Searching for structure in silence: Voice mismatches in VP ellipsis.

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One of the most important tasks in arriving at the correct interpretation of a sentence is to build an accurate structural representation of it. A large body of psycholinguistic investigation has focused on establishing how we go about this (e.g., [1], [2]). One area of debate is how we build a representation of a sentence containing elements that are not pronounced, like the English sentence in (1). In (1), the sentence ends at "didn't" but its interpretation relies on understanding the complement of "didn't" to be something like "teach a new language." This is VP ellipsis.

(1) One of the professors was supposed to teach a new language, but they didn't.

Our present study asks how VP ellipsis works. Our aim is to tease apart two major approaches to VP ellipsis in English. According to one approach, the elided VP contains the full syntactic structure that is just not pronounced [3]. For (1), this means that the parser builds the full syntactic representation of "teach a new language." According to the other approach, the elided VP includes only a silent pro-form, a so-called "pointer" to its antecedent [4]. This means that the parser re-activates the meaning of "teach a new language," but does not build the structure of this VP at the ellipsis site. As previously noted [5], psycholinguistic evidence so far has not been able to distinguish these two approaches. Studies that seem to show effects of structure in the ellipsis site might just be showing the effect of reactivation of the antecedent. This is true even of structural priming effects that have previously been found (e.g., [6]): The reactivated antecedent might induce priming of the structure, but this does not necessarily show that the parser builds that structure, independently of reactivation.

Word-recall experiment. We attempt to distinguish the two approaches by looking at cases of voice mismatch in VP ellipsis ([7]), which is independently shown to be acceptable if certain conditions are met ([8]). Critically, we use irregular verbs with different stem forms for active and passive, like *teach-taught*. Participants (n = 128; 11 exclusions due to accuracy checks; L1 speakers of English, recruited on MTurk) read sentences like in Table 1 (shown on the screen as a whole before disappearing at key press). They then had to identify whether the word that appeared on the next screen had been present in the sentence. Our 2x2 design crossed (i) Voice of elided VP (active vs. passive) and Target type (related vs. unrelated). The related target was always the active form of the verb (e.g., *teach*) - which did not appear in the sentence (its passive form *taught* did). The unrelated length-matched target (e.g., *worst*) also did not appear. Our dependent measure was the rate at which participants correctly rejected the target word as having appeared. We created 16 itemsets like in Table 1 (Latin square; 4 lists), plus 20 fillers (half had a target that *had* been present in the sentence). **Results (Fig. 1)**. We fit a 2x2 logistic MEM to the data. There was a main effect of Target type in the expected direction: higher rejection accuracy for unrelated (worst) vs. related (teach) targets (.99 vs. .69; z= -5, p <. 0001). Crucially, we found an interaction of Target*Voice (z = -2.6, p = .009): **higher** accuracy (i.e. more correct rejections) for passive-related than active-related. We reason that this is because readers process the active *form* of the word (*teach*) only in the Active condition, where it is reconstructed at the ellipsis site (leading to an illusion that it appeared in the sentence proper). But in the Passive condition, they construct the passive form (*taught*). This effect cannot be explained as reactivation of the antecedent, because the antecedent is the same across conditions. The parser appears to construct a representation of the ellipsis that includes active

voice. This is consistent with the view that new structure gets built [3], rather than old structure being reactivated [4].

	Stimulus	
Elided VP = active	*A new language was supposed to be taught in the fall semester, but **no professors could** because the schedule was too tight. Target: TEACH*	*A new language was supposed to be taught in the fall semester, but **no professors could** because the schedule was too tight. Target: WORST*
Elided VP - passive	*A new language was supposed to be taught in the fall semester, but **no new language was**, because the schedule was too tight. Target: TEACH*	*A new language was supposed to be taught in the fall semester, but **no new language was**, because the schedule was too tight. Target: WORST*

Table 1: A sample itemset.

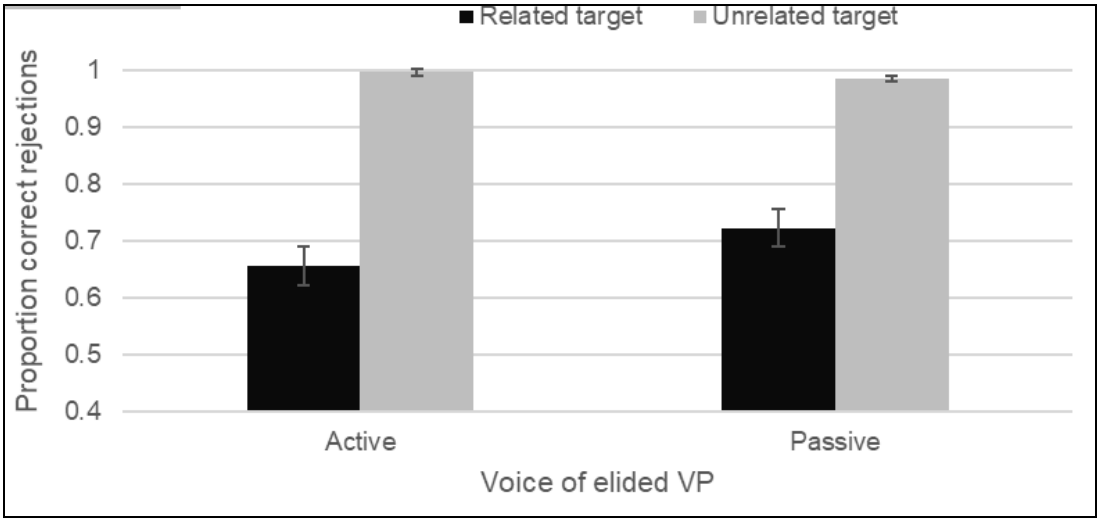

Figure 1: Proportion of correct rejections of target word across the experimental conditions: active voice (left) and passive voice (right); related in black bars, unrelated in gray bars. Error bars represent +/- 1 S.E.

References

[1] Frazier, 1987, *NLLT*. [2] Tanenhaus et al., 1995, *Science*. [3] Merchant, 2001. *The Syntax of Silence.* OUP. [4] Hardt, 1999. *Linguistics and Philosophy*. [5] Phillips & Parker, 2014. *Lingua.* [6] Xiang, Grove & Merchant, 2019. *Glossa*: *A Journal of General Linguistics.* [7] Merchant, 2013. *Linguistic Inquiry* 44. [8] Stockwell, 2024. *Glossa: A Journal of General Linguistics* 8(1).