

Almost Thinking Counterfactually: Children's Understanding of Close Counterfactuals

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Saying something "almost happened" indicates that one is considering a close counterfactual world. Previous evidence suggested that children start to consider these close counterfactuals at around 2 years of age (P. L. Harris, 1997), substantially earlier than they pass other tests of counterfactual thinking. However, this success appears to result from false positives. In Experiment 1 ($N = 41$), 3- and 4-year-olds could identify a character who almost completed an action when the comparison did not complete it. However, in Experiments 1 and 2 ($N = 98$), children performed poorly when the comparison character completed the action. In Experiment 3 ($N = 28$), 5- and 6-year-olds consistently passed the task, indicating that they made appropriate counterfactual interpretations of the "almost" statements. This understanding of close counterfactuals proved more difficult than standard counterfactuals.

You too may know from personal experience that almost catching a plane or train is particularly galling. Thinking about what we could have done to get there on time, we generate counterfactual alternatives to reality. We can think counterfactually about any event, but adults are particularly prone to musing on these "what ifs" when the counterfactual event is very close to the actual outcome, that is, when it almost happened (Kahneman & Varey, 1990). This speculative mental time travel is essential for learning from our mistakes and planning for the future (Roese, 1997). Being able to compare how the world is with how it might have been seems to develop over a protracted period in early to middle childhood from thinking about how simple causal events could have turned out differently (Harris, German, & Mills, 1996) to understanding why people feel regret for missed opportunities at around 7 years (Guttentag & Ferrell, 2004).

Before their second birthdays, children think outside the here and now when they pretend. Pretence involves sophisticated thinking about alternative worlds (e.g., Kavanaugh & Harris, 1999; Leslie, 1987; Skolnick & Bloom, 2006), but it does not involve thinking about "what might have been,"

that is, genuine counterfactual thinking (see Harris, 2000; Peterson & Riggs, 1999). Evidence that children are thinking counterfactually about what might have been, that is, how could events in this world have been different, emerges between 2 and 4 years. The first success is seen when children are asked about close counterfactuals. In the only experimental study to date (Harris, 1997), children saw several brief events acted out with toys. For example, in one event there were two horses who galloped along the table. One stopped about 30 cm away from the edge of the table. The other galloped fast right up to the edge and stopped abruptly just centimeters from falling. Children were asked, "Which horse almost fell off the table?" Even the youngest children, 2-year-olds, were more likely to select the horse on the edge of the table.

Harris (1997) argued that children who identified the correct horse were entertaining a counterfactual world in which the horse did fall off the table. Referring to the horse by "almost fell" should indicate representation of both the counterfactual "He could have fallen" and the actual "but he didn't" worlds. Harris puts this neatly, "An actual event is enlarged so as to include an outcome that did not materialize but might have" (p. 174). In other words, he claimed that when children think about what really happened in these situations they also think about the counterfactual event that did not

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happen. This pairing between the actual and counterfactual worlds is similar to Byrne's (2005) analysis of adult counterfactual reasoning.

It may be worth noting here that our and Harris's (1997) interest is in children's thinking about counterfactual worlds and in what their understanding of the word *almost* can reveal about this kind of thinking specifically. The claim we investigate here is that when children respond to the word *almost* they are demonstrating precocious counterfactual thought; that is, they are not merely speculating about alternative fictional or future worlds. When *almost* is paired with the simple perfect past tense like "almost fell," adults think about a close counterfactual. There are two interesting features of close counterfactuals: First, for the interpretation to be counterfactual the outcome described must not have come about. As Kahneman and Varey (1990) spell out, "By definition, counterfactual statements refer to events that did not, in fact, occur" (p. 1102). Second, "almost happened" (e.g., "almost fell") must describe an outcome that is very similar to the real outcome. For example, adults reject as peculiar the statement "Tom almost died but in fact he was never in real danger" (Kahneman & Varey, 1990).

The first feature, that the outcome did not happen, is critical for those interested in children's counterfactual thinking because there is another common use of the word *almost* to mean imminent (not counterfactual) events. For example, one might say, "Dinner is almost ready" or "She has almost graduated." In this case, the event has not yet happened, but it is anticipated. These events can, like counterfactuals, be close (the second feature described earlier). These constructions are what developmental psychologists would call future hypothetical rather than counterfactual. We know that children give correct answers to questions about future events before they pass comparable questions about counterfactual events (Perner, Sprung, & Steinkogler, 2004; Riggs, Peterson, Robinson, & Mitchell, 1998; Robinson & Beck, 2000). Although interesting in their own right, these imminent almoses are not counterfactuals, as they do not describe what might have been.

Why is Harris's (1997) claim that 2-year-old children think about close counterfactuals on hearing an "almost happened" statement so important for those interested in counterfactual thinking? Because it is not until children are 3 or 4 years old that they pass other counterfactual tasks. In these studies, questions take the form "What if X had/had not happened, how would the world be?" For example,

in Riggs et al.'s (1998) task, Mum took some chocolate from a drawer to make a cake. She returned it to a cupboard. The counterfactual conditional question was, "What if Mum hadn't baked a cake, where would the chocolate be?" Four-year-olds found this relatively straightforward and answered that the chocolate would be in the drawer. However, 3-year-olds tended to give realist answers saying where the chocolate was rather than where it would be. Similar results were reported by Guajardo and Turley-Ames (2004) and Perner et al. (2004). Slightly earlier success (at around 3 years) is described by Harris et al. (1996) in a simpler task where a character walks across a floor in muddy shoes. The child was asked, "What if Carol had taken her shoes off, would the floor be clean or dirty?" (see also German & Nichols, 2003; but cf. Beck, Riggs, & Gorniak, 2010). Some authors have suggested that children's counterfactual thinking is not adultlike until somewhat later, perhaps 5 or 6 years old (Beck, Robinson, Carroll, & Apperly, 2006; Rafetseder, Cristi-Vargas, & Perner, 2010).

Thus, Harris's (1997) evidence that 2-year-olds think about close counterfactual worlds is important as it is by far the earliest demonstration of counterfactual thinking. One reason to expect close counterfactuals to be easy for young children is that we know that adults are especially likely to engage in counterfactual thinking when the counterfactual world seems close: Missing the train by 2 min results in more thoughts of "If only . . ." than arriving at the station half an hour late. It may also be that children have more exposure to the simple word *almost* in everyday speech than the more formal construction of the counterfactual conditional (although this may in fact familiarize them with imminent rather than counterfactual almoses; see the General Discussion).

However, there is a reason to doubt the current evidence for children's understanding of close counterfactuals. In the events Harris (1997) describes while one character almost attained something the control character came nowhere near the same action (n.b. in fact; in Harris's study only one event is described so we assume that the others take this format). For example, one horse is on the edge of the table whereas the other is a long way from falling. It is possible that a child who does not make the counterfactual interpretation of "almost fell"; that is, imagine the counterfactual world in which the horse who is on the edge actually fell, may search all available characters for a potential candidate. Of the two potential candidates one comes nowhere near falling and the other looks

more like falling. As Harris's task gave children a forced choice, "Which one almost fell off the table?" a child who had no idea what almost means, might choose the target horse because he is the one who is nearest to falling. Similarly, children might interpret the questioner as meaning almost in the imminent sense described earlier: Which one is about to fall? Again, the horse on the edge of the table is the best candidate. There may be interesting reasons why children might make these interpretations. Perhaps, children first treat *almost* as describing any close possible world (future or counterfactual) and only later restrict its use with the past tense "almost fell" to be counterfactual. A similar transition is reported in children's making of scalar implicatures arising from *some* and *might* (Noveck, 2001). However, our interest here is whether Harris's task provides support for the claim that young children think counterfactually. If children make a different interpretation of *almost*, then, by definition, they are not thinking about what might have been and different evidence to support such a claim would be needed.

In three experiments, we investigated 3- to 6-year-olds' understanding of close counterfactuals. First, we wanted to check whether the good performance on the task Harris (1997) reported indeed represented counterfactual thinking. Second, we wanted to provide stronger evidence about when children would interpret "almost happened" as a close counterfactual.

Experiment 1

We compared Harris's (1997) original procedure with a new condition. In the original incomplete condition, children saw one horse almost fall and one horse not fall (as in Harris's study). In the new complete condition, one horse almost fell and another really fell. In all the experiments reported here, we also used a second event in which dolls tried to reach a ball from on top of a wall. One character could reach, one clearly could not, and the third could almost reach. According to Harris's claim that 2-year-olds were making a counterfactual interpretation in the original study, both the incomplete and complete trials should be easy. However, if children are not thinking counterfactually about statements such as "almost fell," our new complete condition should be more difficult. Both horses do something a bit like the key action, so children who do not understand what almost means may perform at chance. Alternatively, children may ignore

the word *almost* and systematically choose the horse that completes the action.

We tested older children than in Harris's (1997) study. All the children were above 3. If children of 2 found close counterfactuals easy to think about, they should present no problems for our 3- to 4-year-olds.

Method

Participants. A total of forty-one 3- and 4-year-olds (20 girls) participated in this study. In this and subsequent studies, children were recruited from schools in the United Kingdom. They were tested individually in a quiet area of their school. Their mean age was 3 years 11 months (3;11; range = 3;4-4;4); 16.7% of the children were Asian in ethnic origin, 2.1% were Black, and 81.3% were White. The school served a working- and middle-class population.

Materials. For the almost game, we used two toy horses (approximately 10 cm), three dolls (heights between 3 and 10 cm), and two blocks (approximately 10 cm tall when stacked) to represent a wall. A small toy ball (approximately 1 cm in diameter) was placed on top of the wall. Child and experimenter sat at a low table (approximately 60 cm off the ground).

Procedure. Children were alternately allocated to one of two groups: the complete group and the incomplete group. They saw two test events: the horse and the reach events, with two characters in each (order of presentation counterbalanced). Children in the incomplete group were told to watch as two horses were galloped along the table by the experimenter one at a time. One horse (the target) stopped abruptly right at the edge of the table. One horse stopped about 30 cm from the edge (as in Harris's, 1997, study). Children were asked, "Which one almost fell?" This was followed by the reach event. The experimenter manipulated two dolls each of whom tried in turn to reach the ball from on top of the wall. The target doll could almost reach the ball whereas the comparison doll could not reach. The test question was "Which one could almost reach?"

Children in the new complete group saw the same events with one small change. The comparison character completed the action. The horse fell off the edge of the table and the doll could reach the ball. The same test questions were asked.

Results and Discussion

A McNemar test showed no difference between performance on the horse and wall questions

Table 1
Performance on Close Counterfactuals As a Function of Condition,
Experiment 1

Condition	Score (maximum = 2)			Mean
	0	1	2	
Incomplete (Harris)	1	8	13	1.55
Complete (new)	7	8	4	0.84

($p = .804$, Cramer's $\phi = .18$) and so scores were summed (see Table 1). The incomplete group outperformed the complete group, $t(39) = -3.31$, $p = .002$, $d = 1.04$ (n.b. we replicated our analyses using nonparametric statistics, and the same patterns were found).

We made comparisons with performance predicted by chance (if children chose randomly between the two horses). Performance by the incomplete group was better than that expected by chance, $t(21) = 4.29$, $p < .001$, $d = 0.92$. However, the complete group's performance did not differ from chance, $t(18) = -0.90$, $p = .380$, $d = 0.21$. A chi-square goodness-of-fit test confirmed that children were not responding systematically, $p = .491$.

We replicated Harris's (1997) result with our 3- and 4-year-old sample. Children identified the character who almost completed an action, when the comparison character did not complete it. When the comparison character did complete the action, in our new complete condition, children were as likely to pick the character who completed the action as the one who almost completed it. This was in line with our speculation that the correct answers in Harris's original study did not represent counterfactual thinking. As children were equally likely to pick the horse who fell or the one on the edge of the table, perhaps they interpreted almost as meaning something about to happen. While this can clearly describe the horse on the edge of the table, it can also describe the horse who has fallen if one accepts that just before he fell he had a period of imminent falling. Alternatively, children might think that *almost* qualifies the action in some way but be unsure how and so have to use an unrelated reason to choose between the two characters. As we have indicated before, these possibilities are worthy of future research to investigate how children interpret the word *almost*, but for the purpose of this article Experiment 1 provides no evidence that 3- and 4-year-olds think about close counterfactuals.

One question is whether children would have performed better had we placed more stress on the

word *almost*. Perhaps, this is more in keeping with how they hear the word in natural speech? However, this does not explain the difference between the two conditions in Experiment 1 (we did not stress *almost* in the incomplete condition but children performed well there). Certainly, children's experience with and use of words like *almost* in everyday life warrants further investigation.

Experiment 2

In Experiment 1, we used a new test of children's understanding of close counterfactuals, the complete version of the almost game. Children's performance was poor on the almost questions. They were as likely to choose the character who completed the action as one who almost completed it; that is, they did not make the expected close counterfactual interpretation. In Experiment 2, we sought to replicate this finding as well as comparing children's performance on almost questions with other measures of counterfactual thinking. We used a variation of Beck et al.'s (2006) mouse game procedure, the marbles game, that included standard counterfactuals, which are passed between 3 and 4 years, and open counterfactuals, which are passed around 5–6 years.

Method

Participants. A total of ninety-eight 3- to 5-year-olds (50 girls) participated in this study. They formed groups of younger children ($n = 41$, mean age = 3;9, range = 3;3–4;1) and older children ($n = 57$, mean age = 5;0, range = 4;6–5;5); 13.3% of the children were Asian, 20.4% were Black, 60.2% were White, and 6.1% were of mixed race or other ethnic origin. They were recruited from and tested at a school serving a working and middle class population.

Materials. For the almost game, we used the materials from Experiment 1. For the marbles game, we used an apparatus based on the mouse game used by Beck et al. (2006). This consisted of a cardboard frame, positioned vertically, approximately 45 cm², with two tubes (approximately 5 cm in diameter) running top to bottom of the frame. One blue tube on the left was straight and had only one exit. A red tube on the right split so that there were two possible exits. Blue and red marbles, stored in a cloth bag, were dropped down the correspondingly colored tubes. At each exit was a small box to catch the marble.

Procedure. Children completed both the almost game and the marbles game. The order of the two games was counterbalanced. All children played the complete version of the almost game from Experiment 1. We counterbalanced the order of presentation of the two characters. There was one test question for each event, "Which one almost fell/could almost reach?"

For the marbles game, the experimenter sat on the red side of the tubes and the child sat on the blue side. The child was allowed to drop the blue marbles down the blue tube and the experimenter dropped the red marbles down the red tube. The marbles always went down the matching colored tube. When a red marble was at the bottom of one of the red tube exits, the experimenter asked either a standard counterfactual question, "What if it had gone the other way, where would it be?" (correct answer: the other red tube exit) or an open counterfactual question, "This time it went this way [pointing to the marble], could it have gone anywhere else?" (correct answer: yes and indicate the other red tube exit). The blue tube was used for filler questions. When the blue marble was at the bottom of the tube, the experimenter asked, "This time it went this way [pointing to the marble], could it have gone anywhere else?" (correct answer: no). Each child had two questions of each type, making four experimental trials. Trials were presented in one of two orders for simplicity of presentation: either standard, open, standard, open, or open, standard, open, standard. Filler trials were presented between the second and third experimental trials and as a last trial to make the end of the game easy for the child.

Results and Discussion

McNemar tests confirmed that there was no difference between performance on the pairs of almost trials ($p = .136$, $\phi = .37$), standard counterfactuals ($p = .824$, $\phi = .48$), open counterfactuals ($p > .999$, $\phi = .47$), or filler trials ($p = .727$, $\phi = .70$). Scores were summed (see Table 2). Performance on the blue filler questions was very good, with 80% correct. Incorrect responses on blue trials may have come about because children failed to understand the rules of the game or possibly because they were thinking counterfactually but using an earlier starting point than we intended, "It could have been a red marble." We ran our analyses excluding children who had not given our expected answer to the blue questions and there was no change in the pattern of results.

Table 2
Performance on Close, Standard, and Open Counterfactuals As a Function of Children's Age and Counterfactual Type, Experiment 2

Counterfactual type	Scores (maximum = 2)			Mean
	0	1	2	
Younger children ($n = 41$)				
Almost	24	13	4	0.51
Standard	9	12	20	1.27
Open	11	9	21	1.24
Older children ($n = 57$)				
Almost	25	15	17	0.86
Standard	7	8	42	1.61
Open	27	17	13	0.75

Including all children in the sample, we ran a repeated measures analysis of variance (ANOVA) with age group (younger and older) as a between-subjects factor and trial type (standard counterfactual, open counterfactual, almost) as a within-subject factor. There was a main effect of trial type, $F(2, 192) = 27.72$, $p < .001$, partial $\eta^2 = .22$, and an interaction between trial type and age, $F(2, 192) = 11.22$, $p < .001$, partial $\eta^2 = .11$. We used post hoc t tests to investigate this interaction, making a Bonferroni correction for nine tests ($p = .006$).

For the younger children, performance on the standard question was better than on the almost, $t(40) = -4.35$, $p < .001$, $d = 1.02$, and performance on the open question was better than on the almost, $t(40) = -4.28$, $p < .001$, $d = 0.94$. There was no difference between the standard and open questions, $t(40) = 0.18$, $p = .860$, $d = 0.04$. The pattern for the older group was different. Like the younger children, they performed better on the standard than the almost, $t(56) = -6.25$, $p < .001$, $d = 0.96$, but in line with Beck et al. (2006) their performance on the open question was worse than on the standard, $t(56) = 6.68$, $p < .001$, $d = 0.13$. There was no difference between performance on the almost and the open questions, $t(56) = 0.79$, $p = .436$, $d = 0.13$.

There was a trend for older children to outperform younger on the standard counterfactual, $t(96) = -2.26$, $p = .026$, $d = 0.45$. There was also a trend for older children to outperform younger children on the almost questions, $t(95.1) = 2.25$, $p = .027$, $d = 0.45$. Surprisingly, younger children gained higher scores on the open question than the older children, $t(96) = 2.88$, $p = .005$, $d = 0.59$. The relatively good performance by the younger children is out of line with the results in the original

study (Beck et al., 2006). One possibility is that they interpreted the open counterfactual as a future hypothetical. As this is unrelated to our question about close counterfactuals, we do not discuss this result further here. Future research should replicate this finding and clarify why very young children gave this answer.

The younger children performed worse than chance on the almost questions, $t(40) = -4.63$, $p < .001$, $d = 0.72$. Their systematic choice of the horse on the floor suggests that they were ignoring the word *almost* (answering instead, "Which one . . . fell?"). Standard counterfactuals were better than chance, $t(40) = 2.13$, $p = .039$, $d = 0.33$, but open counterfactuals were not, $t(40) = 1.82$, $p = .077$, $d = 0.28$. A chi-square goodness-of-fit test showed that children tended to respond systematically correctly or incorrectly, $\chi^2(2, N = 41) = 17.78$, $p < .001$. Older children's performance did not differ from chance on almost questions, $t(56) = -1.24$, $p = .22$, $d = 0.16$. Nonetheless, children tended to be systematic in their responses, $\chi^2(2, N = 57) = 15.04$, $p = .001$. Older children performed better than chance on standard counterfactuals, $t(56) = 6.61$, $p < .001$, $d = 0.88$, and worse than chance on open counterfactuals, $t(56) = -2.30$, $p = .026$, $d = 0.30$.

Experiment 2 confirmed our earlier finding that almost questions were difficult when children were given a choice between a character who almost completed an action and one who did complete the action. Children did not make a counterfactual interpretation of the phrase "almost fell." In fact, this sample of younger children performed systematically worse than chance: more often selecting the character who completed the action than the one who almost did. As a group the older children were equally likely to pick either character, however, their tendency to respond consistently across the two trials suggested that some children ($n = 17$) in this age group were thinking about a close counterfactual. Children in both age groups performed more poorly on the almost questions than the standard counterfactuals, supporting our conclusion that these almost questions do not reveal precocious counterfactual thinking. Having ascertained that close counterfactuals are more difficult for children than previously claimed (Harris, 1997) and than other measures of counterfactual thinking (standard counterfactual conditionals), we present a final study to address the question: At what age do children think about close counterfactuals, that is, when do they make the interpretation that something that "almost happened" indicates a close counterfactual?

Experiment 3

Method

Participants. A total of twenty-eight 5- and 6-year-olds (11 girls) participated in this study. Their mean age was 6;2 (range = 5;8–6;7). All the children in this sample were White. They were recruited from and tested at a school serving a predominantly middle class population.

Materials. We used the same materials as in Experiment 2.

Procedure. Children completed the almost game as in Experiment 2. Each child also completed a single standard counterfactual trial and a single open counterfactual trial using the marbles apparatus. Due to constraints on testing time, we did not run repeated counterfactual trials.

Results and Discussion

A McNemar test confirmed that there was no difference between the two almost trials ($p = .219$, $\phi = .19$). These scores were summed (see Table 3).

A McNemar test showed that standard counterfactuals were easier than open counterfactuals; 9 children passed standard but not open, and none showed the opposite pattern, $p = .004$, $\phi = .26$. Because we had only one of each open and standard counterfactual question, we compared these separately with each almost event. Neither horse nor reach trials differed from standard counterfactuals ($p > .999$, $\phi = .69$; $p = .125$, $\phi = .10$, respectively). Horse trials were significantly easier than open counterfactuals; 8 children passed the horse but not the open trials, and none showed the opposite pattern, $p = .008$, $\phi = .37$. Reach trials were not significantly different from open counterfactuals although the trend was in the same direction; 7 children passed the almost trial but not the open

Table 3
Performance on Close, Standard, and Open Counterfactual Trials As a Function of Trial Type and Counterfactual Type, Experiment 3

Counterfactual type	Score			Mean
	0	1	2	
Almost trials (max. = 2)				
Almost	1	6	21	1.71
Marbles game (max. = 1)				
Standard	1	27	n/a	0.96
Open	10	18	n/a	0.64

Note. n/a = not applicable.

counterfactual, and 3 showed the opposite pattern, $p = .344$, $\phi = .16$.

We compared performance with that expected by chance. Performance on standard counterfactuals was better than that expected by chance, binomial test, $p < .001$, Cohen's $g = .46$. Performance on open counterfactuals was no better than chance, $p = .185$, $g = .14$. Five- and 6-year-olds' responses to almost questions were better than chance, $t(27) = 7.07$, $p < .001$, $d = 1.33$. Bearing in mind that we had begun with the claim that children as young as 2½ were thinking about close counterfactuals, we were relieved to find an age group, albeit much older than anticipated, who passed our task.

Despite passing the task, is it possible that the 5- to 6-year-olds were still not making a counterfactual interpretation of almost, but were instead thinking about imminent almos^ts? They could have selected the horse on the edge of the table because he is about to fall, not because he could have fallen but did not. Although possible, we consider it unlikely that children start to understand imminent almos^ts at 5 or 6 years. Research on children's mental time travel does suggest that there are some relatively late developments (see Atance & Jackson, 2009); however, simple sequences of events are understood by preschoolers (Friedman, 1990), and understanding imminent almos^ts seems more akin to the latter than the former. Furthermore, that children start thinking about close counterfactuals at around 6 years of age fits with other late developments in counterfactual thinking (e.g., Beck et al., 2006; Perner et al., 2004; see the General Discussion for further discussion). It would be very surprising if this rather familiar form of a counterfactual (almost) was not mastered until late childhood, and we have no evidence to indicate when such a change may occur. Future work should confirm that 5- and 6-year-olds are making genuinely counterfactual interpretations of almost (see suggestions in the General Discussion), although for now we think that interpreting this performance as counterfactual thinking is the most parsimonious explanation. Of course, even if 5- and 6-year-olds were thinking about imminent almos^ts when they passed our task, this would not change our main claim that 2- and 3-year-olds are not thinking counterfactually when they interpret the word *almost* in the original Harris's (1997) task.

General Discussion

Despite replicating Harris's (1997) finding (Experiment 1, incomplete group), children did not dem-

onstrate a precocious understanding of close counterfactuals. Three- to 5-year-olds failed to identify a character who almost fell or almost reached when the distracter was one who completed the action. Thus, they did not make a counterfactual interpretation of the word *almost* (as claimed by Harris, 1997). The 5- and 6-year-olds in Experiment 3 passed our task by selecting the target character above chance, indicating that they were making a counterfactual interpretation (although see discussion earlier). Seventy-five percent of 5- and 6-year-olds responded perfectly. In this section, we discuss two aspects of this work: First, how should we characterize the young children's behavior? Second, how does children's understanding of close counterfactuals fit with the broader literature on counterfactual thinking?

Children under 5 years of age performed very poorly on our new version of the almost task, although they passed Harris's (1997) version where the comparison character did not complete the action. We claim that, in terms of counterfactual thinking, the correct answers they gave on the incomplete versions of the task were false positives. What do young children think the almost question means if they do not think about it as a close counterfactual, as older children and (we assume) adults would? One possibility is that they ignore the word glossing the question as "Which one fell?" In this case, we would expect them systematically to choose the completed action character in trials where it is present. This is what we saw in Experiment 2 with the youngest children we tested (mean age = 3;9). They tended to pick the horse on the floor or the person who could reach the ball. It is clear that they were not making a counterfactual interpretation.

Is it possible that this tendency to pick the character who completed the action resulted from a problem with inhibitory control? One might argue that the character on the floor is the most salient "fallen" character. This may give a clue as to why children have difficulty with the close counterfactual task. Future research should explore whether children suffer a performance problem; that is, they have fledging counterfactual thinking, which is obscured by inhibitory demands they encounter, or a competence problem, that is, being able to ignore reality is an integral part of speculating about counterfactuals. It would be interesting if inhibitory control had a role to play in children's thinking about close counterfactuals. It has already been suggested elsewhere that developments in children's counterfactual thinking may be related to

their developing executive function (e.g., German & Nichols, 2003; Riggs & Beck, 2007), in the same way that relations have been found between executive functions and theory of mind (Carlson & Moses, 2001). Indeed, Beck, Riggs, and Gorniak (2009) presented evidence that developments in 3- to 4-year-olds' inhibitory skills underpin their competence in counterfactual conditional and syllogistic thinking. To repeat a point we made earlier, if children fail the complete condition of the almost task, for whatever reason—inhibitory problems or interpretation—this still undermines the claim that success on the incomplete condition indicates close counterfactual thinking.

Children in Experiment 1 (complete group) and the older children in Experiment 2 did not systematically choose the character who completed the action. In Experiment 1, the complete group performed no differently to chance, suggesting that individual children were guessing. The older children in Experiment 2 performed no differently from chance as a group, but 74% of the individual children responded systematically picking the almost character or the completed character on both trials. Thus, there was also a number of children (26%) who chose the almost character on one trial and the complete character on the other. The Experiment 1 sample and the children who scored 1 in Experiment 2 suggest that children may at some point interpret “almost happened” to refer equally well to either the complete or the almost character. (It is also possible that some of the systematic responders also thought the word could refer equally to either character but arbitrarily settled on either the almost or the complete character for both trials.) As highlighted in the discussion of Experiment 1, children who interpret almost to mean some unknown qualification of the verb, or who think about imminent but not close counterfactuals may consider either character a good candidate for “almost fell.” These potential explanations warrant further research, but neither explanation can support the claim that children are thinking about a close counterfactual.

One way to determine what children are thinking when they encounter statements like “almost fell” would be to ask them to interpret such statements. Children could hear a story or report with no visual representation of the events. Having heard, “He almost fell,” they could be asked whether the character really fell or not. If children have no understanding of the word *almost* and ignore it, or if they think of it as a qualifier, then they should tend to claim that he did fall. If chil-

dren think of “almost fall” as a step before falling (an imminent almost) then they should not necessarily know whether the horse has actually fallen or is about to, so we might expect them to be at chance. Finally, of course, when one makes a counterfactual interpretation of the statement, “He almost fell,” the inference is that he did not fall.

One might look at our data and wonder whether very young children can think counterfactually, but they make an interpretation of the word *almost* (perhaps as an imminent almost) that means that they do not demonstrate this understanding. On this account, while our complete condition undermines the counterfactual interpretation of the incomplete condition in Harris's (1997) original study, the question remains open whether young children can think counterfactually under some circumstances. In this case, it remains the task of the skeptic to produce evidence of such counterfactual thought. On our reading of the literature and the results of the experiments in this article, the evidence is in favor of counterfactual thinking developing relatively late.

One potential problem for our claim that children under 5 do not understand “almost happened” to indicate a close counterfactual is evidence from children's natural language. Harris (1997) presented evidence from the CHILDES database (Macwhinney & Snow, 1985) that children use *almost* to refer to counterfactual worlds from around 30 months. Further evidence comes from a study in the same article where children saw events in which something almost happened (e.g., a deer almost got hit by a car) and were asked, “Did you see that? What happened?” These questions made no reference to the counterfactual outcome, yet 33- to 41-month-old children (and to a lesser extent 24- to 32-month-olds) occasionally made some reference to the alternative event, in this case the deer being knocked down. Bowerman (1986) reported even earlier use of the word in her developmental corpus study. One child described a pitcher precariously balanced on the edge of the sandbox as “almost fall” at 22 months. Two-year-olds apparently use the word *almost* to describe what look like counterfactual events appropriately, but there is a substantial time lag before they will pass more formal tests of counterfactual thinking, including our new version of the close counterfactual test. It is implausible to us that children's production of a word and related understanding should appear more than 2 years before they pass receptive tests of such understanding. We offer two suggestions as to what children may be doing when they use

words like *almost* or nearly in natural speech. Yet, it is clear that this apparent lag between production and receptive understanding requires further investigation.

The possible explanations echo those offered earlier for why children might be equally likely to choose the horse on the floor or on the edge of the table when asked, “Which one almost fell?” One possibility is that young children produce the word *almost* to mean some kind of qualified action, but they are vague as to exactly what. Perhaps, children see the car swerve to avoid the deer in Harris’s (1997) example and, having no better way to describe it, refer to the event as “something a bit like being hit” or in their vocabulary “almost hit.” Something that is close (but not necessarily counterfactually close) can be described as “knocking over” especially if one uses the word *almost* to qualify it. Alternatively, children might be talking about imminent almos. This would allow them to describe a pitcher as “almost falling” when it is teetering on the edge of something and *about to* fall, and, if we allow imminent almos to describe previous points in time, then a child might think “almost hit” is a good description of the deer: He was about to be hit and *then* he was not. This may explain the apparent mystery of how children can use the word *almost* before they can think about close counterfactuals.

We turn now to how understanding close counterfactuals fits into the broader picture of children’s counterfactual thinking. Our evidence suggests that children find it more difficult to identify events that almost happened than they do to answer standard counterfactual conditional questions about events, such as “What if X hadn’t happened, how would the world be?” Perhaps, this is because the latter explicitly direct the child to think about the counterfactual world, whereas the close counterfactuals described by almost are prompted more indirectly. The evidence from the open questions was less clear, but at the very least the data presented here support the claim that there is not one single shift that marks the development of counterfactual thinking. The growing body of evidence suggests that a range of developments unfold over a somewhat extended period of time (from at least 3–7 years) that result in adult-like counterfactual thought (including Beck & Crilly, 2009; Beck et al., 2006; Ferrell, Guttentag, & Gredlein, 2009; Rafetseder et al., 2010).

Thinking about a counterfactual almost seems to involve more than just generating an alternative to what is known to have happened. It involves recog-

nizing the close pairing of the actual event and the one that did not happen. This may be akin to what Beck et al. (2006) argued was tested by the open counterfactual question: that counterfactuals were once possibilities. Alternatively, like understanding regret (Ferrell et al., 2009; Guttentag & Ferrell, 2004), understanding counterfactual almos may involve some kind of comparison between the actual and counterfactual world, perhaps because they are so close to each other. Similarly, Rafetseder, Cristi-Vargas, and Perner (2010) recently argued that considering the nearest possible world—a constraint that Lewis (1973) set on counterfactual thought—requires that the child draw on specific aspects of the real world to generate the appropriate counterfactual world, and that this is difficult until around 6 years old. All these accounts of late developments in counterfactual thinking emphasize the relation between the real and counterfactual worlds and it seems that close counterfactuals demand this by definition (the two worlds must be considered or compared to judge that they are close). However, our almost task proved easier than most of these tasks. Perhaps, close counterfactuals are particularly salient and prompt speculation about alternative worlds, or they may be particularly easy representations to manage because they deviate only marginally from the real world. There is a parallel here with German’s (1999) finding that 5-year-olds, like adults, are more likely to engage in counterfactual thinking when they encounter negative outcomes. If negative events prompt counterfactual thinking, it may be that near misses also do this.

Despite its relative neglect to date, children’s understanding of almost as a form of counterfactual thinking seems likely to prove important. We found evidence that the success by children on Harris’s (1997) original close counterfactual task appeared to be false positives. Three- and 4-year-olds did not make counterfactual interpretations of almost in our new version of the task and an understanding of close counterfactuals was not evidenced until between 5 and 6 years. The relatively late success children demonstrated in making a counterfactual interpretation of “almost happened” adds weight to the claim that counterfactual thinking continues to develop after age 4.

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