

FROM FALSE BELIEF TO FALSE ASCRIPTION¹

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1. Introduction

A growing body of literature has investigated whether the ability to contend with false belief (Wimmer and Perner 1983) is dependent upon the acquisition of the language that reports false beliefs (de Villiers, 2000, 2004, de Villiers and de Villiers 2000, de Villiers and Roeper (in prep)). de Villiers and her colleagues maintain that certain linguistic developments are precursors to a child's Theory of Mind. In particular, the linguistic representation of clausal complementation necessary for representing (false) beliefs has not developed in those children who fail standard false belief tasks (de Villiers and Pyers 2002).

Consider the scenario depicted in Fig. 1, where Big Bird (BB) believes that Cookie Monster (CM) is climbing the stairs, when in actuality Cookie Monster is eating a cookie. Now consider the sentence below in (1), an attitude ascription that reports Big Birds beliefs.

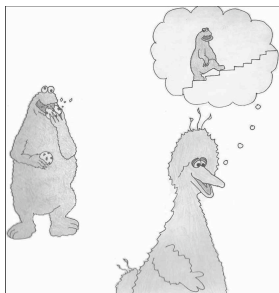


Fig. 1

(1) “BB is thinking that CM is eating, isn’t he?”

The report in (1) is false, of course, because the embedded clause offers a description of “reality”, not Big Bird’s (mistaken) thought. Children below the age of three, however, will accept (answer yes) to claims such as (1).

The defining characteristic of attitude ascriptions as in (1) is the fact that the clausal complement of *think* (and other attitudes) are evaluated not with respect to a “reality” but with respect to the beliefs of an attitude holder, who of course can be mistaken. The linguistic account of children’s incorrect answer to (1) posits that children have not yet acquired this aspect of attitude ascriptions, which allows that embedded proposition in (1) to be false (from our perspective) but true from the perspective of the Big Bird (see de Villiers 2003 for an account in terms of Point of View projections). Instead, the child may interpret (1) as saying that *A thinks about (the fact that) Cookie Monsters is eating*, which is of course true.

We support this line of research regarding the connection between the acquisition of constructions that report propositional attitudes and the development of theory of mind, but we think that there is another possible confound that tasks like that described in (1) present for a child. The sentence in (1) is simply false. It is, in our terminology, a false ascription. It ascribes to Big Bird a proposition that he does not bear a ‘thinking’ relation to. Of course, this should lead the child to reject (1), just as an adult would. And, as just discussed, the fact that children accept (1) suggests they are interpreting belief ascriptions differently. But there is another possibility: children may simply have difficulty when confronted with false ascriptions – no matter what their ability is when it comes to theory of mind.² Why, the child might ask, is the experimenter telling me something clearly false about a thinker? If, as we know, the child’s ability to take someone else’s perspective is a delicate business, then surely being confronted with a false-hood about such a scenario would add to the difficulty.

A hearer’s first response to an odd statement is often to exhibit incredulity, unsure of the origin of the oddness, not to assume a false statement. This is true for children as well as adults. Consider this dialogue of Adam at 2.4 years, which seems to involve a “strange belief” (2).

- (2) MOTHER: “go ask Cromer if he would like a cup of coffee.”
 CHILD: “le(t) me # have # cup of coffee?”
 MOTHER: “Cromer”

Did the mother (speaker) say something wrong or think something wrong (child drinks coffee)? In effect, the child comprehends that there is something wrong with the mother’s statement, but a whole panoply of

options then arises. What could it be? Was she joking, lying or teasing? Did the child mishear or was there an undetected ambiguity?

To tease apart the child's ability to accept that an intentional agent may have false beliefs (which is a question about theory of mind) from the child's ability to discriminate between truth or falsity of belief ascriptions themselves, we asked what children would do when faced with sentences that were false simply because they were false ascriptions (not because the embedded clause reported the 'reality'). Consider the scenario depicted in Fig. 2, showing Elmo thinking that Bert is eating.



Fig. 2

How will a child answer the question in (3), which is simply a false ascription?

- (3) “Elmo is thinking that Bert is jumping, isn’t he?”

If children fail tasks like (1) because they interpret the complement of think transparently (i.e. something like *A thought about q*, as described above) then we have no reason to expect children to have difficulty with (3). There is no reality present – they should respond that it is false to the same extent they can rule out any false statement. We will present some evidence that situations like Fig.2/(3) provide difficulty for a younger group of children. It would appear, then, that the mere ability to interpret the relation between a thinker and some thought, regardless of the truth or falsity of that thought, poses difficulties.

We further explore the role that false ascription plays in children's comprehension of belief reports by manipulating who a belief is ascribed to. For instance, in a scenario where no reality will guide the child's understanding of a belief ascription, we present two thinkers with separate beliefs, as in Fig. 3 and then ask the question in (4).



Fig. 3

- (4) “Ernie is thinking that Grover is swimming, isn’t he?”

The target sentence in (4) is a false ascription. It is false because it is not Ernie who thinks that Grover is swimming, but The Count. We will present evidence that even in these cases, younger children have difficulty answering correctly. It seems that children have difficulty with false ascriptions in general.

We will offer some speculation as to why children, when confronted with false ascriptions, are willing to accept them. However, our primary goal in this paper is to demonstrate that there may be many sources for children's failure on certain tasks that involve belief-attribution. We certainly do think, along with de Villiers and others, that one source of the problem is that children at around three and below cannot (linguistically) represent the false beliefs of others, and are therefore willing to accept false ascriptions as long as the embedded clause describes the reality being thought about. However, we think our preliminary results show that children also have trouble with the basic concept of false ascriptions –i.e. being able to confidently reject sentences that are false because they do not correctly ascribe a belief to someone (regardless of whether the belief ascribed is true or false).

2. The Experiment

The notion of false ascription articulates the domain where the act of assertion is in error. The concept itself can be broken down into two parts: ascription and falsehood. Can we show that children understand what it means to ascribe something to another person independent of the truth of the proposition? As seen in the examples above, our experiment contained a number of environments in which we manipulated three variables: the thinker, the thought bubble and reality. In addition, there was really a

fourth variable, the speaker/experimenter, who is implicitly the subject of a false ascription. It is in fact the experimenter whose statement a child then must evaluate.

The pictures varied in two dimensions: the number of thinkers and the presence of reality. Items varied on whether they had (a) one or two thinkers, (b) the presence or absence of a reality-situation. This included pictures of the types in Figures 1-3 above as well as the more complex picture below in Figure 4.

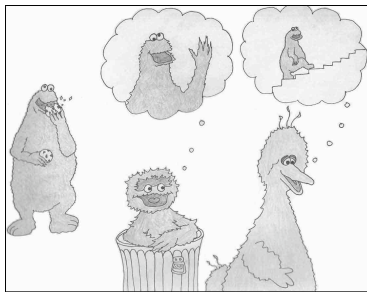


Fig. 4

In addition to manipulating the above factors, we also manipulated whether the question/statement presented to the child was true or false, and if false, we manipulated *how* it was false. Children were presented with sentences that contained an embedded clause with a tag question at the end (5).

- (5) “BB is thinking that CM is waving, isn’t he?”

All sentences were of this form. For simplicity, all embedded clauses contained an intransitive verb. Table 1 illustrates the type of items heard by subjects. The number following the description tells how many of each type were presented to the subject.

Picture	Prompt Type			
	Embed			Embed
1 thinker (Fig. 2)	matches thought -1-			matches nothing -3-
2 thinkers (Fig. 3)	Embed matches thought -1-		Embed matches wrong thought -3-	
1 thinker 1 reality (Fig. 1)	Embed matches thought -3-	Embed matches reality -3-		
2 thinkers 1 reality (Fig. 4)	Embed matches thought -1-	Embed matches reality -3-	Embed matches wrong thought -3-	

Table 1: Picture and prompt types.

By Manipulating the truth of the target sentence and to what the erroneous embedded clause referred we created nine item types (see Table 2).

2.1 Subjects

This study included 26 children. These children were split into two groups, younger and older. The younger group consisted of 15 children aged 2;11-3;9, mean age 3;4. The older group consisted of 11 children age 3;10-5;3, mean age 4;6.

2.2 Method

We used a standard Truth Value Judgment task. Children were introduced to a puppet who looked at each picture with the child and spoke the target sentence. The child was then asked to judge whether the puppet was right or wrong. The puppet would then ask the child to explain why he got it right or wrong. There were 24 experimental items. Before these items were introduced, each subject underwent a pretest, which established whether the child could recognize the characters.³ Each subject was then given eight more pretest items that ensured that he understood the role of the thought bubbles and to whom each thought bubble corresponded. These items also ensured that the child could manage simple sentences

with tag questions. Only then was the child presented with the 24 experimental items in one of two randomized versions.

2.3 Results

Table 2 shows the percentage correct for each age group. Target-NO items were of three types. For T1, the embedded clause did not match the picture in the thought bubble. For T3 and T7 the embedded clause matched the wrong thought bubble. For T5 and T9 the embedded clause matched the reality.

Item Type	Item type description	Younger Group % correct	Older Group % correct
T1	1 thinker = NO	78.57%	100.00%
T2	1 thinker = YES	100.00%	100.00%
T3	2 thinkers = NO	54.76%	96.67%
T4	2 thinkers = YES	85.71%	100.00%
T5	1 thinker, 1 reality = NO	69.05%	93.33%
T6	1 thinker, 1 reality = YES	81.40%	96.67%
T7	2 thinkers, 1 reality = NO	46.34%	96.43%
T8	2 thinkers, 1 reality = YES	85.71%	100.00%
T9	2 thinkers, 1 reality = NO	56.67%	100.00%

Table 2: Percentage of Correct answers⁴

2.4 Discussion

The older group was able to comprehend false ascription and false belief with no difficulty, giving virtually perfect responses for every item. As for the younger group, we draw the reader's attention to the results for items T1 and T3. (These correspond to the descriptions given in Fig. 2/(3) and Fig. 3/(4) above.) These are false ascriptions. In order to reject T1, the child need only recognize that the embedded clause does not characterize

the attitude holder's thoughts (without the presence of a reality). However, the younger group had more difficulty than the older children in rejecting these statements (NO: younger 78%, older 100%). These children also did worse on T1 than in cases where the embedded clause matched the thought bubble (a true ascription, T2).

Perhaps more strikingly, the false ascriptions in T3 – which were false because the attitude holder and the embedded clause were mismatched – were correctly rejected only 54% of the time by the younger children (compare: 96% correct for the older group). Hence children have difficulty with false ascription, not just false beliefs.

We do not, at this time make any strong claims about items T7 and T9, which use the same picture type but different target sentence. These pictures contain both two thinkers and a reality. T7 (like T3) requires the subject to distinguish between two thinkers, T9 (like T5) between thought and reality. We included these items to investigate the interaction of all variables involved in the experiment. There is no obvious grammatical explanation here for the greater difficulty on these items. It is possible that children employ a pragmatic strategy that allows them to ignore the upper clause scope of the tag-question and allow it to operate instead on the lower clause. It is not unlike a dialogue of the kind in (6).

- (6) “Mary said the store is open, didn’t she?”
 “Yes, it is.”

Additionally, all of the characters in our pictures were male. The “isn’t he” could pragmatically (but not syntactically) refer to either clause (7).

- (7) “Ernie is thinking that Bert is waving, isn’t he”

If children maintain several grammars, one of which is their earlier grammar, and if initial subordinators are treated as adjuncts (Diessel 2004), then under an adjunct interpretation, the tag question should apply to the lower clause. The child may allow for this grammatical option based on a pragmatic decision regarding what they think the experimenter is “really” asking. However, if children were creating a pragmatic environment where they could just judge the truth of the embedded clause we would expect a number of behaviors not seen in this experiment, such as correctly rejecting T1 100% of the time, 100% correct on yes items, and worse performance on reality items (or at least similar performance on any item where an image matching the embedded clause was represented somewhere in the picture). This is not the pattern that we see emerging.

How else can we account for this data? We note that there are simple introducers of complements that are compatible with false statements (e.g. “to” and “for”). In English one can state a proposition about the minds of others that does not entail that those minds contain that explicit proposition. One might say (8) of a toddler who falls asleep before Sesame Street without believing that the toddler entertains that explicit proposition.

(8) “To Mary, Sesame St is boring.”

We suggest that there are many ways in which a proposition can be false and still linked to a particular thinker, without it being a false belief. It may be that all of these options are implicitly present in the child who detects something “wrong” with a proposition, but is reluctant to attribute a false belief to someone.

We certainly do think, along with many authors (e.g. de Villiers), that one source of the problem has its roots in theory of mind development—an account which suggests that younger children cannot represent false beliefs of others and are therefore willing to accept false ascriptions as long as the embedded clause describes the reality being thought about. However, we think our preliminary results show that children also have trouble with false ascriptions in the first place. They cannot confidently reject sentences that are simply false because they do not correctly ascribe a belief to someone (regardless of whether the ascribed belief is true or false). The results of this experiment demonstrate that there may be many sources for children's failure on certain tasks that involve belief-attribution and that these sources should be part of the broader discussion of false belief acquisition.

Notes

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² de Villiers and Pyers (2002) give evidence that children are able to hold the grammatical representations of embedded structures in memory; for instance, they can compute *wh*-trace dependencies across them. We do not know yet whether the

children who fail our ‘false ascription’ task simply have not mastered the syntactic relation that holds between the subject of a belief-ascription and the complement clause.

³ For children unfamiliar with the characters in Sesame Street, new names were created based on the color of each character in the picture (e.g. “the orange guy” for “Ernie”).

⁴ For items of type T7, the embedded clause matches the thought of the wrong thinker. For items of type T9, the embedded clause matches reality.

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