATCH/ACCESSIBLE:MISMATCH conditions, exactly where our reading times were slowest. This suggests competition between two candidates which only partially match the reflexive's requirements. Supporting this idea, there were marginally higher regression probabilities for non-adjacent reflexives ( $p < .10$ ), heightened for INACCESSIBLE:MISMATCH ( $p < .10$ ). Why should verb-adjacent and non-verb-adjacent argument reflexives show such different patterns? In the verb-adjacent cases we propose that the reflexive has reliable, immediate information about the verb's argument structure. In the non-adjacent cases, the direct object has intervened, displacing this information from the focus of attention and necessitating an interference-prone retrieval.

(1) The pilot who scared John/Mary injured himself quite badly during the journey. [5]

(2) The pilot who scared John/Mary bought some coffee for himself after the flight.

(3) POSITION:ADJACENT

a. ACCESSIBLE:MATCH, INACCESSIBLE:MATCH/MISMATCH

The mechanic who spoke to John/Mary sent himself a package ... .

b. ACCESSIBLE:MISMATCH

sent herself a package ... .

(4) POSITION:NonAdjacent

a. ACCESSIBLE:MATCH, INACCESSIBLE:MATCH/MISMATCH

The mechanic who spoke to John/Mary sent a package to himself ... .

b. ACCESSIBLE:MISMATCH:

sent a package to herself ... .

**References.** [1] Chomsky (1981) [2] Reinhart & Reuland (1993) [3] Nicol & Swinney (1989) [4] Badecker & Straub (2002) [5] Sturt (2003) [6] Dillon et al. CUNY2011 [7] Vasishth et al. CUNY2011 [8] McElree (2006) [9] Vasishth & Lewis (2005) [10] Wagers, Lau & Phillips (2010) [11] Van Dyke & Lewis (2003) [12] Runner et al. (2006)