Acquisition of Belief Reports by Mandarin-Speaking Children

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1. Introduction

   Preschoolers have long been reported to have non-adult-like interpretations of belief verbs like *think.* They seem to assume that *think* only reports true beliefs and reject *think*-sentences when the complement clause is false but the whole sentence is true (Wellman et al. 2001 a.o.). For example, in a scenario where it's sunny outside but Taoqi thinks it's raining, children tend to judge (1b) as false.

 (1) a. Scenario:

   b. Taoqi thinks it's raining outside.

   Children's non-adult-like interpretation of belief verbs is traditionally taken to reflect conceptual difficulty with the underlying belief concept (Wimmer & Perner 1983 among many others). This **conceptual hypothesis** argues that because children cannot attribute false beliefs to others, they cannot interpret *think* correctly when it reports a false belief. However, Lewis et al. (2017) argue that this non-adult-like interpretation might not be a conceptual problem but a pragmatic one. In English, speakers can use *think* to discuss someone's belief, in which case the speaker meaning is simply the sentence meaning, as illustrated in (2). But speakers can also use *think* to add the content of someone's belief to the conversation, as shown in the conversation in (3), in which case the speaker meaning goes beyond the literal meaning, and consists of an indirect proffering

of the embedded clause. We will refer to such uses as the "parenthetical use" (Urmson 1952, Simons 2007 among others).

(2) A: Why is Taoqi carrying an umbrella?
    B: He thinks it's raining.   *Literal Use*
(3) A: What's the weather like outside?
    B: I think it's raining.   *Parenthetical Use*

According to this **pragmatic hypothesis,** children's rejection of sentences like (1b) results from them over-assuming the parenthetical use of *think,* which are frequent in adult speech. In support of this hypothesis, Lewis et al. (2017) show that three-year olds' performance improves significantly in contexts where parenthetical uses are blocked, and beliefs are made salient.

In this study we explore whether the same manipulations employed in Lewis et al. (2017) can help Mandarin-speaking three-year-olds with the belief verb *juede* "think." Do Mandarin-speaking children make similar false belief errors as their English-speaking peers with a belief verb like *juede,* and can the same contextual manipulation proposed by Lewis et al. help them with belief verbs like *juede*? English *think* is relatively frequent in children's input, and it is often used in a parenthetical way, as a way to hedge assertions (e.g., *I think it's raining,* Dudley 2017, Diessel & Tomassello 2001 among others). Comparatively, Mandarin *juede* is infrequent (Huang et al. 2018), and while parenthetical uses are possible, hedges tend to be made through other means in Mandarin, e.g., with sentence final particle *ba* (*xiayu le ba* "It's raining"). If children's tendency to over-assume parenthetical uses is primarily driven by frequency, we might expect Mandarin-speaking children to be less prone to false belief errors with *juede* than their English-speaking peers with *think*. On the other hand, Mandarin has a dedicated verb for false belief, *yiwei*, which might make it even more difficult to override an assumption that when the neutral belief verb *juede* is used, the speaker endorses the reported belief. The existence of *yiwei* could lead Mandarin-learning children to perform worse than English-learning children.

In this project, Experiment 1 investigates whether children can reject a false *juede* sentence based on a false literal meaning, and Experiment 2, whether children can accept a (true) *think* sentence reporting a false belief in conflicting beliefs scenarios. We find that these two manipulations help Mandarin-speaking children, but the effect is muted compared to English-speaking children. Additionally, we find that Mandarin-speaking adults make similar false belief "errors" as English-speaking children, but overcome them with the contextual manipulation, providing further evidence against the conceptual hypothesis.

2. Background

The Mandarin belief verb *juede* "think" can be used in the same way as English *think*. The conversation in (4) illustrates the literal use of *juede* and (5), its parenthetical use.

(4) A: Why is Taoqi carrying an umbrella?
    B: Taoqi juede waimian xiayu le.
       Taoqi think outside rain   ASP
      "Taoqi thinks it's raining outside."   *Literal Use*
(5) A: What's the weather like?
    B: Wo juede waimian xiayu le.
       I   think outside   rain ASP
      "I thinks it's raining outside."   *Parenthetical Use*

Different from English, Mandarin has a belief verb that is only appropriate for reporting false beliefs, *yiwei:*

(6) Taoqi yiwei   waimian xiayu le.
    Taoqi falsely belief outside rain   asp
    "Taoqi falsely believes that it's raining outside."

While *juede* is neutral and can be used to report both true and false beliefs, it is infelicitous to use *yiwei* to report true beliefs:

(7) Taoqi juede waimian meiyou   xiayu,   ta shi duide.
    Taoqi think outside not   rain   he is right
    "Taoqi thinks it's not raining outside, and he's right."
(8) Taoqi yiwei   waimian meiyou xiayu,   #ta shi duide.
    Taoqi falsely believe outside not   rain   he is right
    (intended) "Taoqi falsely believes that it's not raining outside, and he's right"

In (7), when the speaker uses *juede* to report Taoqi's beliefs, the follow-up *he's right* is acceptable. In contrast, when the speaker uses *yiwei* to report Taoqi's belief, as in (8), it is infelicitous to add *he's right.*

Previous research on Mandarin belief reports show that Mandarin-speaking 3-year-olds have similar problems with *think*-like verbs as English-speaking children do with *think* (Lee et al. 1999)*,* and their performance improves as well after four years old (Tardif & Wellman 2000). However, three-year-olds seem to have adult-like understanding of *yiwei* in false belief scenarios (Lee et al. 1999). However, as Lee et al.'s experiment only tests children's understanding of *xiang* "think/want" in false belief scenarios, children's difficulty with *xiang* is also blamed on conceptual difficulty. But here again, the pragmatic hypothesis is consistent with the results as well.[2] Our study examined children's understanding

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[2] Another problem with *xiang* is that the verb is ambiguous between "want" and "think." Some native speakers we consulted did not accept *xiang* as a clause-embedding verb and judged the prompt sentences in Lee et al. (1999) as unacceptable. When using *xiang* to mean "think," some speakers can only accept the verb used as a parenthetical:

(i) Waimian xiayu le,   Taoqi xiang.

of *juede* "think," and manipulated the contextual information to help children access the literal use of this belief verb.

3. Experiment 1: Sentence truth

This experiment is adapted from Experiment 2 of Lewis et al. 2017. We employ a Truth-Value Judgment Task (TVJT) to test three-year-olds' understanding of *juede* "think." While both the conceptual and pragmatic hypothesis predict that children will reject *think*-sentences when the attitude holder has a false belief, as illustrated by (1), their predictions differ when the literal meaning of the sentence is false, but the complement clause is true:

(9) Taoqi thinks it's sunny outside.

In (9), the whole sentence is false, as Taoqi does not believe that it's sunny outside, but the complement clause is true. The conceptual hypothesis predicts that children should still have non-adult-like interpretation for sentences like (9), because they cannot attribute false beliefs to other people like Taoqi: given that the reported belief is true (it is sunny outside), children should accept a sentence like (9) in such a scenario. However, the pragmatic hypothesis predicts that children should behave like adults- and reject (9): under this view, children have access to the literal meaning of *think*, and should reject (9) based on its false literal meaning. Lewis et al. (2017) shows that the prediction is borne out for English speaking three year olds. Our experiment tests whether Mandarin three-year-olds can similarly reject a false *juede (think)* sentence.

3.1. Methods
3.1.1. Design

We manipulated two factors in this experiment: the truth/falsity of the sentence, and the truth/falsity of the embedded clause, both as within-subject factors. In total, we have (2*2=) 4 conditions, with 4 trials in each condition. All testing sentences took the same form as (10).[3] Table 1 shows the sample test sentences translated to English in each condition.

Outside rain ASP,   Taoqi think
"It's raining outside, Taoqi thinks."

If this is the case, then it is not surprising that children over-assume the parenthetical use of *think*-like verbs in the task and appear to make false belief errors, which is exactly what the pragmatic hypothesis would predict. Our experiment therefore uses *juede,* which can be used as a clause-embedding verb and has both a literal use and parenthetical use, like English *think*.

[3] Different from Lewis et al. (2017), we did not manipulate the knowledge of the participant, so in all of our stories, the true location of the hider is revealed.

(10) Chaoren   juede   bianfuxia   zai   chuanglian   houmian
Superman   think   Batman   at   curtain   behind
"Superman thinks Batman is behind the curtain."

Table 1. Test sentences in each condition

	Sentence True	**Sentence False**
Complement True	Batman thinks Superman is behind the bush	Superman thinks Batman is under the bed
Complement False	Superman thinks Batman is behind the curtain **(False belief condition)**	Batman thinks Superman is behind the fence

3.1.2. Materials

During testing phase, children listened to stories about a game of hide-and-seek. The stories follow the same template:

Two friends decide to play hide-and-seek (Superman and Batman in this case, Fig.1). Batman is going to hide (Fig. 2). Look! He went under the bed (Fig. 3). Oops, we can still see his boots! Meanwhile, a fox comes in and it goes behind the curtain (Fig. 4). Now, we can see one pair of boots behind the curtain and one pair under the bed (Fig. 5). Ok, Superman comes in looking for Batman (Fig. 6): "Hm, I see a pair of boots behind the curtain. Aha! Batman, I found you! You are behind the curtain!"
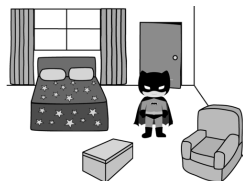

Fig 1. Introducing the hider and the seeker
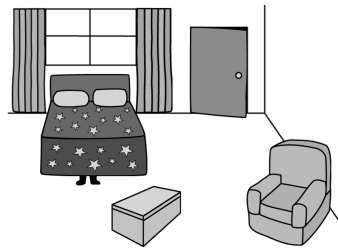
Fig 2. The Hider (Batman) enters the room
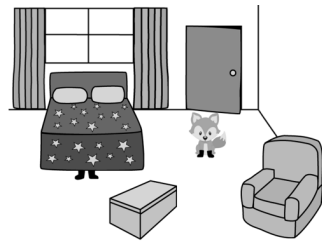
Fig 3. The Hider hides
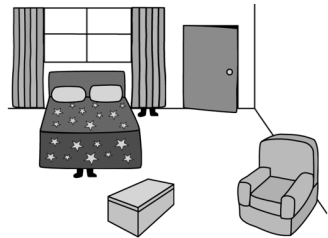

Fig 4. A distractor comes in
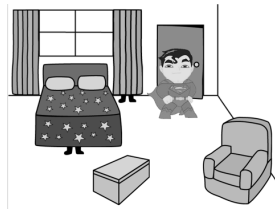

Fig 5. Ready for the Seeker

Fig 6. The Seeker looks for the hider (false-belief scenario)

In half of the stories, the seeker finds the hider in the correct location (the true-belief scenario, Fig.7), in the other half of the stories the seeker looks for the hider in the wrong location (Fig.8).
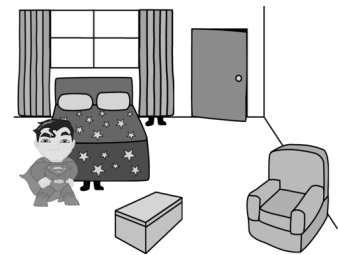

Fig 7. True-belief scenario: Batman hides under the bed, and Superman looks for Batman under the bed (correct location)
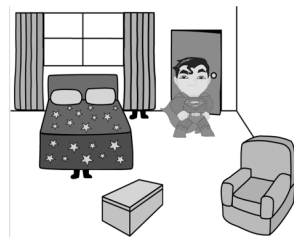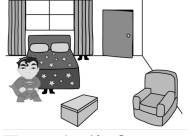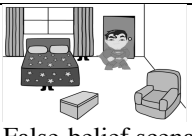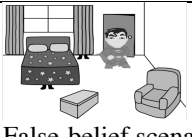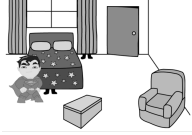

Fig 8. False-belief scenario: Batman hides under the bed, Superman looks for Batman behind the curtain (wrong location)

Table 2 illustrates the sample sentences and corresponding scenario in each of the 4 test conditions. In the SENTENCE TRUE COMPLEMENT TRUE condition, the seeker correctly finds the hider. In the SENTENCE FALSE COMPLEMENT FALSE condition, Superman does not look for Batman behind the curtain so the whole sentence is false; additionally, Batman does not hide behind the curtain, so the complement clause *Batman is behind the curtain* is also false. In the SENTENCE TRUE COMPLEMENT FALSE CONDITION (i.e., the **false belief condition**), the

sentence as a whole is true since Superman does look for Batman behind the curtain, but the complement *Batman is behind the curtain* is false, since Batman does not hide behind the curtain. Lastly, in the SENTENCE FALSE COMPLEMENT TRUE condition, Superman doesn't look for Batman under the bed, so the sentence is false, but since Batman is under the bed so the complement clause is true.[4]

Table 2. Sample sentences and the matching scenario in the 4 conditions

Sentence Truth	Complement Truth	Sample sentence	Scenario
TRUE	TRUE	*Superman thinks Batman is under the bed*	True-belief scenario
TRUE	FALSE	*Superman thinks Batman is behind the curtain* **(False-belief condition)**	False-belief scenario
FALSE	TRUE	*Superman thinks Batman is under the bed*	False-belief scenario
FALSE	FALSE	*Superman thinks Batman is behind the curtain*	True-belief scenario

In addition to the 16 testing sentences, children also heard 16 filler sentences, like the example in (11) and (12), to balance the number of "yes" and "no" responses. None of the filler sentences involved belief.

(11) Chuanglian   houmian   you   yi-zhi   xiaohuli.
     Curtain   behind   have   one-CL fox
     "There's a fox behind the curtain."   *True Filler*
(12) Chuang   dixia   you   yi-zhi   xiaohuli.
     Bed   under   have   one-CL fox
     "There's a fox under the bed."   *False Filler*

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[4] Each type of scenario (true-belief/false-belief) was associated with two distinct stories with different characters and hiding places. Each participant therefore saw each set of characters in only one scenario.

3.1.3. Procedure

Sessions took place in a relatively quiet space with the participant seated in front of a laptop next to the experimenter.[5] The experimenter started a session by telling the child that they were going to listen to some stories with a boy on the computer screen, who introduced himself as Taoqi. The experimenter then told the child that Taoqi sometimes could get things wrong, and they would need to teach Taoqi what's right and what's wrong. At the end of each story, Taoqi would make some comments, and the child was asked to help Taoqi by telling him whether his comments were right or wrong. To ensure that the child was comfortable telling Taoqi whether he was right or wrong, the experimenter first asked Taoqi to label some objects, and prompted the child to teach Taoqi whether he was right or wrong.

In each trial, the child watched the hide-and-seek stories with Taoqi. After each story, Taoqi uttered the target sentence. The sentences were prerecorded by a male native speaker of Beijing Mandarin, so that the prosody of the sentences was consistent for every child. The experimenter prompted the child to judge the sentence by asking, *Is Taoqi right?* After children responded to Taoqi, the experimenter reacted to the child's response by giving feedback to Taoqi*: Good job, Taoqi, that's right!* Or *Sorry Taoqi, you'll get it right next time!* After Taoqi delivered two sentences (one test and one filler), the location of the hider was revealed: *Ah look, here's Batman!* After each story, the child was given a stamp to keep them attentive.

During practice, Taoqi's sentences were similar to filler sentences and did not involve beliefs. Additionally, the experimenter provided feedback if the child responded incorrectly. After the practice trials, the experimenter did not provide feedback.

3.1.4. Participants

45 children (aged 3;2-4;2, mean 3;8) and 32 adults (aged 22-44, mean 33 years old) were recruited for the experiment. Among the 45 children, 9 were excluded from analysis due to inability to produce both "yes" and "no" responses during practice; 2 were excluded due to unintelligible responses; 2 due to video camera malfunction. No child was eliminated due to low filler accuracy (lower than 60%). In total, 32 children were included in the final analysis.

3.2. Predictions

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[5] Adults and children were tested in the same way, except adults entered their own responses directly using the laptop's keyboard while for children, the experimenter entered their responses on the keyboard.

If children respond solely to the literal meaning of *juede* sentences and do not commit false belief errors, then they should accept the test sentence when the whole sentence is true, regardless of whether the complement is true.

If three-year-olds have access to the literal use of *juede* sentences, but over-assume parenthetical uses as predicted by the pragmatic hypothesis, they should be prone to false belief errors, and reject the sentence in the SENTENCE TRUE COMPLEMENT FALSE CONDITION. However, we should see a main effect of sentence truth: children should be prone to false belief errors when the sentence is true, but they should *reject* the sentence when it is false, based on its false literal meaning, regardless of complement truth.

If as the conceptual hypothesis predicts, 3-year-olds do not have access to the literal meaning of *juede,* and cannot attribute false beliefs, we should not see a main effect of sentence truth: children should accept or reject sentences based on the truth of the complement.

3.3. Results

Children's responses were coded in real time by the experimenter and again from the video recording by a second coder. The two coders agreed on all but 4 trials (0.007% of all trials). After re-watching the videos, children's responses in these 4 trials were considered irrelevant to the task and were removed from the analysis. An additional 6 trials were eliminated due to low intelligibility. In total, 512 trials from 32 adults and 502 trials from 32 children were included in the final analysis. Fig. 9 summaries the proportion of "yes" responses.
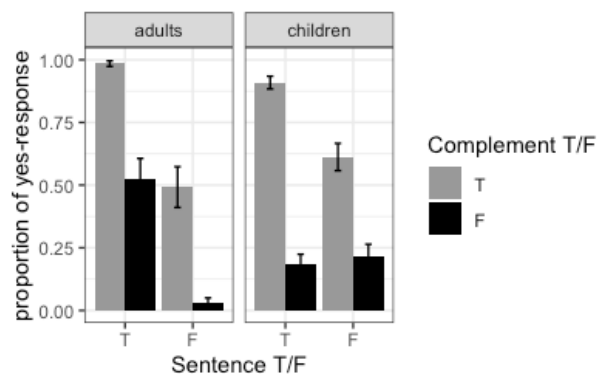
Fig 9. The proportion of "yes" responses in Experiment 1

As seen in the figure, both adults and children made apparent false belief errors, and rejected the sentence in the false belief condition (SENTENCE TRUE COMPLEMENT FALSE CONDITION); adults rejected the sentence around 50% of the time, but children consistently rejected the sentence. Additionally, although children still accepted the sentence in SENTENCE FALSE COMPLEMENT TRUE

condition about 50% of the time, the proportion of "yes" responses is reduced in the two SENTENCE FALSE conditions for both children and adults.

A mixed-effect logistic regression model with SENTENCE TRUTH/FALSITY, COMPLEMENT TRUTH/FALSITY, and AGE GROUP (adults vs. children) as fixed factors and participant and test sentence as random factors revealed a main effect of SENTENCE TRUTH (B = 3.46, $p < 0.001$) and COMPLEMENT TRUTH (B = 3.58, $p < 0.001$), and no interaction between the two (B = 0.64, $p = 0.47$), suggesting that (1) both children and adults were susceptible to complement truth and both committed false belief errors, but (2) they were also sensitive to the literal meaning of the sentence and were less likely to accept the sentence when it was false. There was also a main effect of AGE (B = 1.5, $p = 0.04$), an interaction between AGE and SENTENCE TRUTH (B = -3.37, $p < 0.001$), and an interaction between AGE and COMPLEMENT TRUTH (B = -1.63, $p = 0.07$), but no three-way interaction of the three factors (B = 1.4, $p > 0.1$), which suggests that children were more likely to make false belief errors than adults, and the sentence truth manipulation helped adults more than children to respond to the literal meaning of *juede.*

3.4. Interim Discussion

Our results suggest that both adults and 3-year-olds make apparent false-belief errors. Given that adults have mature conceptual systems, these results can't be blamed on an inability to attribute false beliefs, and thus lend further support to the pragmatic over the conceptual hypothesis. Additionally, we see a main effect of sentence truth/falsity: when the literal meaning of the sentence is false, 3-year-olds can reject *juede*-sentences like adults. However, compared to the results reported in Lewis et al. (2017) for English speaking children, the effect is muted. In Experiment 2, we made beliefs more salient in the stories, to see if this pragmatic manipulation can help children interpret *juede*-sentences like adults.

4. Experiment 2: Salience of belief

As mentioned above, *juede* can have two types of uses in conversation, the literal use, where the main point of a *juede*-sentence is on someone's belief (4), or the parenthetical use, where the focus is on the complement clause (5). But when *juede* is used to report conflicting beliefs, the subject's belief is made more salient as in (13), and the parenthetical use of *juede* is less likely.

(13) Taoqi juede waimian xiayu   le,   Xiaoxiao juede mei xia.
     Taoqi think outside raining ASP   Xiaoxiao think not rain
     "Taoqi thinks it's raining outside, but Xiaoxiao thinks not."

Lewis et al. (2017) have shown that when beliefs are made more salient in this way, children can overcome false belief errors and respond to the literal use

of *think*. This experiment adopts a similar design as Experiment 1 of Lewis et al. (2017), to test Mandarin 3-year-olds' knowledge of *juede*.[6]

4.1. Methods
4.1.1. Participants

47 children (3;2-4;2, mean 3;8) and 32 adults (18-42, mean 24 years old) were recruited for the experiment. Among the 47 children, 12 were excluded from analysis due to inability to produce both "yes" and "no" responses during practice; 2 was excluded due to video camera malfunction, 1 due to high filler rate (over 60%). In total, 32 children were included in the final analysis.

4.1.2. Design, material, and procedure

This experiment adopts a similar design as Experiment 1, manipulating matrix and embedded truth/falsity (2*2) as within-subject factors, with 3 trials in each condition. [7] Test and filler sentences were same as Experiment 1.

In this experiment, the hide-and-seek stories involve two seekers rather than one: three friends decided to play hide-and-seek (Superman, Spiderman, and Batman). As in the story in Experiment 1, Batman hides under the bed and Superman comes in, looking for Batman behind the curtain (Fig. 10). But a second seeker, Spiderman, also looks for Batman (Fig.11): "I see a pair of boots under the bed, Batman, you are under the bed!" With two seekers having conflicting beliefs, the question of who believes what becomes salient.
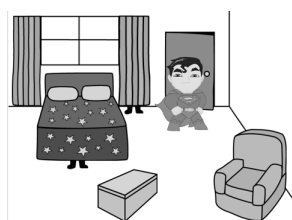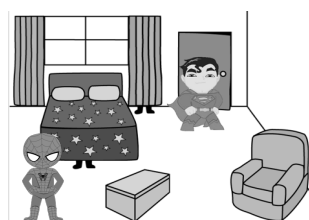
Fig 10. Seeker 1 (wrong location)   **Fig 11. Seeker 2 (right location)**

4.2. Predictions

If children respond solely to the literal use of *juede*, then they should accept the test sentence when the whole sentence is true, and make no false belief errors.

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[6] Different from Experiment 1 from Lewis et al. (2017), this current experiment did not manipulate the knowledge of participants, namely the true location of the hider is always shown.

[7] The stories in this experiment were longer than in Experiment 1, so we had to cut down the number of stories to keep the task under 25 min. In pilot, we tried to have 16 stories during the test phase, and younger children were not able to finish the task.

If three-year-olds have access to the literal use, but their false belief errors are due to their rejecting a parenthetical use, they should still make false belief errors, when the sentence is true, but they should reject a false sentence, regardless of complement truth, as predicted by the pragmatic hypothesis,. Additionally, if we compare children's behavior with 1 seeker stories and 2 seekers stories, we should see fewer false belief errors in 2-seeker stories, when the relevance of belief is highlighted. If as the conceptual hypothesis predicts, 3-year-olds do not have access to the literal meaning of *juede,* we should not see a main effect of sentence truth, and no improvement in 2-seeker stories.

4.3. Results

The data was coded in the same way as Experiment 1; 2 trials from children were excluded due to the unintelligibility of their responses; the two coders agree on all but 7 trials (0.01% of the total trials), all of which were responses irrelevant to the task. In total, 384 trials from 32 adults and 375 trials from 32 children were included in the final analysis. Fig. 12 summaries the proportion of "yes" responses given by children and adults in Experiment 2. Children's filler accuracy rates were above 60%.
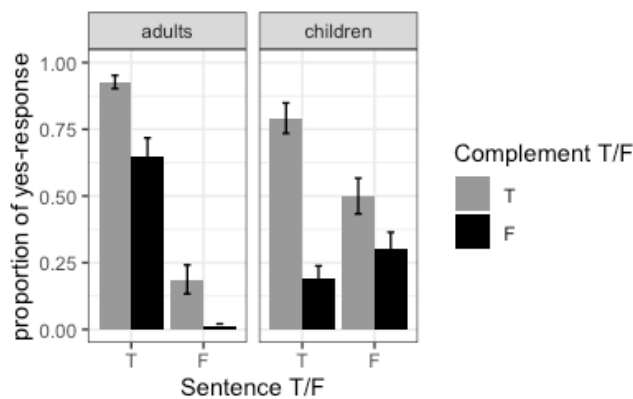

Fig 12 The proportion of "yes" responses in Experiment 2

As shown in the figure, as belief was made salient in the stories, adults were much less prone to false belief errors and tended to accept the test sentences in the SENTENCE TRUE COMPLEMENT FALSE condition. However, this manipulation did not seem to help children, as they were still more likely to reject the sentence in false belief scenarios.

A mixed-effect logistic regression model with SENTENCE TRUTH/FALSITY, COMPLEMENT TRUTH/FALSITY, AND AGE GROUP (adults vs. children) as fixed factors and participant and test sentence as random factors revealed a main effect of SENTENCE TRUTH (B = 5.2, p < 0.001) and COMPLEMENT TRUTH (B = 3.12, p < 0.01), and no interaction between the two (B = -1.12, p > 0.1), suggesting that

even with the 2-seeker manipulation, both children and adults still committed false belief errors, but again they were also sensitive to the literal meaning of the sentence. However, adults differed from children, as there was a main effect of AGE (B = 1.14, p < 0.001), an interaction between AGE and SENTENCE TRUTH (B = -5.9, p < 0.001), AGE and COMPLEMENT TRUTH (B = -2.1, p = 0.04), AGE, SENTENCE, and COMPLEMENT TRUTH (B = 3.2, p < 0.001): children were more likely to make false belief errors than adults, and the sentence truth manipulation helped adults more than children to respond to the literal meaning of *juede.*

Since the target sentences and intended responses were identical in Experiments 1 and 2, the results can be compared directly. An analysis with a mixed effects logistic regression model with SENTENCE TRUTH/FALSITY, COMPLEMENT TRUTH/FALSITY, NUMBER OF SEEKERS (1 VS. 2), and AGE GROUP (adults vs. children) as fixed factors and participant and test sentence as random factors showed a main effect of SENTENCE TRUTH (B = 4.34, p < 0.01), COMPLEMENT TRUTH (B = 3.72, p < 0.05), and NUMBER OF SEEKERS (B = -1.43, p < 0.001), suggesting that both the sentence truth/falsity manipulation and the saliency of belief manipulation worked. There is no main effect of AGE (B = - 0.49, p > 0.1), but there is an interaction between AGE and NUMBER OF SEEKERS (B = 0.99, p = 0.01). None of the other interactions was significant. This suggests that for adults, adding another seeker pushed them toward the literal interpretation, but there is no difference in children's performance. Adults were able to overcome parenthetical uses of *juede* when beliefs were made salient, but children could not.

4.4. Interim discussion

In this experiment, we tested whether children could overcome the parenthetical use of *juede* when beliefs were made salient in a scenario. Our results suggest that while adults were able to access the literal use of *juede* in scenarios where two seekers have contradicting beliefs, children still fell prey to false belief errors. These results differ from results with *think* as reported by Lewis et al. (2017). While raising the saliency of belief helped English-speaking children, it failed to help Mandarin-speaking children with *juede*.

5. Discussion

In this study, we examined three-year-olds' understanding of the Mandarin belief verb *juede*. We found that Mandarin-speaking adults and children were both prone to false belief errors. Given that adults have a mature conceptual system, our results lend further support to the pragmatic over the conceptual hypothesis. Additionally, when the literal meaning of the sentence was false, both children and adults were able reject the sentence, as the pragmatic hypothesis predicts. Moreover, increasing the relevance of belief helped adults, but not children, overcome the parenthetical use of *juede,* unlike the English-speaking children in Lewis et al.

Our results show that despite the fact that *juede* is infrequent and not as routinely used for hedges like English *think,* Mandarin-speaking children are just as prone to false belief errors as their English-speaking peers do with *think*. Not only are Mandarin-speaking children more prone to false belief errors, but they are also less easily driven away from them: even when the beliefs were made salient, Mandarin-speaking children still over-assume the parenthetical use of the belief verb, different from their English-speaking peers.

Why should the contextual manipulation help English-speaking children, but not their Mandarin-speaking peers? Here, various factors could be at play. As mentioned in the introduction, Mandarin's belief verbs include one dedicated to false beliefs, *yiwei.* Since *yiwei* is more appropriate in false belief conditions, it might influence our participants' interpretation of *juede*, as it might make it even more difficult to override parenthetical uses, where the speaker endorses the reported belief, with a neutral belief verb like *juede.* As previous research shows that 3-year-olds can correctly interpret *yiwei* (Lee et al. 1999), children's interpretation of *juede* might be affected by *yiwei.* In future research, we hope to compare children's understanding of *juede* with that of *yiwei* directly, to test this hypothesis.

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