Factivity and At-Issueness in the Acquisition of *forget* and *remember*

Athulya Aravind and Martin Hackl

1. Introduction

Natural language offers ways of distinguishing between the main point of an utterance, its assertive content, from background information taken for granted by the conversation participants, its presuppositions. This paper is interested in a subset of presuppositional expressions, factive predicates, and their acquisition. Factives are clause-embedding predicates that take for granted the truth of their complement. Thus, the factives in (1), unlike the non-factives in (2), lead to an inference that the more qualified candidate did in fact lose.

(1) a. Taylor knew that the more qualified candidate lost the election.
b. Taylor remembered that the more qualified candidate lost the election.
c. Taylor was surprised that the more qualified candidate lost the election.
(2) a. Taylor thought that the more qualified candidate lost the election.
b. Taylor dreamed that the more qualified candidate lost the election.
c. Taylor feared that the more qualified candidate lost the election.

The presuppositionality of this inference is evident from the fact that it behaves differently from asserted content, e.g. by persisting in the scope of operators like negation (3), a property often called "presupposition projection".

(3) Taylor did not know that the more qualified candidate lost the election.
⇒ Her candidate lost the election.

Previous developmental research on the acquisition of factivity show that children have difficulties making adult-like inferences about the truth of factive complements, especially in negative environments like (3) (Harris 1975,

*Athulya Aravind, Massachusetts Institute of Technology, Martin Hackl, Massachusetts Institute of Technology. Contact: aaravind@mit.edu. We are grateful to the children and parents at participating daycares and museums in the Boston area and to Leo Rosenstein and Maya Saupe for help with data collection. We would also like to thank Kate Davidson, Danny Fox, Valentine Hacquard, Irene Heim, Loes Koring, Jon Ander Mendia, Jesse Snedeker, audiences at BUCLD 41, Harvard Language and Cognition Lab and the MIT Language Acquisition Lab for feedback and discussion.

Hopmann and Marastos 1978, Scoville and Gordon 1980, Abbeduto and Rosenberg 1982, Léger 2008, Dudley et al. 2015). A common conclusion, therefore, has been that children do not initially represent factive verbs as presuppositional. Our goal in this paper is to challenge this received view in favor of a more nuanced picture. We begin by pointing out that the commonly used tests for knowledge of factivity as a presupposition are confounded, making it difficult to draw strong conclusions from previous results. We instead propose a novel diagnostic for testing children's knowledge of the presuppositionality of factives, which relies on the unique pragmatic constraints on the use of presuppositions. We begin with the observation that factive sentences of the form *X Verb-ed that p* cannot be used felicitously when the topic of inquiry is *whether p?* We show that this restriction is a direct consequence of the presuppositional status of *p*, and stems from the fact that presuppositions more generally cannot target the Question Under Discussion. We then show experimentally that 4-to-6-year-old children are sensitive to this restriction on the use of factive sentences with the verbs *forget* and *remember*. Children fail to access adult-like interpretations of factive sentences only when they are used incongruently in contexts that raise a question about the status of the embedded proposition. Because the incongruence stems from the presuppositionality of factive *forget* and *remember*, children's sensitivity to it may be taken as indirect evidence for their adult-like, presuppositional representation of these verbs. We suggest, however, that children may nonetheless display non-target behavior because they diverge from adults in how they recover from the perceived discourse incongruence.

2. Methodological challenges

Following Karttunen (1974), Stalnaker (1974), Karttunen and Peters (1979), Heim (1983), a.o., we take the presuppositions to be restrictions imposed by a sentence on the types of contexts in which it can be felicitously used. Concretely, a sentence S may be said to presuppose *p* if *p* is already entailed by the common ground (i.e. the body of information the discourse participants mutually assume to be true and not up for debate). Thus, for a speaker to felicitously utter the sentences in (1) above, the information must be shared knowledge among all of the discourse participants. Of course, speakers *do* sometimes utter presuppositional sentences in situations where the common ground requirement is violated, as in (4). In (4), a factive sentence is used, seemingly felicitously, although the the discourse makes it implausible that the truth of the complement was already common knowledge.

(4) A: Do you know Taylor? B: No, I don't
A: Taylor is an actor. He hasn't been leading a good life.
I was surprised that he has been unemployed for months.

This is because even when the presupposition of a sentence is not entailed by the context, the hearer might nevertheless agree, for the purpose of the conversation, to treat it as taken for granted, i.e. they can "accommodate" the presupposition. As long as the content is uncontroversial and the speaker is one in good standing (i.e. can be assumed to be cooperative), the hearer can silently add the unmet presupposition to the common ground prior to evaluation (e.g. von Fintel 2008).

To establish that a child has acquired the adult-like presuppositional meaning of factive predicates, it needs to be shown that the child can (i) draw the right inferences about the truth of their complements, and (ii) treat this inference as a presupposition. To meet this two-fold challenge, much of the previous developmental work has relied on presupposition projection, with negation in particular, as the key diagnostic. Children are presented with negated factives in a neutral context (i.e. a context that is silent about whether or not the complement is true) and tested on their infernences about the complement. If the child can reliably draw an inference to the truth of the embedded proposition in negative environments, she may be taken to understand not only that factives take true complements, but also that the truth of the complement is presupposed.

One of the first studies on child factives, Harris (1975), used a "truth questioning" task where participants heard sentences and questions as in (5).

(5) Sentence: The teacher didn't know that Tim was absent.
Question: Was Tim absent?

The participants, who were children in preschool through sixth-grade, were expected to use their metalinguistic knowledge of the factivity of *know* to conclude that the truth of the complement is presupposed. The author found that even in later grade school years, children had trouble reliably answering questions like (4) in the affirmative. A similar task was used in Scoville and Gordon (1980) who tested 5-to-14-year-old children's interpretation of affirmative and negative factives, and found chance performance on negative factives until age 8. Hopmann & Maratsos (1975) used an act-out task to test 4-to-7-year-olds on a battery of factives, including *know, it's surprising, be happy, it's nice,* and *it's sad* as well as non-factive controls. Until 6, children did not differentiate between factives like *know* and non-factives like *think* when the verb was negated, even when they could do so in affirmative contexts. More recently, these findings were replicated in Dudley et al. (2015) and Hacquard et al. (2016). In their studies, 3-5-year-old children had to identify the location of a hidden toy based on attitude reports with *know* and *think*. They heard "clues" as in (6) and had to choose the box they thought the toy was under.

(6) Lambchop (knows/doesn't know) that the toy is in the red box.

Children consistently chose the mentioned box in the case of affirmative know, but the majority of children failed to do so reliably when the verb was negated.

Minor differences in age of adult-like performance aside, studies using projection through negation as the crucial test for knowledge of factivity consistently find that young children do not show adult-like behavior. However, the very logic of these tests introduces certain confounds. Recall that presuppositions have to be part of the common ground of the conversation participants. This constraint is, by design, violated in the tasks described above. For instance in Dudley et al. (2015), the participant's task is to make guesses about the location of the toy based on partial evidence (e.g. clues from the puppet). This in turn implicates that the location of the toy is *not* public knowledge, contra what is expected given the presuppositionality of (6). This contradicts the demands imposed by the presuppositionality of (6). Hence, to stay within a coherent discourse, the participant must either accommodate the presupposition, or ignore it altogether. A participant who shows target behavior in such a task may be taken to have both (i) an adult-like presuppositional representation of factives, and (ii) adult-like abilities to accommodate presuppositions that were not already part of the common ground. However, failure on the same task could be due to a failure in either (i) or (ii). A participant who does not accommodate, and instead chooses to ignore the presupposition, cannot, naturally, be expected to access a projective reading.

To our knowledge, only one study, Schulz (2003), has tested children's knowledge of factivity using a task that did not rely on presupposition projection with negation. Schulz reasoned that children may have independent difficulties with negation in complex sentences, a difficulty that cannot be teased apart in tasks where the interpretation of the scope of negation provides the crucial test. She therefore exclusively tested affirmative sentences using the verb *forget*. In a Truth-Value Judgment Task, 4-6-year-old children were presented with stories that either explicitly supported an inference to the truth of the complement, or made clear that the complement proposition was false. Children were then asked to judge the truth of a factive sentence. Even 4-year-olds showed high accuracy rates when the presupposition was met. However, they were below chance on sentences with a false presupposition. The author took these results to indicate that 4-year-olds have adult-like representation of factivity (at least with *forget*), but have yet to acquire adult-like abilities to deal with presupposition failure. While this study avoids the problems associated with negation tasks, it fails to provide an adequate test of children's knowledge of factivity: Once the truth of the complement has been established in the context, it is no longer possible to draw inferences about how children are representing the complement. In fact, a child who has a non-factive representation of the factive verb should respond no differently from one who has an adult-like representation of the verb.

As the discussion above makes clear, the pragmatic restrictions imposed by presuppositions on the conversational context make diagnosing children's representations of factive verbs a particularly hairy task. On the one hand, tests that would allow us to assess whether children treat factives as presuppositional introduce a third factor, accommodation, which may independently lead to non-adult behavior. On the other hand, once the presupposition is supported in the

context, taking away the need for accommodation, we can no longer interpret adult-like behavior as a genuine indicator of underlying knowledge. The present paper turns to the pragmatics of presuppositions for a potential solution. In the following section, we propose a more indirect diagnostic, having to do with constraints on when presuppositions can be felicitously used in conversation.

3. (Not)-At-Issueness as a diagnostic

Our starting point is the observation that factive sentences are infelicitous in discourses like in (7). In (7), B's response A involves a presupposition. Accommodating this presupposition would provide the necessary information to resove A's question, namely that Taylor is married to a writer. Nevertheless, the discourse is incongruent. The incongruence of the dialogue in (7) cannot be reduced to the fact that B's utterance is overinformative or indirect. As we see in (8), both the contextually equivalent sentence in (B') and a similar one involving a non-factive verb in (B'') are not deviant in the same way.

(7) A: Who is Taylor married to?
B: #Taylor's agent keeps forgetting that he is married to a writer.

(8) A: Who is Taylor married to?
B': Taylor is married to a writer, but his agent keeps forgetting that.
B'': His agent thinks that Taylor is married to a writer.

Following a suggestion in Heim's (2014) lecture notes, we propose that the incongruence of this discourse arises from the conflicting demands presuppositions and questions place on the conversational context. Before pursing this idea further, let us make precise some of our background assumptions about cooperative discourse. Following Stalnaker (1973, 1974), Roberts (1996, 2012) and others, we assume that the main goal of conversation is to add information to the shared repository of knowledge among the interlocuters, i.e. the common ground. A speaker makes a proposal about how to add information to the common ground by raising a new topic of inquiry, or Question Under Discussion (QUD), which the interlocutors commit to address before moving on. Crucially, the information sought by the QUD is not yet part of the common ground; otherwise, the question, as well as the interlocutors' commitment to resolving it, would be vacuous. Content that is relevant to the QUD and can be used to address it is considered to be "at-issue" relative to the QUD. At-issue content, if accepted, is added to the common ground.

Let us consider again the infelicitous discourse in (7). Speaker A, in raising the question about Taylor's spouse, takes the common ground to be one that does not already contain an answer to this question. Presuppositions are information that is known, either because they were already part of the common ground or accommodated and effectively treated as such. If A were to interpret B's presuppositional sentence as addressing the QUD, as would be expected of a cooperative interlocutor, she must first accommodate the presupposition.

However, accommodating the presupposition entails treating the common ground as already containing the answer to her question, in effect resulting in a context where the question shouldn't have been posed in the first place. Thus, because of the presuppositional nature of the content that could address the QUD, the discourse becomes one in which the conversational principles governing the raising and addressing of the QUD cannot be satisfied simultaneously. This generalization can be stated as in (9):

(9) **Not-At-Issueness Constraint on presuppositions:** Presuppositions cannot be used to directly target the Question Under Discussion.

It is important to note that dialogues that violate (9) are not necessarily irrecoverable. One possible repair strategy is for the hearer to treat the otherwise infelicitous sentence as answering a different, more appropriate, QUD. In (7) for instance, to the extent that it is licensed, A may interpret B's utterance as a congruent response to the question, "What did Taylor's agent forget?". When the QUD is presented explicitly, accommodating a different one is hard, if not prohibited altogether. However, when the likely QUD is only implied, the hearer can more easily interpret the sentence relative to another, contextually relevant question, thereby rescuing what would have been an incongruent discourse.[1]

Our studies use children's sensitivity to the Not-At-Issueness constraint as a diagnostic for knowledge of the presuppositionality of factives. We ask if 4-to-6-year-olds are sensitive to this requirement by testing their comprehension of the same factive sentences used in two environments, one that raises a QUD about the embedded proposition and one that does not. According to (9), factive sentences of the form, *X forgot that p*, are incongruent when used in response to a QUD *Whether p?* Previous acquisition work has demonstrated that children are highly sensitive to discourse-(in)congruence (Hamburger & Crain, 1982, Thornton & Crain 1999), and moreover, may not have adult-like means of recovering from incongruence (Hackl et al. 2015, Aravind et al. 2016). In light of these findings, we expected that a child who has a presuppositional representation of the verbs in question should both (i) recognize the incongruence that arises in contexts that violate the Not-At-Issueness constraint, and (ii) have more difficulties interpreting factive sentences in such contexts.

4. Experiment 1

Experiment 1 serves as our baseline: children's comprehension of factive sentences with *forget* and *remember* is assessed in contexts where all of the pragmatic requirements on using presuppositional sentences are satisfied. The

[1]Another option would be to cancel the presupposition altogether (Simons 2001, Simons et al. 2014, Beaver 2010, Abrusan 2011). However, cancellation tends to be easier with some expressions than others and *forget* has been categorized in the latter group (e.g. Abbott 2006). Therefore, we do not consider it in more detail in this paper.

truth of the embedded proposition was supported in the context, eliminating the need for presupposition accommodation. Moreover, the context highlights a forgetting event, a QUD about a character's mental state, in particular whether or not they remembered carrying out a task; factive sentences with *forget* and *remember* are coherent responses to such a QUD.

4.1. Participants and Procedure

Twenty-four children ages 4-6 (Mean Age = 5;1), recruited from daycares and museums in the Boston area, participated in the study. Forty adults, recruited via Amazon Mechanical Turk, served as controls. In a Truth-Value Judgment Task (Thornton and Crain 1999), children were presented with brief scenarios accompanied by visual support. The scenarios were all about the same two characters who had to carry out some chores. In the critical trials, the character in question carries out the chores, but forgets about having done one of chores and fails to report it. The character is later rewarded with stickers, the number of which corresponds to the number of chores the character *reports* doing. After each story, the child is first asked a question of the following form: "How many stickers did X get?" In addition to serving as a comprehension question, this question serves to highlight the fact that the critical aspect of these stories is the agent's cognitive state (as the rewards are contingent upon it). Afterwards, a puppet, introduced as sometimes inattentive, is asked to describe what happened in the story and provides a description using a factive sentence. An implicit assumption in this design is that speakers, when answering a broad question like "What happened?", are guided by the QUD raised in the preceding context. At the same time, the generality of such a question makes it possible, if necessary, to accommodate a different sub-question from the one made salient in the preceding story.

Test sentences fell into one of four conditions created by crossing Verb (*forget/remember*), a between-subjects factor, with Polarity (Affirmative/Negative). Additionally, Truth was balanced, with two of the four conditions involving false sentences. Because the verbs are antonyms, the affirmative variant of one verb (e.g. *forget*) and the negative variant of the other (e.g. *not remember*) were used in the same contexts, in turn allowing us to fully isolate the potential contribution of syntactic negation.

Table 1 : Conditions, Experiment 1

	True	**False**
Affirmative	*Forget*	*Remember*
Negative	*Not remember*	*Not forget*

There were 4 items per condition, giving us 16 critical items. Since Verb was a between-subjects factor, each child saw 8 critical items. Additionally, they saw 4 fillers with mono-clausal sentences, counterbalanced for Truth and Polarity.

Each set of stories was administered in one of two pseudo-randomized orders. An example (Forget, Affirmative; visual support omitted) is given in (10).

(10) Billy was supposed to help Farmer Mary around her farm. He helped by feeding the chickens and milking the cow. The next day, Farmer Mary asked, "How did you help?". He said, "I milked the cow, but I'm not sure what else I did!" He didn't tell her about feeding the chickens!
Comprehension: How many stickers will Billy get? (One)
Puppet's sentence: Billy forgot that he fed the chickens. (True)

The same types of stories were presented to adults in written form and without visual support using IbexFarm presentation software. In addition to the critical items, they saw 24 filler items involving non-factive attitude predicates (*admit, deny, think, consider*). Truth and polarity were balanced across fillers.

4.2. Results

Adults performed at near-ceiling levels on all four conditions, and our analyses revealed no significant differences. Children's accuracy on the four conditions is represented in Figure 1. Performance was well-above chance on all conditions. A mixed-effects logistic regression, with Verb and Polarity as interacting fixed factors, Age as a covariate, and Item and Participant as random effects, revealed a significant main effect of Polarity ($\beta = 0.722$, $p = .005$): participants were more likely to respond correctly on affirmative trials with both *forget* and *remember* sentences. Moreover, there was a significant age effect ($\beta = 1.356$, $p = .003$), with overall accuracy increasing with age.

4.3. Discussion

Children's high accuracy in this experiment suggests that they approximate adult-like semantics for the two verbs involved. For instance, they seem to know that *forget* describes a negative memory state and *remember* its opposite. Moreover, while the presence of negation does seem to make comprehension more challenging, children were nevertheless able to give adult-like judgments to negative sentences overall. It is important to note, however, that we cannot draw conclusions from these results alone about children's treatment of the factive verb, specifically whether they have a presuppositional representation of them. This is so because contextual information would suffice to give rise to the inference that the complement proposition is true (see discussion of Schulz (2003) above). Our dependent measure, therefore, cannot be the results from either Experiment 1 or 2 alone. Rather, we are interested in the potential discrepancy between the two experiments, which crucially differ in whether or not the presuppositional sentences are used felicitously.

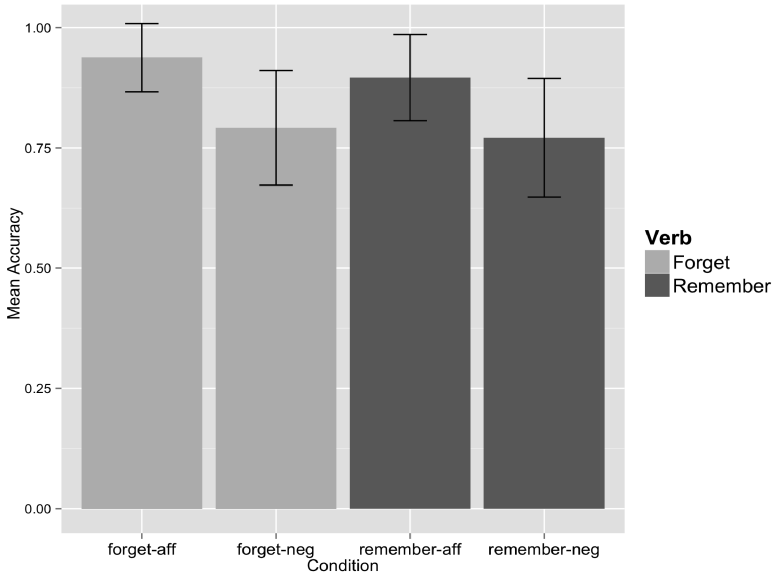

Figure 1: Accuracy & 95% CI by Condition, Exp. 1

5. Experiment 2

Experiment 2 used the same target sentences as Experiment 1, but the stories now raised a QUD about whether or not a character carried out a given chore. A factive sentence presupposing the answer to such a question is in violation of the Not-At-Issueness constraint and therefore, incongruent. Our goal in this experiment was to see whether 4-to-6-year-olds, who were shown in Experiment 1 to give adult-like judgments to factive sentences with *forget* and *remember*, are sensitive to this incongruence and behave differently on the same sentences in Experiment 2.

5.1. Participants and Procedure

Forty-eight children ages 4-6 (Mean Age = 5;4), recruited from daycares and museums in the Boston area, and 40 adults recruited via Amazon Mechanical Turk, participated in Experiment 2. The number of participants was doubled because both Verb and Polarity were between-subjects factors in Experiment 2, as opposed to just Verb in Experiment 1.[2] The task and target sentences were the same across Experiments 1 and 2, though the particulars of the stories changed. Again, we crossed Verb (*forget/remember*) with Polarity

[2] This change was the result of orthogonal constraints on testing duration at the sites Experiment 2 was carried out.

(Affirmative/Negative) and balanced Truth in the same way as in Experiment 1. There were 4 items in each condition as before, resulting in 16 critical items. Both Verb and Polarity were between-subjects factors, so a given participant only saw 4 of the critical items. Each child saw 4 fillers with the *opposite* truth-value of the subset of critical items she saw, so that truth was balanced within the experiment.

The stories in Experiment 2 again about two characters who had to carry out chores. Crucially, only one character carries out the assigned task, while the other gets distracted and fails to do it. Later, neither recalls whether or not they carried out the task. Thus, the most salient aspect of these stories is the contrast between who did the task, and who did not. Accordingly, the comprehension question changed to a question of the form. "Which one should get a sticker?", which reinforces the idea that the relevant issue is whether or not the character(s) carried out the task. An example story is provided in (11).

(11) Today, Billy and Jane were supposed to help Farmer Mary around her farm. Billy fed the chickens, but Jane was sleeping instead. The next day, Farmer Mary asked them, "Did you feed the chickens?". But both of them said, "It was so long ago, we're not sure anymore!"
Comprehension: Who should get a sticker? (Billy)
Puppet's sentence: Billy forgot that he fed the chickens. (True)

The crucial difference between Experiments 1 and 2 is the QUD suggested by the preceding stories. In (11), the main issue is about whether or not Billy and Jane fed the chickens. An appropriate description of the story should take this into account and address the question of whether Billy/Jane fed the chickens. However, the puppet's response using a factive sentence *presupposes* the answer to such a question and is thus not directly congruent. We expected adults to recover from this incongruence by assuming a more appropriate QUD than the one suggested by the story, a repair made possible by the fact that the puppet was explicitly asked a broad question (*What happened?*). With children, we considered at least three possible outcomes. One possibility is that children are in fact sensitive to the presuppositionality of *forget* and *remember* and the violation of the Not-At-Issueness constraint, but are unable to carry out the same kind of repair as adults. In this event, we might expect children to perform significantly worse in Experiment 2 relative to Experiment 1. Another possibility is that the incongruence of the discourse selectively affects the interpretation of sentences that are independently difficult, e.g. negated factives. This would suggest that children possess knowledge of the requiste repair strategies, but their deployment is costly. A third possibility is that we see no difference between Experiments 1 and 2. This would be uninformative, as the pattern may obtain either due to adult-like abilities to repair the pragmatic violation, or from having non-adult, non-presuppositional semantics for the verbs, which precludes them from detecting incongruence in the first place.

5.2. Results and Discussion

Adults, one again, showed consistent ceiling-level accuracy on all four conditions, suggesting that they are able to override the incongruence of factive sentences in these contexts. Children, on the other hand, show a radically different response pattern from that in Experiment 1. Their accuracy rates were below chance on all four conditions, as shown in Figure 2. We analyzed the results using a mixed-effects logistic regression, with Verb and Polarity as interacting fixed factors, Age as a covariate, and Item and Participant as random effects. There were no effects of the two factors manipulated or of Age.

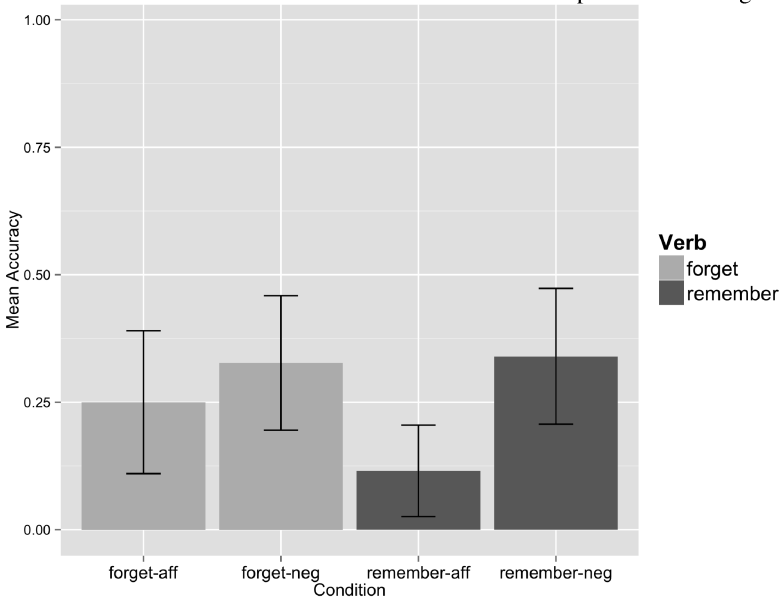

Figure 2: Accuracy & 95% CI by Condition, Exp. 2

To explore the nature of these judgments, we examined children's explanations for why they thought a puppet's utterance was wrong. Though many of these justifications were uninformative ("Because he wasn't paying attention"), the informative ones, some of which are in (12), suggest that children treat the *forget/remember that* sentences as "Implicatives" involving *forget/remember to*. Because of the way truth was manipulated in the experiment, the implicative variants of the target sentences had the opposite truth value as the factives. For instance, in all of the stories, whenever a sentence with *forget that* was true, a corresponding sentence with *forget to* would be false. Therefore, the below chance performance we observe would be expected if children were consistently misanalysing factives as implicatives.

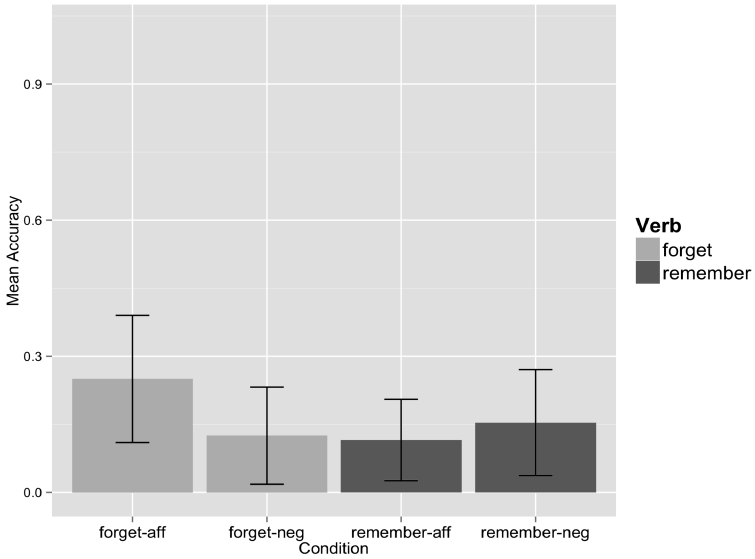

Figure 3: Accuracy & 95% CI of Error-Makers, Exp.2

(12) (a) Puppet: Billy forgot that he watered the flowers (Right)
Child, age 4;3: Wrong. He didn't forget to water the flowers
(b) Puppet: Jane didn't remember that she fixed the chair (Right)
Child, age 4;10: Wrong. Because Jane remembered to fix the chair.
(c) Puppet: Billy forgot that he fed the chickens (Right)
Child, age 5;10: Wrong. Billy did feed the chickens

Importantly, implicatives with *forget* and *remember*, unlike factives, do not presuppose the truth of their complement. When an implicative verb is negated, the inference about the actuality of the embedded event is also the opposite.

(13) a. Billy forgot to feed the chickens. ⇒ Billy did not the chickens.
b. Billy didn't forget to feed the chickens. ⇒ Billy fed the chickens.

The fact that implicatives do not presuppose their complement means that their use in Experiment 2 contexts does not violate the Not-At-Issueness constraint. This, in conjunction with fact that the apparent misanalysis occurs only in Experiment 2, suggests that children's misinterpretation is pragmatically driven. Children may confuse the two sentence frames precisely because one of them is a more congruent response to the type of QUD raised by the context.

6. General Discussion

In two experiments, we explored a novel way of probing children's underlying knowledge of the presuppositionality of factive verbs. We observed

that presupposed content, even when informative, cannot target the QUD, and used children's sensitivity to this Not-At-Issueness constraint as a diagnostic for whether they take factives to presuppose their complement. A factive sentence is infelicitous when the QUD concerns the proposition described by its complement. We tested children's interpretation of factive sentences in two contexts, one that raised a question about the complement (Experiment 2), and one that did not (Experiment 1). Children's behavior varied significantly across experiments: though they gave adult-like interpretations for the factive sentences in Experiment 1 contexts, they failed to access the right interpretation for the same sentences in Experiment 2 contexts. This suggests that children were sensitive to the Not-At-Issueness constraint. Moreover, since the infelicity of factives in Experiment 2 contexts stems directly from the fact that these verbs presuppose their complements, children's sensitivity to this infelicity tells us that they have an adult-like presuppositional representation of these verbs.

A related implication of our results, which goes beyond the specific lexical-semantics of factives, is that children understand the pragmatic requirements on presuppositions and how it relates to the building of a coherent discourse. Using presuppositions appropriately in conversation is a complex task: it involves collaborating on a shared goal of adding information to the common ground, keeping track of the state of the common ground at each discourse stage, and presenting information as foregrounded (asserted) or backgrounded (presupposed) in accordance with the state of the common ground. The fact that children, even as young as 4, are sensitive to how presuppositions can and cannot be felicitously used points to early and sophisticated understanding of principles governing cooperative communication. A place where children's pragmatic abilities seem to diverge from those of adults, however, is in how they respond to breakdowns in smooth communication. Consider the scenarios in Experiment 2, where a factive sentence of the form *X forgot that p* was uttered even though the QUD raised was about *whether p?* The factive sentence cannot congruently resolve this QUD, but the incongruent QUD-response pair may be dealt with in one of two ways. One repair strategy is to change the presumed QUD to one that would make the actual response congruent. The other would be to change the response itself so that it is congruent relative to the QUD. Whereas adults opt for the first strategy, children's behavior in Experiment 2 suggests that they are opting for the second strategy, misanalzying the incongruent factive sentences as the pragmatically more appropriate implicative variant.

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