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English-speaking kindergarteners sometimes incorrectly answer questions with medial *wh*-relativizers (e.g.., *How did Lewis tell Sally what he picked?*) by saying what was picked (e.g., *apples*). In other words, they interpret it to mean *What did Lewis tell Sally (that) he picked?* These errors are reminiscent of the *wh*-scope marking (WSM) construction found in languages like German, where the true *wh*-phrase appears medially while the scope of the *wh*-phrase is marked by an initial, contentless *wh*-phrase (Lutz, Muller, & von Stechow, 2000). deVilliers and Roeper (1995) argue these errors are due to children having an immature WSM-like grammar, whereas Lutken, Legendre, and Omaki (2020) argue they are due to immature processing, pointing to the relationship between children's working memory (WM) and the rate of their WSM-like interpretations. If children's errors are due to an immature grammar, adults should not make WSM errors because their grammars are fully developed. If children's WSM errors stem from their language processor being overtaxed, adults might also make WSM errors if they are overtaxed.

Experiments. We conducted 3 online experiments to test whether adults make WSM errors when overtaxed. 24 native English-speaking college students participated in Experiment 1, 47 participated in Experiment 2, and 24 participated in Experiment 3. In the experiments, adults read and answered questions about short stories (mean length = 134 words; 8.3 sentences). Once they finished reading a story, it disappeared and a *wh*-question appeared (see example on pg. 2). In Exp 1, but not Exp 2 & 3, the question remained on the screen while participants typed their answer(s). In Exp 2, participants did a WM task between reading the story and selecting their answers to the question from among 4 options. Exp. 3 was a replication of Exp. 2, without the WM task. Exp 1 had 6 ambiguous and unambiguous questions, and Exp 2 and 3 had 18 questions of each type.

Stimuli. Stories were balanced for event prominence of the matrix and embedded clause verbs (see *Design*) and included possible answers for each interpretation of the question. Half of the questions were unambiguous (e.g, *Why did Al report who he invited?*) and half were unambiguous and lacked a medial *wh*-relativizer (e.g., *How did Jim report he invited Sam?*). Because ambiguous questions had 2 correct answers, participants were allowed to select more than one response in both ambiguous and unambiguous questions. For space reasons, we only present their "first response" results. The adult experiments differed from previous ones with children because 1) the task was written, 2) the stories were longer and more complex, 3) the questions' matrix and embedded verbs were more abstract, and 4) no clarifications, gestures, repetitions or visual cues were given. These changes meant that, although the syntax of the questions was identical to that used in previous child experiments, the task demands were considerably higher.

Results: Exp. 1 was designed to establish what types of multiple-choice responses to use in Exp. 2 and 3, and to eliminate scenarios that were too complicated. Sixty-eight percent of the responses participants gave were correct. However, to our surprise, although the stories remained on the screen while participants typed their answers, 4 participants gave WSM-responses.

As expected, in Expt 2, participants treated ambiguous and unambiguous questions differently, giving 1.7 times more embedded response answers to ambiguous questions. For unambiguous questions, adults responded incorrectly 25% of the time, with over half of these errors being WSM responses. Crucially, as shown in Table 1, adults did not simply answer a *who* question at random: they gave WSM responses 3 times more often than *embedded* responses, which are also *who* responses. Consistent with adults' WSM errors being the result of adults occasionally experiencing processing overload rather than some adults having non-standard grammars, 34 adults made at least 1 WSM error and no adult made WSM errors more than 38% of the time. Also consistent with a processing account, WSM errors were not randomly distributed

among the trials. Almost half of adults' WSM errors occurred with 3 specific stories (all *p*s < .05, see Figure 1). Exp 3, which was a replication of Exp 2 sans WM task, yielded very similar results, with 16 of the 24 adults making at least one WSM error and no adult making more than 8 WSM errors. In addition, adults tended to give WSM responses to the same stories in both Exp 2 and 3 (r=.69, r^2= .47).

Conclusions: Our question was simple: if we tax English-speaking adults' language processors, do they make WSM errors just like children do? Our answer is equally simple: they do. While Lutken et al.'s adult controls performed at ceiling on a task designed for children, we found that when the adult task was more taxing, adults made exactly the same types of errors children make, and they did so at the same rates as children. The fact that both adults and children make WSM errors suggests that WSM errors reflect a processing failure that both children and adults are susceptible to when their processing abilities' are taxed. Thus, one cannot take children's WSM comprehension errors as proof that they have WSM-grammars. Our findings also have more general implications for this type of work. First, a cautionary tale: children's performance on psycholinguistic tasks shouldn't be taken as a pure indicator of their competence any more than adults' occasional failure to understand center-embedded sentences like *The cat the dog chased died* should be taken to indicate adults' grammars do not have embedding. Second, comparing adult and child performance on tasks designed for children is fraught. What looks like adults having greater syntactic competence may simply reflect them having greater performance abilities.

References: de Villiers & Roeper. (1995). *J Child Lang*, 22. 389-404; Lutken, Legendre, Omaki. (2020). *Cognitive Science*; Lutz, Muller, & von Stechow. (2000)

Example Scenario for Unambiguous Questions:

The local Boy Scouts are having their jamboree. Arthur was given the job of inviting someone to teach knot-tying and someone to teach fire-building. He's excited about who he's asked to do fire-building, but he's concerned that the knot-tying expert might not show up. He thinks about reporting his concerns to the director but decides to wait just a bit longer. The director sends around an email asking everyone to confirm who they have invited to speak. Arthur goes ahead and reports that he's invited the fire-building expert, but decides he'd better not mention the knot-tying expert yet in case he doesn't work out. **Q**: Why did Arthur report who he invited?

Table 1. Distribution of First Responses to Unambiguous Questions in Experiment 2 and 3

Response Type	Exp 2	Exp 3
Correct (e.g., T*he director asked everyone to confirm their invitations*)	74.9%	79.4%
Wh-scope Marking (e.g., *He reported inviting the fire building expert*)	13.1%	9.3%
Alternate Matrix (e.g., *He was concerned about the knot-tying expert*)	7.6 %	11.3%
Embedded (e.g., *He invited a fire building expert and knot-tying expert*)	4.3 %	1.4%

Figure 1. Percentage of Responses that were WSM by Story in Experiments 2 &3