BUCLD 38 Proceedings
To be published in 2014 by Cascadilla Press
Rights forms signed by all authors

Factivity in Three-year-olds' Understanding of *know* and *think*

Rachel Dudley, Naho Orita, Morgan Moyer, Valentine Hacquard and Jeffrey Lidz

This study investigates three-year-olds' understanding of the mental state verbs *think* and *know*, in an attempt to assess young children's grasp of factivity. *Know* is a factive mental state verb and is therefore used in contexts where the speaker takes the verb's complement to be true. *Think*, although a non-factive mental state verb, is often used in similar situations. Are young children able to recognize the difference in factivity between *know* and *think* despite the contexts the verbs are often used in? Are they able to understand that the truth of the complement is presupposed in one case but not in the other case? Acquisition studies on *know* and *think* find that children do not have an adult-like understanding of these verbs and their (non-)factivity before the age of four, but the tasks used in these studies are often inappropriate for testing preschoolers' understanding of factivity for independent reasons. We designed an interactive game to implicitly evaluate children's knowledge of these verbs in a task that more directly targets factivity and our results show some three-year-olds distinguish *think* and *know* while others seem to treat both verbs as non-factive. This suggests that early representations of *know* may be non-factive, and raises the question of how children come to distinguish the verbs.

1. *Think* and *know*

Think and *know* are similar mental state verbs in that they both report the beliefs of a subject. For example, consider the affirmative *think* sentence in (1) and the affirmative *know* sentence in (2).

(1) John thinks that Mary is at the office

(2) John knows that Mary is at the office

Both (1) and (2) convey the message that John has a belief about Mary's location, namely the belief that she is at the office. They differ in the types of inferences that the listener is able to draw based on some knowledge about John. For example, (2) can be true if John holds that belief, regardless of Mary's

[*]All authors at University of Maryland, College Park. The data for this paper was collected at the University of Maryland Project on Children's Language Learning. This research was supported in part by NSF grant BCS-1124338, UMD's NSF-IGERT DGE-0801465, as well as a University of Maryland Baggett Fellowship.

actual location, while (1) can only be true if Mary is in fact at the office. Factive verbs like *know* are typically taken to presuppose, as opposed to entail, the truth of their complement (Kiparsky & Kiparsky 1970; Karttunen 1971), which means that, with the use of *know*, the speaker takes the truth of the complement for granted. This presuppositional behavior of *know* is demonstrated by the fact that the truth of the complement seems to project out of p-family contexts (Chierchia & McConnell-Ginet 1990), including negation. Compare (3) and (4). With (3) the complement is not necessarily true and, in different contexts, uttering (3) will lead a listener to different inferences about Mary's location. With (4), however, the listener knows that Mary must be at the office, regardless of John's beliefs.

(3) John doesn't think that Mary is at the office

(4) John doesn't know that Mary is at the office

The use of *think* sentences and *know* sentences license different inferences because of the verbs' different presuppositional statuses. Consider a scenario where we are trying to determine whether Mary is still at work or whether she has made it home for the day. If our interlocutor were to utter either (1) or (3), we could not conclude anything about Mary's location (absent some assumptions about the reliability of John and our interlocutor) because these sentences are consistent with *Mary is at the office* being either true or false.

In contexts where our interlocutor could have instead said "John *knows* that Mary is at the office" or "Mary *is* at the office", we should be able to infer, via Gricean reasoning, that Mary must not be at the office because our interlocutor was not able to use either of the stronger statements. As adults we are able to compute this quantity implicature because we understand *think* and *know* to be competitors and that, all else equal, our interlocutor will try to be informative.

Alternatively, in contexts where we know that our interlocutor assumes John is a reliable source of information, and the relevant competitor sentences are irrelevant or inaccessible, the use of the (1) would invite us to infer that Mary is indeed still at the office while the use of (3) would invite us to infer that Mary has gone home for the day. Thus, we see that the presence of negation in a *think* sentence can affect the inferences that a listener will make.

Consider now the use of either *know* sentence in this same context. If our interlocutor were to utter either (2) or (4), we would be able to recognize the use of the factive verb *know*, and infer that the speaker must be taking it for granted that the complement clause *Mary is at the office* is true. In this way, we would be able to accommodate the presupposition associated with *know*, and this would crucially be the same whether or not the sentence uttered was (2) or (4).

Thus, in contexts where speakers and hearers take John to be a reliable source of information, both (1) and (2) will invite the inference that Mary is at the office. However, we expect divergent inferences for their negated counterparts: (3) indicates that Mary is not at the office while (4) indicates that

she is and John is simply unaware of that fact. In this paper we ask if young children understand the (non-)factivity of mental state verbs like *think* and *know* by asking whether they succeed at recognizing that sentences with *know* presuppose the truth of their complements, even in negated contexts, while *think* sentences do not. As we will see in the next sections, previous research shows that young children behave as if they believe *think* sentences to report only true beliefs: across various tasks, they fail to differentiate affirmative sentences like (1) and (2) and their responses suggest that they take these sentences to indicate that Mary is at the office. Young children act as if they are unaware that (1) is entirely compatible with Mary being at the office, or at home, or at any number of other locations. This pattern of behavior could result from an inability to differentiate *think* and *know* at all, or perhaps from a failure to derive adult-like quantity implicatures using these verbs. Furthermore, because of their behavior with affirmative sentences with *think* and *know*, it is important to look at their understanding of negated sentences like (3) and (4), in order to understand whether they are able to differentiate the verb. Do children realize that (4) presupposes that Mary is at the office, but that (3) does not?

2. Children's understanding of *think* and their developing Theory of Mind

Previous studies show that children have difficulty with *think* until at least four years of age. Unlike adults and older children, three-year-olds typically reject a sentence like (1) in contexts where Mary is not at the office, even if John thinks that she is (Johnson & Maratsos 1977; Wellman *et al* 2001; de Villiers & Pyers 2002; de Villiers 2005; Sowalsky *et al* 2009; Lewis *et al* 2012; a.o.). For example, take the following false belief scenario: Mary has already made it home for the day, but John wrongly believes that she is at the office. Now consider the use of either (5) or (6) in this scenario.

(5) John thinks that Mary is at the office

(6) Mary is at the office

In this scenario, adults and older children assent to (5), but three-year-olds reject it. In these cases, three-year-olds seem to respond based on the truth of the complement clause (6: false in this scenario), instead of the entire sentence (5: true in this scenario). What is responsible for their non-adult responses? There are four hypotheses in the literature which attempt to explain three-year-olds' failure to assent to (5):

(i) *The Conceptual Hypothesis*: children have difficulty assenting to (5) because of a difficulty with the belief concept that this sentence expresses. This conceptual difficulty could be due to an inability to handle belief representations that conflict with their own, or because they lack the ability to understand that others often have false beliefs (*cf.* Johnson & Maratsos 1977; Tardif & Wellman 2000; Perner *et al* 2003; a.o.).

(ii) *The Complement-only Hypothesis:* children do not respond to (5) like adults because they ignore the matrix clause, attending only to the embedded clause. This difficulty could be rooted in an inability to embed finite complement clauses or in a lack of understanding of *think* (*cf.* de Villiers 1995; Diessel & Tomasello 2001).

(iii) *The Pragmatic Hypothesis:* Children's difficulty with (5) is only pragmatic in nature. They have an adult-like understanding of the concepts, the syntax and the semantics necessary for an adult-like understanding of (5) but they assign a parenthetical interpretation to (5) that is inappropriate in the context. Consider the dialogue in (7).

(7) Q: Is Mary coming to dinner?
A: John thinks that she's at the office.

In this scenario, (5) is an inappropriate answer to the question, but we are able to coerce an answer out of it because we assume that the speaker is trying to be informative. In this case, we could infer that Mary is not likely to come to dinner because, according to John, she's still working. In these parenthetical uses of *think*, the complement clause is elevated to main clause status. If children understand sentences like (5) to be parenthetical, they should respond to the truth of the complement clause instead of the entire sentence (*cf.* Lewis 2013; Lewis *et al* 2013; Urmson 1952; Hooper 1975; Simons 2007; a.o.).

(iv) The Factive-think Hypothesis: children's non-adult responses are due to a failure to recognize the non-factivity of *think*. Because they fail to understand *think* appropriately, they treat it in essentially the same way adults treat *know*. (*cf.* Johnson & Maratsos 1977; Abbeduto & Rosenberg 1985).

Work by Lewis and colleagues argues against the Conceptual Hypothesis and the Complement-only Hypothesis. They show that three-year-olds do not attend solely to the complement clause, and that in contexts where the parenthetical interpretations that adults get with scenarios like (7) are blocked, three-year-olds can respond in an adult-like way, even when false beliefs are involved. Consider another false belief scenario: Mary *is* at the office, but John wrongly believes that she is at home. In this scenario, the complement clause is true but the entire sentence in false. Lewis and colleagues find that children are able to correctly reject (5) here, and thus conclude that children understand the contribution of the matrix clause, contra the Complement-only Hypothesis. Furthermore, they argue that three-year-olds improve in these particular false belief contexts because the parenthetical interpretation of (5) is blocked if John does not hold that belief. They also use the fact that their three-year-olds are accurate in these false belief scenarios to argue against the Conceptual Hypothesis. But, the findings in this literature are consistent with the other two hypotheses: three-year-olds could be failing to limit parenthetical interpretations of (5) in an adult-like way, or they could be assigning a factive interpretation to *think*.

3 Children's understanding of *know*

Previous research suggests that children do not differentiate verbs like *know* and *think* until at least age four (Macnamara *et al* 1976; Johnson & Maratsos 1977; Abbeduto & Rosenberg 1985; Moore & Davidge 1989; Moore *et al* 1989). Some authors even argue that children might not have a fully adult-like understanding of *know* well into the grade school years (Harris 1975; Hopmann & Maratsos 1978; Scoville & Gordon 1980; Falmagne *et al* 1994; Léger 2008). However, many of these studies involve complex tasks that could be independently difficult, especially for three-year-olds. Moreover, many of these tasks require children to make metalinguistic judgments or to compare the relative acceptability of two sentences. Consequently, they may underestimate children's knowledge and studies involving more naturalistic use of the verbs could serve as a better probe of children's knowledge.

Several studies attempt to assess whether children understand the projection behavior of *know* and *think* (Harris 1975; Hopmann & Maratsos 1978; Scoville & Gordon 1980; Léger 2008). Other studies in this literature require explicit comparison of *know* and *think* statements (Macnamara *et al* 1976; Johnson & Maratsos 1977; Abbeduto & Rosenberg 1985). Finally, some studies assess children's understanding of the relative strengths of *think* and *know* (Moore & Davidge 1989; Moore *et al* 1989; Falmagne *et al* 1994). These studies, taken together, seem to suggest that the acquisition of factive verbs is a lengthy process which extends into grade school, but that substantial advances are made between the ages of 4 and 7.

None of the above tasks was found to be possible for three-year-olds, but their inability to perform well on these tasks may be due not to their lack of understanding of the factivity of the verbs, but to extra-linguistic or task-related difficulties. Most of these tasks require children to answer a definitional question (What does it mean to know?) or to make explicit judgments about the truth of a *know* sentence or its complement clause given a context (that is sometimes as impoverished as *Julie knows her horse is ill*). This is arguably difficult for naïve adult to do, let alone preschoolers. Furthermore, some of these tasks require participants to either explicitly or implicitly compare a *think* sentence with a *know* sentence (*e.g.:* Does John know that Mary's at the office or does John think that Mary's at the office?). This could be independently difficult for preschoolers for many reasons, not the least of which is that adult understanding of *know* logically implies *think* as well, and preschoolers might not have the pragmatic competence to choose the more informative *know* statement in cases where both statements are true (Grice 1975).

Several of these authors suggest that an understanding of factivity and factive verbs continues to develop well into the grade school years. On a certain level, that seems to be an apt description of the developmental trajectory of these verbs; there are intricacies of their use that surely only adults could grasp. However, we wish to disentangle three-year-olds' basic knowledge of factivity from a more sophisticated holistic understanding of the verbs.

4. Children's understanding of presupposition and implicature

While the findings in this literature are mixed, there is some indication that children are aware of some presuppositions quite early. Despite this early awareness, children may not deploy their presuppositions in the full range of contexts that adults do. Berger & Höhle (2012) show that German preschoolers are aware of the presupposition associated with the focus particles *auch* 'also' and *nur* 'only'. Hamburger & Crain (1982) show that preschoolers' performance on relative clause interpretation is a function of the pragmatic use of relative clauses; children are able to succeed at interpreting object relatives only when relative clauses are used to distinguish two entities that are otherwise similar (*e.g.*, the sheep that the lion bit vs. the sheep that the dog bit). Syrett *et al* (2010) find that three-year-olds are aware of the uniqueness presupposition associated with *the*, and that they are able to use that information in an online task. Trueswell and colleagues show that children fail to use the discourse context in concert with the uniqueness presupposition of *the* in order to help them resolve a PP attachment ambiguity (Trueswell *et al* 1999), but that they are nonetheless able to use one structure when the discourse demands it (Hurewitz *et al* 2000). Together, these findings suggest an initial understanding of some presuppositional phenomena, but one that is emerging earlier than the literature on children's understanding of factive verbs would suggest.

5. Method

In order to assess three-year-olds' understanding of the factive and non-factive verbs *know* and *think* and the inferences that they license, we designed a simple task that allows them to demonstrate their knowledge without being hindered by difficulties orthogonal to their understanding of the verbs. We ask participants to find a toy hidden in one of two boxes using clues in the form of sentences containing *think* and *know*.

Child participants were 40 three-year-olds (age range: 3;1–3;11, mean age: 3;6, 19 boys and 21 girls). All children were reported to be monolingual speakers of English by their parents and all were recruited from the University of Maryland Infant Studies Database. Ten adults also participated. The adult participants were recruited from an undergraduate introductory linguistics course at University of Maryland and participated for course credit.

Participants were seated in front of two boxes (one red and one blue). They were told that the experimenter would hide one toy in either of the boxes and their task was to find the toy after the experimenter gave them a clue. Participants were also informed that the puppet Lambchop (LC) would be joining the game as well, but was too shy to do anything but whisper to the experimenter. An occluder kept participants from seeing where the toys were hid and there was always a toy in each box, despite what participants were told. This was done in order to avoid participants learning from negative evidence.

On each trial, the occluder would rise and the puppet would whisper in the experimenter's ear before the experimenter delivered the test sentence in the form of a clue. Upon hearing the test sentence, participants were to demonstrate which box they thought the toy was in, or simply to look in that box.

We manipulated two factors within subjects: verb-type (*think*, *know*) and negation-type (none, matrix, embedded). Thus children heard both *think* and *know* sentences, both with and without negation, as in Table 1. Participants were given three trials for each sentence type, as well as three control trials with the test sentence *It's not in the red/blue box*. Responses were coded as selections of the box mentioned in the sentence or as selections of the other box.

Table 1: Test sentences by factor

	Think	*Know*
None	LC **thinks** that it's in the red/blue box	LC **knows** that it's in the red/blue box
Matrix	LC **doesn't think** that it's in the red/blue box	LC **doesn't know** that it's in the red/blue box
Embedded	LC **thinks** that it's **not** in the red/blue box	LC **knows** that it's **not** in the red/blue box

6. Predictions

Based on the above discussion, there seem to be only three logical possibilities for children's understanding of these verbs that are consistent with the literature: (i) children understand the (non-)factivity of these verbs in a fully adult manner but previous tasks have obscured their performance; (ii) children lack the understanding that *know* is factive, thereby treating both verbs as non-factive; or (iii) children understand *know* in an adult manner but also treat *think* as a factive, which is why they tend to assume its complement is true.

These possibilities make the following predictions: If children understand the verbs in the way adults do, they will only pick the mentioned box when they hear either verb in an affirmative sentence or *know* in a sentence with matrix negation. If children treat *know* as a non-factive, they should only pick the mentioned box when they hear the affirmative sentences. If children treat *think* as factive, they should pick the mentioned box when they hear either of the affirmative sentences or the sentences with matrix negation, regardless of the verb. See Table 2 for a summary of these possibilities. Note that the matrix negation trials will be the crucial ones for determining participants' understanding of the factivity of the two verbs.

Table 2: Summary of predictions

Hypothesis	Trials where mentioned box should be selected					
	No negation		Matrix negation		Embedded negation	
	Think	Know	Think	Know	Think	Know
1) children are entirely adult-like	✔	✔	✖	✔	✖	✖
2) children aren't adult-like: *know* is non-factive	✔	✔	✖	✖	✖	✖
3) children aren't adult-like: *think* is factive	✔	✔	✔	✔	✖	✖

7. Results

Control items were three trials using the clue "It's not in the red/blue box." On the control trials, participants needed to choose the non-mentioned box at least two out of three times in order to be included in the analyses. 9/10 adult participants chose the correct box on every trial. The tenth adult never chose the correct box, and was excluded from analyses. 9/40 children also failed the control items. Additionally, 3 children were excluded due to experimenter error, leaving 28 children (age range: 3;1–3;11, mean age 3;6, 12 boys and 16 girls).

Adult data (n=9) is given in Figure 1. Adults always chose the mentioned box for affirmative *think* sentences and affirmative *know* sentences. They never chose the mentioned box on *think* sentences with embedded negation and *know* sentences with embedded negation. Adults chose the mentioned box on 4% of *think* trials with matrix negation and 74% of *know* trials with matrix negation.

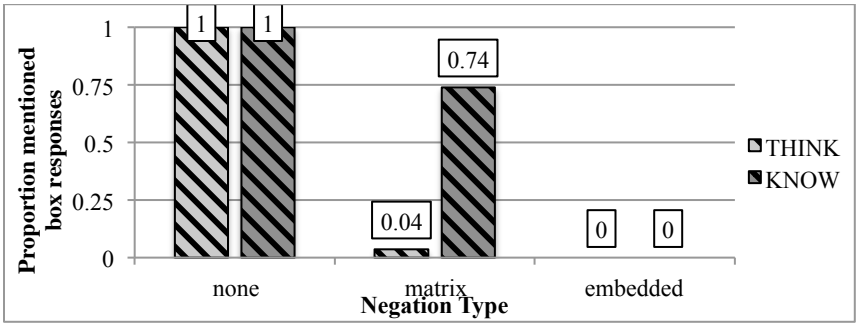

Figure 1: Adult performance

Child participants' performance (n=28) is given in Figure 2. Overall, children picked the mentioned box for affirmative *think* and *know* sentences. They picked the other box for *think* trials with matrix negation and well as for both *think* sentences with embedded negation and *know* sentences with

embedded negation. On *know* sentences with matrix negation, they picked the mentioned box about 40% of the time.

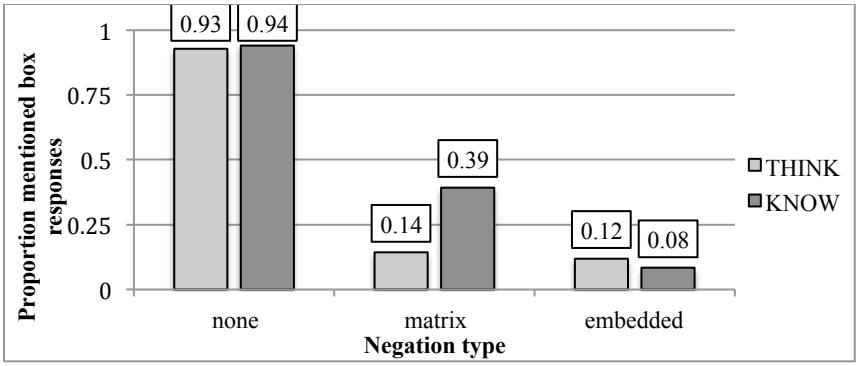

Figure 2: Three-year-olds' responses

For the three-year-olds' responses, 2x3 ANOVA revealed a significant main effect of verb-type ($F(1,21)=28, p<0.017$) and negation- type ($p<2.0e-16$) and a significant interaction between verb-type and negation-type ($p<.0072$). Planned comparisons revealed that children treat *think* sentences with matrix negation differently from *know* sentences with matrix negation ($p<.017$) and also that they treated *know* sentences with matrix negation differently from *know* sentences with embedded negation ($p<.0088$).

All child participants seemed to perform completely adult-like on *think* trials; both children and adults picked the mentioned box for affirmative *think* sentences but they pick the other box for both kinds of negative *think* sentences. Note that the neither the adult nor the child participants seemed to compute a quantity implicature from the use of both *think* and *know*; they always picked the mentioned box with affirmative *think* sentences. We take the apparent lack of implicature computation in this task to be due to the "clue" status of the utterance: participants do not necessarily assume that the speaker is going to make her contribution as informative as possible, but that she will provide just enough info to help them guess correctly. These data provide evidence against the Factive-*think* Hypothesis since our three-year-olds did not respond to *think* sentences as if they understood *think* to be a factive verb.

Children picked the same box as adults on *know* trials with no negation or embedded negation. Behavior differed on matrix negation trials, however, where adults almost always picked the mentioned box but children picked the mentioned box only about 40% of the time. An examination of individual performance on this measure suggests that this 40% is not due to chance performance. If all three-year-olds were guessing on these sentences, we would expect performance to be distributed normally around a mean accuracy of 50%. However, children's performance on *know* sentences with matrix negation is distributed *bimodally*, not normally around the mean, as it is in other conditions.

See Figure 3 for a measure of children's individual performance in the *know* matrix negation condition.

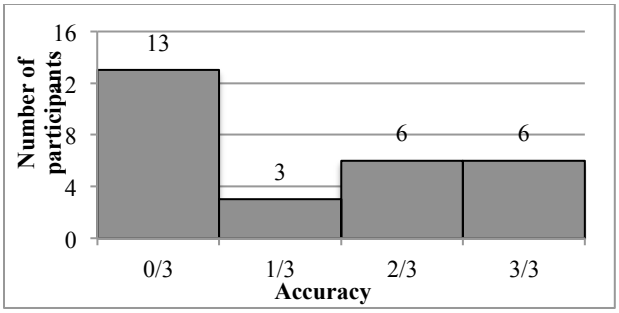

Figure 3: Individual accuracy on *know* with matrix negation for children

8. Discussion

Based on their significantly different responses to *think* and *know* sentences with matrix negation, our results show that three-year-olds are differentiating the factive verb *know* from the non-factive verb *think*,. These results conflict with previous findings that three-year-olds systematically failed to appropriately distinguish between these mental state verbs (Johnson & Maratsos 1977; Abbeduto & Rosenberg 1985), or were found to be at chance in distinguishing them (Moore and colleagues). We suspect, however, that the metalinguistic nature of previous tasks was to blame for children's poor performance and that our task is better able to assess three-year-olds' true understanding of the verbs and their (non-)factivity.

Three-year-olds' high accuracy in all *think* conditions indicates that they may have an adult-like understanding of *think* at an age where they are still failing false belief tasks. Given their performance on the *think* sentences with matrix negation, we can conclude that three-year-olds, just like adults, understand *think* to be non-factive. When they hear sentences like "Lambchop doesn't think that it's in the red box," they do not infer that the toy is in the red box (which would be the expected outcome under the hypothesis that young children treat *think* as a factive verb). This result would suggest that previous studies in which children failed to differentiate *know* and *think* could be due to extra pragmatic processing associated with the metalinguistic nature of tasks.

Our findings also suggest the need for a more sophisticated analysis of the developmental trajectory of verbs like *know*. Our results show that a factive understanding of *know* may emerge earlier than four years of age because some three-year-olds (43%) consistently behave like they have an adult-like understanding of *know*. However, other three-year-olds (57%) reliably treat *know* exactly like they treat *think*, namely as a non-factive. Our measure of individual performance suggests that the apparent chance performance of three-year-olds on certain *know* sentences results from averaging together the

performance of two groups: those with an adult-like *know* and those without it. Therefore, past studies that found three-years-olds to be at chance in *know* conditions, like the studies by Moore and colleagues, might have yielded similar results to ours if individual performance were examined as well.

To the extent that children's performance on our task is a direct reflection of their semantic representations for *know*, our data suggest that some children understand *know* to be factive by age three, and that others do not. But it is also entirely possible that even this simplified task is still obscuring three-year-olds' performance and that the failure of some to behave as if they understand *know* to be factive derives from an additional factor masking their knowledge. To enumerate them, the variability in children's performance on *know* could either be (i) due to differences in their representations of 'know': as a factive predicate for some, as a non-factive for others; (ii) because children have an adult-like semantics for *know* but they fail to accommodate the presupposition associated with *know* because it involves complex inference-making[1]; or (iii) because children have an adult-like semantics for *know* but fail to behave like adults for some task-dependent reason. The first possibility raises interesting questions both about how factivity is encoded in the target (*i.e.*, adult) representation of *know*, and about how children come to acquire it. How do learners determine that *think* and *know* are different in the relevant respect, namely that *know* is factive and *think* is not (which some seem to have done before their fourth birthday)?

9. Conclusion

Our data suggest that some children might begin to understand *know* in an adult-like way at an earlier age than the literature has indicated. The behavior of roughly half of our three-year-olds is consistent with an adult-like understanding of *know*. The other half, however, do not distinguish *think* and *know*, even under negation, effectively treating neither one as factive. Thus some children distinguish *think* and *know* before age 4, even when they still assume (by default) that *think* sentences report true beliefs. Moreover, we find no evidence that children build a factive representation for *think.* Still, our results suggest that children's early representations of *know* may be non-factive and raise the question of how children come to recognize that *know* is factive and *think* is not.

These results also have impacts outside of the literature on children's understanding of factivity. Our results, taken in concert with those of Lewis and colleagues, allow us to conclude that children's difficulties with *think* are not (i) conceptual, (ii) a result of ignoring the matrix verb, or (iii) due to a factive

[1] Consider the processing demands: the child hears clues without knowing the actual location of the toy. Upon hearing "LC doesn't know that it's in the red box", the child must notice the use of a factive verb in order infer that the speaker takes the complement for granted. Finally, the child must know that, as the toy-hider, the speaker is justified in taking it for granted. Only then can the child conclude that the toy must be in the red box.

understanding of *think*. Instead, we must conclude that children's difficulties are pragmatic in nature. Additionally, there are implications for work on children's theory of mind. It is a longstanding puzzle that infants seem to track other people's knowledge states but that explicit measures with preschoolers seem to find no evidence of this capacity. The fact that roughly half of our three-year-olds successfully treated *know* as factive suggests that there is more continuity between infants and preschoolers than the explicit measures indicate because it shows preschoolers can be sensitive to their interlocutors' knowledge and belief states in a linguistic task.

References

Abbeduto, Leonard, & Rosenberg, S. (1985). Children's knowledge of the presuppositions of know and other cognitive verbs. *Journal of Child Language*, *12*(3), 621-641.

Berger, Frauke, & Höhle, B. (2012). Restrictions on addition: Children's interpretation of the focus particles auch ('also') and nur ('only') in German. *Journal of Child Language*, 39, 383-410.

Chierchia, Gennaro, & MacConnell-Ginet, S. (2000). *Meaning and grammar: An introduction to semantics*. MIT press.

de Villiers, Jill G., & Pyers, J. E. (2002). Complements to cognition: A longitudinal study of the relationship between complex syntax and false-belief-understanding. *Cognitive Development*, *17*(1), 1037-1060.

de Villiers, Jill G. (1995) Questioning minds and answering machines. In D. MacLaughlin and Susan McEwen (eds) *Proceedings of the Boston University Conference on Language Development*. Cascadilla press.

de Villiers, Jill G. (2005). Can Language Acquisition Give Children a Point of View?. In *Why Language Matters for Theory of Mind, Apr, 2002*.

Diessel, Holger, & Tomasello, M. (2001). The acquisition of finite complement clauses in English: A corpus-based analysis. *Cognitive Linguistics*, *12*(2), 97-142.

Falmagne, Rachel Joffe, Gonsalves, J., & Bennett-Lau, S. (1994). Children's linguistic intuitions about factive presuppositions. *Cognitive Development*, *9*(1), 1-22.

Grice, Herbert Paul. (1975). Logic and conversation. *1975*, 41-58.

Halberda, Justin. "The development of a word-learning strategy." *Cognition* 87.1 (2003): B23-B34.

Hamburger, Henry, & Crain, S. (1982). Relative acquisition. *Language development*, *1*, 245-274.

Harris, Richard J. (1975). Children's comprehension of complex sentences. *Journal of Experimental Child Psychology 19*, 420-3.

Hooper, Joan. B. (1975). On Assertive Predicates. *Syntax and Semantics vol. 4*, ed. By James Kimball, 91-124.

Hopmann, Marita, & Maratsos, M. P. (1978). A developmental study of factivity and negation in complex syntax. *Journal of Child Language*, *5*(02), 295-309.

Hurewitz, Felicia, Brown-Schmidt, S., Thorpe, K., Gleitman, L. R., & Trueswell, J. C. (2000). One frog, two frog, red frog, blue frog: Factors affecting children's syntactic choices in production and comprehension. *Journal of Psycholinguistic Research*, *29*(6), 597-626.

Johnson, Carl Nils, & Maratsos, M. P. (1977). Early comprehension of mental verbs: Think and know. *Child Development*, 1743-1747.

Karttunen, Lauri. (1971). Some observations on factivity. *Research on Language & Social Interaction*, *4*(1), 55-69.

Kiparsky, Paul, & Kiparsky, C. (1970). *Fact*. Linguistics Club, Indiana University.

Léger, Catherine. (2007). The acquisition of two types of factive complements. In *Language Acquisition and Development: Proceedings of GALA* (pp. 337-347).

Lewis, Shevaun., Hacquard, V., & Lidz, J. (2013). The semantics and pragmatics of belief reports in preschoolers. In *Proceedings of SALT* (Vol. 22, pp. 247-267).

Lewis, Shevaun. (2013). *Pragmatic enrichment in language processing and development*. PhD dissertation, University of Maryland.

Macnamara, John, Baker, E., & Olson, C. L. (1976). Four-Year-Olds' Understanding of" Pretend"," Forget", and" Know": Evidence for Propositional Operations. *Child Development*, 62-70.

Moore, Chris, Bryant, D., & Furrow, D. (1989). Mental terms and the development of certainty. *Child Development*, 167-171.

Moore, Chris, & Davidge, J. (1989). The development of mental terms: Pragmatics or semantics. *Journal of Child Language*, *16*(03), 633-641.

Perner, Josef, Sprung, M., Zauner, P., & Haider, H. (2003). Want That is Understood Well before Say That, Think That, and False Belief: A Test of de Villiers's Linguistic Determinism on German–Speaking Children. *Child development*, *74*(1), 179-188.

Scoville, Richard P., & Gordon, A. M. (1980). Children's understanding of factive presuppositions: an experiment and a review. *Journal of Child Language*, *7*(02), 381-399.

Simons, Mandy. (2007). Observations on embedding verbs, evidentiality, and presupposition. *Lingua*, *117*(6), 1034-1056.

Sowalsky, Emily, Hacquard, V., & Roeper, T. (2009). Is PP Opacity on the Path to False Belief?. *Generative Approaches to Language Acquisition North America (GALANA)*, *3*, 263-261.

Syrett, Kristen, Kennedy, C., & Lidz, J. (2010). Meaning and context in children's understanding of gradable adjectives. *Journal of Semantics*, *27*(1), 1-35.

Tardif, Twila, & Wellman, H. M. (2000). Acquisition of mental state language in Mandarin-and Cantonese-speaking children. *Developmental Psychology*, *36*(1), 25.

Trueswell, John C., Sekerina, I., Hill, N. M., & Logrip, M. L. (1999). The kindergarten-path effect: Studying on-line sentence processing in young children. *Cognition*, *73*(2), 89-134.

Urmson, James Opie. (1952). IV.—Parenthetical verbs. *Mind*, *61*(244), 480-496.

Wellman, Henry M., Cross, D., & Watson, J. (2001). Meta‐analysis of theory‐of‐mind development: the truth about false belief. *Child development*, *72*(3), 655-684.