January 2013

29. Lyon, TD, & Evans, AD (in press). Young children's understanding that promising guarantees performance: The effects of age and maltreatment. Law & Human Behavior.

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Young children's understanding that promising guarantees performance: The effects of age and maltreatment

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In press, *Law & Human Behavior*

Abstract

Two studies, with 102 non-maltreated 3- to 6-year-old children, and 96 maltreated 4- to 7-year-old children, examined children's understanding of the relative strengths of "I promise," "I will," "I might," and "I won't," to determine the most age-appropriate means of eliciting a promise to tell the truth from child witnesses. Children played a game in which they chose which of two boxes would contain a toy after hearing story characters make conflicting statements about their intent to place a toy in each box (e.g., one character said "I will put a toy in my box" and the other character said "I might put a toy in my box"). Children understood "will" at a younger age than "promise." Non-maltreated children understood that "will" is stronger than "might" by 3 years of age and that "promise" is stronger than "might" by 4 years of age. The youngest non-maltreated children preferred "will" to "promise," whereas the oldest non-maltreated children preferred "promise" to "will." Maltreated children exhibited a similar pattern of performance, but with delayed understanding that could be attributed to delays in vocabulary. The results support a modified oath for children: "do you promise that you will tell the truth?"

Young children's understanding that promising guarantees performance: The effects of age and

maltreatment

In most jurisdictions in the United States, witnesses are expected to affirm in some

manner that they will tell the truth, typically by taking the oath. The Federal Rules of Evidence,

which has been adopted in some form by 42 states in the United States (Mueller & Kirkpatrick,

2009), requires that "every witness shall be required to declare that the witness will testify

truthfully, by oath or affirmation administered in a form calculated to awaken the witness'

conscience and impress the witness' mind with the duty to do so" (Rule 603).

The arcane language of the formal oath ("do you swear that you will tell the truth, the

whole truth, and nothing but the truth, so help you God") is sure to be difficult for many children

to understand, and researchers have confirmed that terms like "swear" show large age

improvements in comprehension, with little understanding until children are 11 years of age

(Saywitz et al., 1990). However, there is no legal requirement that the formal oath be

administered to every witness. The Federal Advisory Committee's Note to Rule 603 of the

Federal Rules of Evidence states that an "[a]ffirmation is simply a solemn undertaking to tell the

truth; no special verbal formula is required." Several states have enacted legislation specifically

allowing for children to promise to tell the truth rather than take the oath (Cal. Evid. Code, 2012;

Colo. Rev. Stat. Ann., 2012; Mich. Stat. Ann., 2012), and even without specific statutory

authorization, courts have approved promises in lieu of formal oaths (*State v. Just*, 2012; *Welfare*

of K.R.O., 2005). In other jurisdictions, court procedures have similarly been liberalized. In

Canada, child witnesses under 14 are not given a formal oath but asked to promise to tell the

truth (Bala, Evans, & Bala, 2010).

In order for the modified oath to be meaningful, children must understand what it means

to promise to tell the truth. A substantial amount of research has examined children's developing

understanding of the words "truth" and "lie"; a basic understanding (that "truth" refers to true statements and "lie" to false statements) emerges shortly before children are four years of age (Lyon, Carrick, & Quas, in press). However, children's understanding is easily underestimated. For example, it is much more difficult for children to provide even a minimally competent definition of the truth or a lie compared to identifying whether a statement is true or not (Lyon & Saywitz, 1999; Pipe & Wilson, 1994). Furthermore, children's apparent understanding will falter if they are asked about truth and lies in contexts in which wrongdoing occurs (since they will err on the side of calling all statements about wrongdoing lies) (Wandrey, Quas, & Lyon, 2012). Similarly, a basic understanding of the morality of truth-telling (that true statements are "good" and false statements "bad") also emerges before children turn four (Lyon, Carrick, & Quas, in press), and children's moral understanding can easily be underestimated. For example, children are more proficient at evaluating truth and lies as "good" or "bad" than in discussing the consequences of lying (Evans & Lyon, 2012), particularly if they are asked about the consequences of lying to themselves (Lyon et al., 2001). It is therefore important to attend closely to the manner in which children's understanding of honesty is assessed.

Children's understanding of "I promise." With respect to children's understanding of "promise," the results are mixed. On the one hand, Saywitz and colleagues (1990) found that 80% of even the youngest children (5 years of age) exhibited a good understanding of "promise." Since Saywitz and colleagues asked children to define the word, a difficult assignment, one would expect that still younger children would have good understanding. However, the authors did not explain how they coded the accuracy of children's definitions, other than reporting that they examined dictionary definitions. Therefore, it is possible that 5 year old children possessed an incomplete understanding of "promise."

Other researchers have argued that children have a limited understanding of promising until much older. In a series of studies, Astington has identified a number of deficiencies. First, young children appear to confuse promising and acting. Astington (1988a) presented 5- to 11-year-olds with sentences containing either a promise ("the girl is promising to feed the dog") or action ("the girl is feeding the dog"), and then presented a pair of pictures, one in which the child was speaking to an adult, and one in which the child was performing the action. Children were asked to select the picture that demonstrated the sentence they heard. Results revealed that 5-year-olds (and to some extent 7-year-olds) failed to distinguish between promising and performing the action. Second, young children fail to distinguish between promises and predictions. Astington (1988b) presented 5- to 13-year-olds with six stories in which a story character used the words "I promise" after making a prediction or stating that s/he would perform some act. It was not until 7 years of age that most children distinguished between predictions and promises with respect to whether the speaker was naughty when the action did not occur. It was not until 13 years of age that a majority of children denied that the prediction was a promise. Third, children do not understand that a broken promise is still a promise; Astington (1988b) did not find this understanding before 13 years of age. A fourth limitation of children's understanding of promising was found by Mant & Perner (1988), who determined that children younger than 9 did not understand the moral distinction between agreeing to act with another person and simply asserting one would act. In other words, younger children failed to appreciate that one is more culpable when one fails to act knowing that another will rely on one's commitment to do so.

Although Astington does not describe her results with respect to their implications for children taking the oath in court, Perner (1997) discusses both Astington's (1990) work and his

own (Mant & Perner, 1988) and argued that his results "suggest that children before 9 or 10 years are not competent to appreciate the full moral impact of an oath, insofar as it formalizes the absolute necessity to tell the truth" (p. S31).

A more generous interpretation of the research emphasizes that children's limited understanding does not make them understate the obligatory nature of promising; quite the contrary. Young children appear to hold an unusually strong view of the connection between promises and actions, so that at a young age they equate promising with acting, and until they are much older continue to believe that promises must lead to action or not be promises at all. Their equation of promising with predicting need not mean that they understate the moral obligations of promising, but could mean that they overstate the obligations of predicting. Similarly, the children who failed to distinguish between agreeing to act and asserting that one would act did so because they viewed both statements as equally naughty (rather than viewing both statements as innocuous) (Mant & Perner, 1988). Indeed, Ruck (1996) interpreted children's equation of promising with acting as suggesting that they may view a promise as *more* binding than adults view the oath. Similarly, Astington (1990) noted that her finding that children believe a broken promise is not a promise at all "may indicate the children's implicit understanding that someone who makes a promise thereby assumes an obligation to bring about the promised outcome" (p. 236).

Two findings challenge the generous interpretation of the research on children's understanding of promising. First, young children fail to refer to promising as the reason for acting. Astington (1988a) presented 6-, 8-, and 10-year-old children with scenarios in which story children promised to perform some action, and asked children why they should perform that action. It was not until 8 years of age that children were likely to mention the promise.

Similarly, Rotenberg (1980) found that 5-year-olds (in contrast to 7- and 9-year-olds) who were told stories about children who kept or broke their promises virtually never mentioned whether a promise was kept or broken as the basis for trusting another child. Moreover, 5-year-olds focused on the positive actions of individuals rather than on the consistency of their words and actions when choosing which individuals they would trust. Second, young children fail to use the words "I promise" to assure others that they will perform. Astington (1988c) acted out scenarios with 4-, 6-, 8-, and 10-year-olds in which children were asked "How do I know you will [perform some action]?", and it was not until 8 years of age that most children used the word "promise" to assure the experimenter.

Both findings may be relatively insensitive to early understanding. With respect to the finding that children do not refer to promises as the reason for action, Astington noted that "when there was no obvious external reason in the situation children were more likely to mention the promise utterance" (Astington, 1988a, p. 266). Therefore, children's understanding of the moral obligations imposed by promising may be masked by their awareness of other reasons to act prosocially. With respect to the finding that children failed to use "I promise" to guarantee performance, Astington (1988c) noted that there were several indications that children had difficulty catching on to the purpose of the task. Most of the children who said "I promise" only did so after a series of prompts, and children's performance improved in the second scenario.

In sum, some research examining children's understanding of promising suggests difficulties until they are 13 years of age. However, much of that research can be interpreted as evincing an unusually strong belief in the obligatory nature of promising. To the extent that children fail to refer to promises as the reasons for action, or fail to utter the words "I promise" to

guarantee their own performance, this may be due to methodological difficulties rather than lacking comprehension.

Children's understanding of "I will." If a child does not understand the word "promise," it may nevertheless be possible to elicit a commitment from her by asking whether she "will" tell the truth. The Sixth Circuit Court of Appeals held that it was acceptable for a child who did not understand the formal oath to respond yes to "do you and will you tell the truth?" (Haliym v. Mitchell, 2007).

There is some evidence that children understand "I will" at a younger age than "I promise." "Will" appears in children's speech by two years of age (Wells, 1979). Astington (1988c) found that although few 5-year-olds said "I promise" in order to assure the experimenter that they would perform an action, most uttered some sort of commissive (a verbal commitment), such as "I will." Grafenhain and colleagues (2009) found that 3 and 4 year old children behaved differently at the termination of play with an adult if the adult had invited them to play together ("will you play with me?") or if the child had invited the adult to play together.

However, the difficulty with substituting "promise" with "will" is that it less clearly obligates the speaker to future action. Stating "I promise" rather than "I will" is a stronger guarantee of performance, since the promise explicitly undertakes a responsibility to act in accordance with one's words. As Austin (1962) pointed out, "if I say, ' I will do it' how is the listener to take it? I may be making a commitment, but I may be simply expressing an intention (e.g. ' I will try to do it'), or even merely making a prediction (e.g. ' I will try not to do it, but then I always do')" (p. 156). Furthermore, Astington (1988c) may have exaggerated young children's understanding of "will" as a commissive. Children's purpose in uttering "I will" was unclear.

Indeed, to elicit the response, Astington asked questions such as "How do I know you will?" which may have led to the unthinking use of the word "will."

The current studies. One way to distinguish among promises, intentions, and predictions is by the certainty with which they are uttered. When one says "I promise," one's commitment to one's future performance should increase the likelihood that one will perform. To test young children's understanding we modified a procedure used by Moore and his colleagues to assess understanding of different degrees of certainty associated with mental terms and modals (Moore, Bryant, & Furrow, 1989 (know, think, and guess); Moore & Davidge, 1989 (know, think, and sure); Moore, Pure, & Furrow, 1990 (must, might, could, probably, possibly, and maybe)). The task was structured as a game in which the participant heard contrasting statements regarding which story child was going to put a toy in his or her box, and chose which box would contain a toy. In the present study, four words (promise, will, might, and won't) were contrasted with one another in six pairs: promise/will, promise/might, will/might, promise/won't, will/won't, and might/won't. We contrasted "promise" and "will" with "might" and "won't" to assess children's recognition of the relative certainty of the former terms with a term that reflects uncertainty ("might") and a term that reflects certainty that an event will not occur ("won't").

The task had several advantages. It was not necessary for children to produce the terms, only to recognize their meaning. Moreover, the forced-choice procedure over repeated trials provided a sensitive means of assessing children's incipient understanding. Finally, because the tasks varied only with respect to the words used, rather than the to-be-performed actions, there was no opportunity for children's focus on deeds to mask their understanding of the importance of words.

We made several predictions. First, based on previous work examining children's understanding of words designating relative degrees of certainty (e.g. Moore, Pure & Furrow, 1990), we expected to find that understanding of "will" versus "might" emerges during the preschool years, and we expected to see a similar development in the understanding of "promise" versus "might." Second, based on children's early use of "will," we predicted that children would exhibit a better understanding of "will" than "promise" when contrasted with "might" and "won't." Third, based on Astington's (1988a & b) research, we predicted an increase in age in the understanding that a person who "promises" is more likely to perform an action than a person who merely says "I will."

In Study 1 we tested children typically interviewed in developmental research: preschool children from middle-class and upper-middle-class backgrounds. In Study 2 we tested children who had been removed from the custody of their parents because of maltreatment, in order to determine whether children with aversive experiences (and primarily low socioeconomic status) would exhibit different understanding. Because maltreated children tend to exhibit delays in vocabulary, we tested 3- to 6-year-old non-maltreated children and 4- to 7-year-old maltreated children.

Study 1

Participants

One hundred and two 3 to 6 year old children attending preschools in two U.S. cities participated in the present investigation. The sample included 25 3-year-olds ($M = 42.76$ months, $SD = 2.55$, range 36 to 47 months, 11 males, PPVT-R scaled score $M = 113.08$, $SD = 12.98$), 26 4-year-olds ($M = 52.54$, $SD = 3.22$, range 48 to 59 months, 13 males, PPVT-R scaled score $M = 112.46$, $SD = 16.43$), 24 5-year-olds ($M = 63.25$, $SD = 2.80$, range 60 to 71 months, 13 males,

PPVT-R scaled score $M = 116.38$, $SD = 13.20$), and 27 6-year-olds ($M = 78.44$, $SD = 4.09$, range 72 to 86 months, 13 males, PPVT-R scaled score $M = 113.00$, $SD = 13.15$). 70% of children were Caucasian, 6% of children were African-American, and 25% of children were of another ethnic background.

Materials and Procedure

The task was structured as a game to make it engaging for young children. Children met individually with the experimenter. The experimenter showed children a large number of brightly colored plastic boxes, and explained that some of the boxes had toys inside of them, and some boxes did not, and that the children could "figure out" which boxes had toys inside by listening to some stories.

In each story, the participant was shown two felt child characters, one red and one blue. Boy participants heard about boy story characters and girl participants heard about girl story characters. For ease of explanation, we will assume the participant is a girl. The experimenter quoted each story child as stating whether or not she would put a toy in her box, using the words "promise," "will," "might," or "won't." For example, in one story, the red girl would say, "I PROMISE I'll put a toy in my box," and the blue girl would say "I WILL put a toy in my box." Six pairs of words were contrasted: promise/will, promise/might, will/might, promise/won't, will/won't, and might/won't. After quoting the story characters, the experimenter then said, "Now ONE of the girls is going to put a toy in her box," and placed a plastic box under each story child, the color of the box matching the color of the story child. The experimenter reminded the participant of what each story child said (emphasizing the operative word, e.g. "MIGHT"), and then asked, "Which girl's box has a toy?"

Participants were given a total of 12 stories, 2 of each type of story. The stories were counterbalanced so that children who exhibited a preference for a particular color box, story child, or position (box on right or box on left) would score at chance. At the end of the task, the experimenter and the child opened all of the boxes that the child had picked; to make the game maximally engaging, all of the boxes contained toys. Children received 1 point for each correct selection they made ("promise" for the promise/will, promise/might, and promise/won't stories, "will" for the will/might and will/won't stories, and "might" for the might/won't story). Thus, for each story type participants received an accuracy score ranging from 0 to 2. Additionally, all children completed the PPVT-R.

Results

We first compared children's performance on the different story types at each age to chance, and then analyzed age and story effects. We then specifically compared children's performance on the stories using the word "will" and the word "promise," and calculated the number of children performing at ceiling on the promise/will stories. Preliminary analyses on children's total score revealed no effects attributable to order, standardized PPVT-R score, participants' gender or ethnicity when they were included in the analyses of age and story differences; results were collapsed across these factors for further analysis.

Comparison of children's performance to chance. Children's performance on the different story types by age is depicted in Table 1 and Figure 1. 3-year-olds were significantly below chance on the promise/will stories, whereas children were not above chance until they were 6 years of age. Children were not above chance on the promise/might stories until 4 years of age. Children at all ages were above chance on the other stories.

Age and story type differences. A 4 Age (3, 4, 5, 6) x 6 Story Type (promise/will, promise/might, will/might, promise/won't, will/won't, and might/won't) Repeated Measures ANOVA was performed on children's accuracy scores. There were main effects for Age, F (3, 98) = 13.23, p < .001, $\eta\rho^2$ = .29, 95% CI [.13, .40], and Story Type, F (5, 490) = 39.42, p < .001 $\eta\rho^2$ = .29, 95% CI [.22, .34], which were qualified by an interaction between Age and Story Type, F (15, 490) = 2.16, p = .007, $\eta\rho^2$ = .06, 95% CI [.00, .08]. Follow-up pairwise comparisons with the Bonferroni correction revealed that the 3-year-olds' performance lagged on the the promise/will, promise/might, and will/might stories, the 4-year-olds lagged on the promise/will and the promise/might stories, and the 5-year-olds lagged on the promise/will stories. The 6-year-olds performance did not significantly vary across story types (Table 1).

"Will" vs. "Promise." Next, to test our prediction that children would exhibit a better understanding of "will" than "promise" when the words are contrasted with "might" and "won't," we created variables which consisted of the sum of the child's performance on the will/might and will/won't stories (will stories) and the sum of the child's performance on the promise/might and promise/won't stories (promise stories). A 4 Age (3, 4, 5, 6) x 2 Story Type (will stories vs. promise stories) Repeated Measures ANOVA was performed on children's summed accuracy scores. Results revealed a significant main effect of Age, F (3, 98) = 9.57, p < .001, $\eta\rho^2$= .23, 95% CI [.08, .34]. Additionally, a main effect of Story Type was revealed, F (1, 98) = 3.82 p = .054, $\eta\rho^2$= .04, 95% CI [.00, .13], indicating that children performed better on the will stories (M = 3.50, SD = .85) than the promise stories (M = 3.34, SD =.83). No significant interaction was found between Age and Story Type.

Proportion of children performing at ceiling on promise/will stories. Because we were particularly interested in children's understanding of the promise/will distinction, we

analyzed individual rates of responding in response to these stories (Table 2). This enabled us to determine the proportion of children at each age who appeared to have a good understanding of the distinction. We calculated the distribution of the number of children answering 0, 1, or 2, of the promise/will stories correctly. There is a 25% chance that a child will answer two of the two stories correctly (with a 50% chance of answering correctly on any single trial). One would expect to see 11 or more out of 24-27 children answering two of two trials correctly less than 5% of the time, by the binomial distribution. The only age group that reached this level of accuracy was the 6-year-olds, with 67% answering both promise/will stories correctly.

Discussion

These findings suggest that it is not until 6 years of age that children distinguish between making a promise and stating that one "will" do something, recognizing that "I promise" is a stronger guarantee of performance than "I will." In contrast, the youngest children (3-year-olds) preferred the character who said "I will" to the character who said "I promise." With respect to the certainty implied by the statement "I will," even 3-year-olds preferred "will" to "might," which is a surprising finding, given prior research suggesting that understanding of relative certainty only gradually emerges during the preschool years (e.g. Moore, Pure, & Furrow, 1990). Children younger than six exhibited some understanding of "promise"; even the youngest children preferred "promise" to "won't," and by four they preferred "promise" to "might."

This suggests that although six year olds may confuse saying "I promise" with predicting or with acting, their misunderstanding does not lead to an underestimation of the comparative strength of a promise. With respect to younger children, the results suggest that merely asking a child to "promise" to perform will be less well understood than asking the child if he or she "will" perform.

Study 2 sought to replicate and extend these findings to a population of particular

forensic relevance: children who have been removed from their homes because of substantiated

abuse or neglect. Maltreated children may differ from children who have not been suspected of

being maltreated in several ways relevant to their understanding of "promise": they tend to

exhibit delays in verbal ability (Lyon & Saywitz, 1999), and they tend to distrust adults (Toth,

Cicchetti, Macfie, Rogosch, & Maughan, 2000), which may impair their recognition that one

who says "I promise" is likely to carry out that promise.   Because maltreated children's verbal

delays tend to place them at least a year behind age norms (Lyon & Saywitz, 1999), we

interviewed 4- to 7-year-old children.

<div align="center">**Study 2**</div>

Methods

Participants

Four to seven year old children who were awaiting a court appearance at the Los Angeles

County Dependency Court participated in this study. All children had been removed from the

custody of their parent or guardian due to substantiated maltreatment. Children were ineligible to

participate if they were Spanish speaking (either officially recognized as Spanish speaking by the

court or clearly incapable of communicating with the researcher in English) or if they were

awaiting an adjudication hearing on the day of their appearance in court (at which they might

have to testify). Participants were asked for their assent to participate; 97 of 102 asked agreed to

do so. One child's interview was interrupted so that the child could be transported back to foster

care. The final sample included 96 children: 24 4-year-olds ($M = 54.29$ months, $SD = 3.29$, range

48 to 58 months, 12 males, PPVT-R scaled score $M = 68.89$, $SD = 17.22$), 24 5-year-olds ($M =$

64.67, $SD = 3.33$, range 60 to 71 months, 12 males, PPVT-R scaled score $M = 71.41$, $SD =$

16.08), 25 6-year-olds ($M = 78.40$, $SD = 3.54$ range 72 to 83 months, 13 males, PPVT-R scaled

score $M = 76.65$, $SD = 17.95$), and 23 7-year-olds ($M = 89.78$, $SD = 4.11$, range 84 to 95 months,

11 males, PPVT-R scaled score $M = 76.95$, $SD = 17.68$). Twenty two percent of children were

Caucasian, 43% of children were African-American, 33% of children were Latino, and 2% of

children were of another ethnic background.

Materials and Procedure

The same procedure as Experiment 1 was used.

Results

We conducted the same analyses as in Study 1. Preliminary analyses on children's total

score revealed no effects attributable to order, standardized PPVT-R score, participants' gender

or ethnicity when they were included in the analyses of age and story differences; results were

collapsed across these factors for further analysis.

Comparison of children's performance to chance. Children's performance on the

different story types by age is depicted in Table 3 and Figure 2. None of the age groups were

above chance on the promise/will stories. Children were not above chance on the promise/might

stories until 6 years of age, and not above chance on the will/might stories until 5 years of age.

All children were above chance on the other stories, which contrasted terms with "won't."

Age and story type differences. A 4 Age (4, 5, 6, 7) x 6 Story Type (promise/will,

promise/might, promise/won't, will/might, will/won't, and might/won't) Repeated Measures

ANOVA was performed on children's accuracy scores. A main effect of Age was found, F (3,

91) = 2.79, p =.045, $\eta\rho^2$ = .08, 95% CI [.00, .18]. Follow-up pairwise comparisons revealed no

differences, suggesting slow improvement with age. Additionally, a main effect of Story Type

was found, F (5, 460) = 28.47, p < .001 $\eta\rho^2$ = .24, 95% CI [.17, .29]. Follow-up comparisons

revealed that children had the greatest difficulty with the promise/will stories, next on the promise/might stories, and next on the will/might stories, whereas the other stories (which contrasted terms with "won't") showed similar performance (Table 2). No significant interaction was found between Age and Story Type.

"Will" vs. "Promise." Next, like Study 1, we compared children's performance on the will stories to their performance on the promise stories. A 4 Age (4, 5, 6, 7) x 2 Story Type (will stories vs. promise stories) Repeated Measures ANOVA was performed on children's summed accuracy scores. Results revealed a significant main effect of Age, $F(3, 92) = 2.79$, $p = .045$, $\eta\rho^2 = .08$, 95% CI [.00, .18]. As predicted, there was a main effect of Story Type, $F(1, 92) = 41.29$ $p < .001$, $\eta\rho^2 = .31$, 95% CI [.16, .44], indicating that children performed significantly better on the will stories ($M = 3.13$, $SD = 1.13$) compared to the promise stories ($M = 2.15$, $SD = 1.44$). No significant interaction was found between Age and Story Type.

Proportion of children performing at ceiling on promise/will stories. As in Study 1, we analyzed children's individual rates of responding on the promise/will stories by calculating the distribution of the number of children answering 0, 1, or 2 of the stories correctly (Table 4). The individual rates of responding on the promise/will stories revealed an interesting pattern that had been obscured by averaging performance across children. On the one hand, a significant number of children consistently preferred the story character who said "I promise" to the child who said "I will" by seven years of age (11/24, binomial $p < .05$). On the other hand, an equal proportion of the four-year-olds consistently preferred the child who said "I will" to the child who said "I promise" (11/24, binomial $p < .05$).

Comparison of maltreated and non-maltreated children's performance in Study 1 and Study 2. Finally, we compared maltreated and non-maltreated children's performance

across studies. A sub-sample, matched on verbal age (PPVT scores), was selected to compare the performance of children from our sample of maltreated children with our sample of non-maltreated sample. The final sub-sample included 49 children from Study 1 (non-maltreated sample, PPVT-R raw score *M*= 57.76, *SD*= 19.64) and 48 children from Study 2 (maltreated sample, PPVT-R raw score *M* = 57.96, *SD* = 19.90). The 49 non-maltreated children included 21 3-year-olds (*M* = 42.62 months, *SD* = 2.77, range 36-47 months, 8 males), 11 4-year-olds (*M* = 52.55 months, *SD* = 3.17, range 48-58 months, 5 males), 11 5-year-olds (*M* = 63.27, *SD* = 3.93, range 60-71 months, 5 males), and 6 6-year-olds (*M* = 78.17 months, *SD* = 4.31, range 73-85 months, 2 males) with 63% Caucasian children, 2% African-American children, and 35% of another ethnicity. The 48 maltreated children included 4 4-year-olds (*M* = 55.25 months, *SD* = 1.89, range 54-58 months, 1 male), 6 5-year-olds (*M* = 66.83 months, *SD* = 3.25, range 63-71 months, 3 males), 18 6-year-olds (*M* = 78.89, *SD* = 3.68 range 72-83 months, 10 males), and 20 7-year-olds (*M* = 90.60, *SD* = 3.76, range 84-95 months, 10 males) with 25% Caucasian children, 46% African American children, 25% Latino children and 4% of another ethnicity.

A 2 Study (Non-maltreated vs. Maltreated) x 6 Story Type (promise/will, promise/might, promise/won't, will/might, will/won't, and might/won't) Repeated Measures ANOVA revealed no significant differences in performance between maltreated and non-maltreated children F (1, 95) = .01, p = .92, $\eta\rho^2$ = 0. Thus, when matched on verbal ability, maltreated children performed similarly to non-maltreated children.

Discussion

It was not until 7 years of age that a significant number of maltreated children understood that stating "I promise" is a stronger guarantee of action than "I will." It was not until 6 years of age that children successfully distinguished between "I promise" and "I might," and not until 5

years of age that children distinguished between "I will" and "I might." Matching maltreated children with non-maltreated children on receptive vocabulary revealed that to the extent that maltreated children's understanding lags, it can be attributed to their limited vocabulary, and not any specific difficulty with the relative strengths of "I promise" and "I will."

General Discussion

Taken together, these studies provide a clear picture of children's emerging understanding that promising guarantees performance. Children understand "I will" at a younger age than "I promise." Based on their vocabulary, they recognize that "I will" conveys more certainty than "I might" by three to five years of age, and that "I promise" is more certain than "I might" by four to six years of age. Their understanding that "I promise" is more certain than "I will" emerges by six to seven years of age.

Prior research (with children without suspicions of maltreatment) has suggested deficiencies in children's understanding of promising until they are seven or older (Astington, 1988a, 1988b, 1988c; Mant & Perner, 1988; Rotenberg, 1980). In contrast, Study 1 showed that by four years of age, children understand the greater certainty of "promise" compared to "might" or "won't." By this age, children view "promise" as largely synonymous with "will," and understand that both words connote certainty. How can one reconcile our findings with that of previous research? First, as we suggested in the introduction, young children may view many statements (such as predictions and assertions) as morally binding. It is not that they view promising as weak, but that they view any statement about the future as morally committing the speaker to its truth. As they mature, they acquire the understanding that statements short of true promises (explicit commitments to another person that one will act) have weaker moral significance. Second, our methods are more sensitive to early understanding. When young

children fail to spontaneously utter the words "I promise" as a means of guaranteeing their performance (Astington, 1988c), or fail to mention the promise as a reason for acting (Astington, 1988a, Rotenberg, 1980), they are failing to generate talk about promising. In our task, they need only recognize the differences among the words.

The results offer practical advice for courts that wish to modify the oath in a child-friendly way. Asking children simply to "promise" to tell the truth is likely to be incomprehensible to younger children. Asking children if they "will" tell the truth will be weaker than eliciting a promise from older children. We suggest that a good approach would be to ask the child "do you *promise* that you *will* tell the truth?"

Eliciting some sort of commitment from the child appears to be valuable, given the research demonstrating that children who promise to tell the truth are more likely to do so (Evans & Lee, 2010; Lyon & Dorado, 2008; Lyon et al., 2008; Talwar et al., 2002, 2004). Most of these studies have taken steps to ensure that children understood the terms used to elicit their commitment. Working with 4- to 7-year-old maltreated children, Lyon and colleagues (2008; Lyon & Dorado, 2008) used the approach advocated here: they asked children "do you promise that you will tell the truth?" Notably, they found that the promise was most effective among the younger children. Talwar and colleagues (2004), studying 3- to 11-year-olds, explained the meaning of promise before asking children to promise to tell the truth. The only study to simply ask young children to "promise" to tell the truth (Talwar et al., 2002, 3- to 11-year-olds) did not test whether the promise might have been less well understood and therefore less effective for the youngest children. Evans and Lee (2010) used the simpler "do you promise to tell the truth," but their children were 8 to 16 years of age, and therefore old enough to understand.

In the United States, an additional virtue of asking the child "do you promise that you will tell the truth" is that it fulfills the requirement that all witnesses affirm that they will provide truthful testimony. In the rare cases in which any form of the oath is abandoned, the courts are likely to expect some demonstration of oath-taking competency. For example, Florida is one of the few states that allows children to provide unsworn testimony, but expects child witnesses to demonstrate their understanding of the meaning and importance of telling the truth (Florida Statutes, 2012). Similarly, following the Sixth Circuit Court of Appeals decision that child witnesses should take some form of the oath, the court in *Knappenberger v. Ludwick* (2012) held that it was permissible for a child to fail to promise to tell the truth if she demonstrated an understanding that she ought to tell the truth.

Substituting a promise with an examination of the child's testimonial competency is problematic. Interviewers in general and attorneys in particular are likely to be poor at sensitively assessing children's understanding of the truth and lies (Evans & Lyon, 2012; Lyon, 2011). As a result, children's understanding is likely to be underestimated. Indeed, Lyon and colleagues (2008) utilized a sensitive test of children's understanding, and nevertheless found that children who failed to answer competency questions correctly were more honest after promising to tell the truth.

An alternative approach, adopted by a number of nations, is to abandon both the oath and any inquiries into the child's understanding of the truth (Hoyano & Keenan, 2007). This approach ignores the research showing that promising increases honesty. It may also have detrimental effects on juror's assessment of children's credibility, a topic for further research.

A limitation of the research should be noted. Although the results suggest that many younger children do not appear to understand the word "promise," it is not clear whether "do you

promise to tell the truth?" will be less effective than "do you promise that you will tell the truth?" in inducing honesty. It might be the case that despite their apparently limited comprehension, children will nevertheless respond to the simpler form of the promise. Analogously, Lyon and colleagues (2008) found that children who did not appear to understand the meaning of "truth" were nevertheless more honest after being asked to promise to tell the "truth." Tests of comprehension may underestimate children's understanding. The best test is a direct comparison of the truth-inducing effects of the two forms of the promise. From a legal perspective, however, using words that we can confidently say are understood by the youngest witnesses seems like a sensible approach.

In sum, this research suggests that a child-friendly version of the oath is "do you promise that you will tell the truth?" Such an approach takes account of the fact that younger children understand "will," whereas older children understand that "promise" is even stronger than "will." In a broader sense, this research demonstrates how careful developmental assessment of children's understanding can improve the process by which child witnesses are questioned in court.

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Table 1. Non-maltreated children's performance on the six story types by age, comparing performance to chance and differences among story types (Study 1).

Story Type	3-year-olds (n = 25)					4 -year-olds (n = 26)				
	M (SD)	t	p	d	95% CI (d)	M (SD)	t	p	d	95% CI (d)
Promise/Will	**0.64 (0.64)**ₐ	-2.82	0.009	0.59	[0.35, 0.83]	0.88 (0.65)ₐ	-0.90	0.376	0.19	[-0.43, 0.05]
Promise/Might	1.08 (0.76)ₐᵦ	0.53	0.603	0.11	[-0.18, 0.40]	**1.38 (0.75)**ᵦ	2.61	0.015	0.53	[0.25, 0.80]
Will/Might	**1.44 (0.58)**ᵦ꜀	3.77	0.001	0.79	[0.57, 1.01]	**1.77 (0.51)**꜀	7.63	<.001	1.57	[1.38, 1.76]
Promise/Won't	**1.64 (0.49)**꜀	6.53	<.001	1.36	[1.18, 1.55]	**1.85 (0.46)**꜀	9.30	<.001	1.92	[1.75, 2.09]
Will/Won't	**1.52 (0.59)**꜀	4.44	<.001	0.92	[0.70, 1.14]	**1.92 (0.27)**꜀	17.32	<.001	3.55	[3.45, 3.65]
Might/Won't	**1.44 (0.65)**ᵦ꜀	3.38	0.002	0.71	[0.46, 0.95]	**1.81 (0.40)**ᵦ꜀	10.25	<.001	2.11	[1.96, 2.26]

Story Type	5-year-olds (n = 24)					6-year-olds (n = 27)					All ages
	M (SD)	t	p	d	95% CI (d)	M (SD)	t	p	d	95% CI (d)	M (SD)
Promise/Will	1.00 (0.89)ₐ	0.00	1	0.00	[-0.34, 0.34]	**1.48 (0.80)**ₐ	3.12	0.004	0.62	[0.33, 0.91]	1.01 (0.80)
Promise/Might	**1.75 (0.44)**ᵦ	8.31	<.001	1.78	[1.61, 1.95]	**1.85 (0.36)**ₐ	12.23	<.001	2.45	[2.32, 2.58]	1.52 (0.67)
Will/Might	**1.88 (0.34)**ᵦ	12.69	<.001	2.70	[2.57, 2.83]	**1.81 (0.48)**ₐ	8.76	<.001	1.75	[1.58, 1.93]	1.73 (0.51)
Promise/Won't	**1.92 (0.28)**ᵦ	15.91	<.001	3.43	[3.33, 3.54]	**1.89 (0.32)**ₐ	14.42	<.001	2.89	[2.77, 3.01]	1.82 (0.41)
Will/Won't	**1.88 (0.34)**ᵦ	12.69	<.001	2.70	[2.57, 2.83]	**1.78 (0.58)**ₐ	7.00	<.001	1.40	[1.19, 1.61]	1.77 (0.49)
Might/Won't	**1.88 (0.34)**ᵦ	12.60	<.001	2.70	[2.57, 2.83]	**1.81 (0.40)**ₐ	10.70	<.001	2.10	[1.96, 2.25]	1.74 (0.49)

Note. Above-chance performance is bolded. Different subscripts reflect significant difference between story types within age group (test statistics are available from the authors).

Figure 1. Mean Number Correct by Story Type and Age for Non-maltreated Children (Study 1).
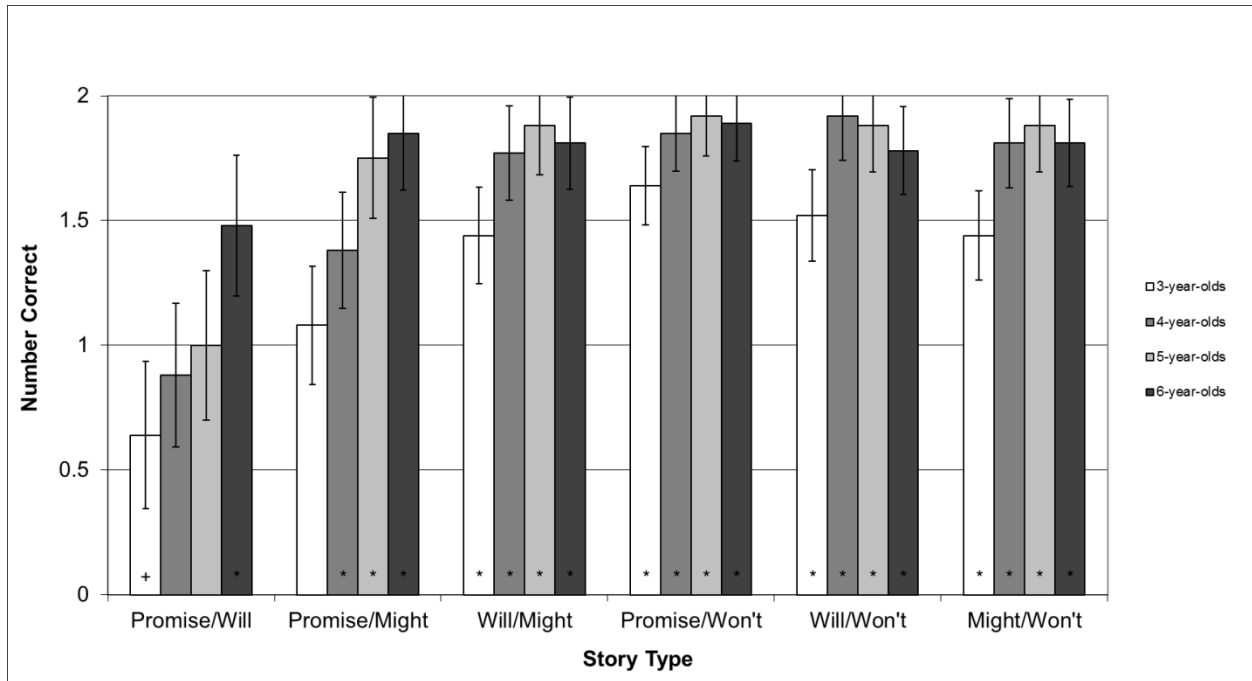
Note. Asterisk denotes significantly above chance (1.00), + denotes significantly below chance. Error bars reflect 95% confidence intervals.

Table 2. Percentage of children answering 2/2 correct and the number of children answering zero/one/two correct on the promise/will stories (Study 2)

3-year-olds	4-year-olds	5-year-olds	6-year-olds
8%	15%	38%	67%
11/12/2	7/15/4	9/6/9	5/4/18*

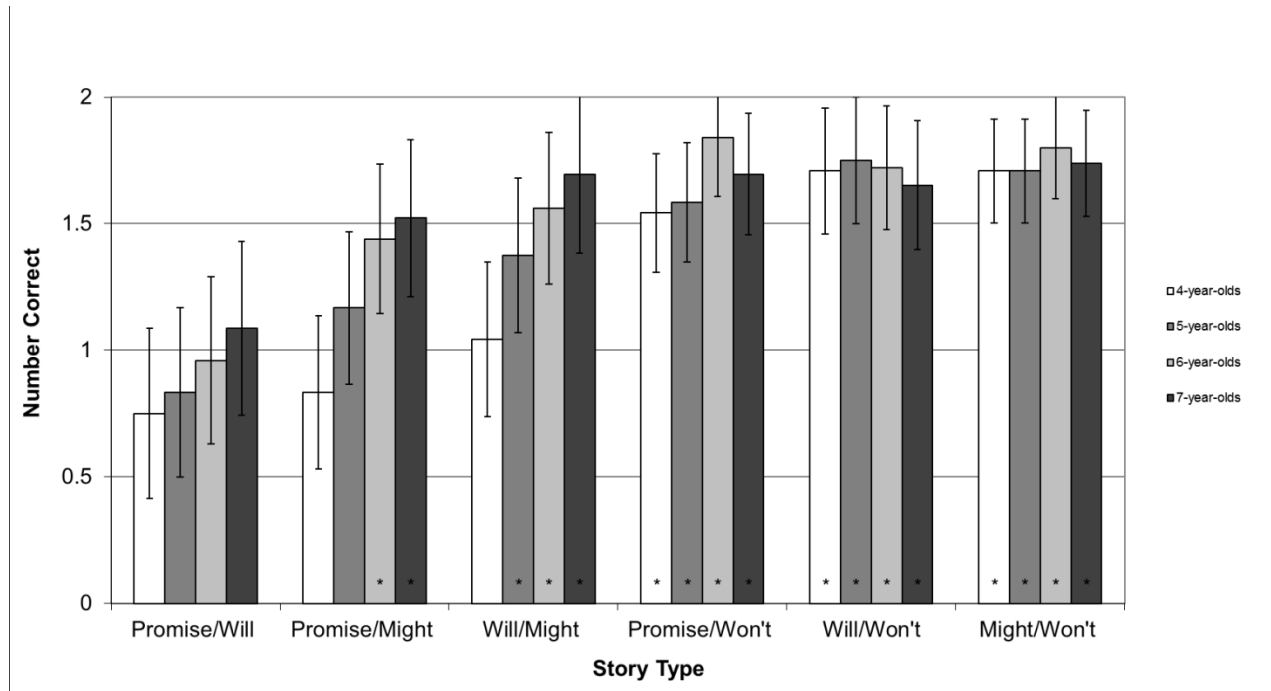*Note.* Asterisk denotes significantly above chance.

Table 3. Maltreated children's performance on the six story types by age, comparing

performance to chance and differences among story types (Study 2).

	4-year-olds					5-year-olds				
Story Type	M (SD)	t (df)	p	d	95% CI (d)	M (SD)	t (df)	p	d	95% CI (d)
Promise/Will	.75 (0.79)	-1.54 (23)	0.137	0.33	[0.03, 0.63]	.83 (0.76)	-1.07 (23)	0.295	0.23	[-0.53, 0.06]
Promise/Might	.83 (0.82)	-1.00 (23)	0.328	0.22	[-0.53, 0.10]	1.17 (0.76)	1.07 (23)	0.295	0.23	[-0.06, 0.53]
Will/Might	1.04 (0.91)	.23 (23)	0.824	0.05	[-0.30, 0.39]	**1.38 (0.82)**	**2.23 (23)**	**0.036**	**0.48**	**[0.17, 0.80]**
Promise/Won't	**1.54 (0.59)**	**4.51 (23)**	**< .001**	**0.96**	**[0.73, 1.18]**	**1.58 (0.65)**	**4.37 (23)**	**< .001**	**0.93**	**[0.68, 1.18]**
Will/Won't	**1.71 (0.62)**	**5.56 (23)**	**< .001**	**1.2**	**[0.96, 1.43]**	**1.75 (0.61)**	**6.04 (23)**	**< .001**	**1.28**	**[1.05, 1.52]**
Might/Won't	**1.71 (0.55)**	**6.31 (23)**	**< .001**	**1.35**	**[1.14, 1.56]**	**1.71 (0.55)**	**6.31 (23)**	**< .001**	**1.35**	**[1.14, 1.56]**

	6-year-olds					7-year-olds					All ages
Story Type	M (SD)	t (df)	p	d	95% CI (d)	M (SD)	t (df)	p	d	95% CI (d)	M (SD)
Promise/Will	.96 (0.84)	-.24 (24)	0.814	0.05	[-0.37, 0.27]	1.09 (0.95)	.44 (22)	0.665	0.1	[-0.27, 0.47]	0.91 (0.83)$_a$
Promise/Might	**1.44 (0.65)**	**3.38 (24)**	**0.002**	**0.71**	**[0.46, 0.95]**	**1.52 (0.79)**	**3.17 (22)**	**0.004**	**0.69**	**[0.38, 1.00]**	1.24 (0.79)$_b$
Will/Might	**1.56 (0.71)**	**3.93 (24)**	**0.001**	**0.82**	**[0.56, 1.09]**	**1.70 (0.56)**	**5.97 (22)**	**< .001**	**1.31**	**[1.09, 1.53]**	1.42 (0.79)$_{bc}$
Promise/Won't	**1.84 (0.47)**	**8.89 (24)**	**< .001**	**1.86**	**[1.69, 2.04]**	**1.70 (0.64)**	**5.25 (22)**	**< .001**	**1.15**	**[0.90, 1.40]**	1.67 (0.59)$_{cd}$
Will/Won't	**1.72 (0.61)**	**5.87 (24)**	**< .001**	**1.23**	**[1.00, 1.46]**	**1.65 (0.65)**	**4.83 (22)**	**< .001**	**1.05**	**[0.79, 1.30]**	1.71 (0.61)$_d$
Might/Won't	**1.80 (0.50)**	**8.0 (24)**	**< .001**	**1.67**	**[1.48, 1.86]**	**1.74 (0.45)**	**7.90 (22)**	**< .001**	**1.72**	**[1.55, 1.90]**	1.74 (0.51)$_d$

Note. Above-chance performance is bolded. Different subscripts reflect significant difference

between story types (test statistics are available from the authors).

Figure 2. Mean Number Correct by Story Type and Age for Maltreated Children (Study 2).

Note. Asterisk denotes significantly above chance (1.00). Error bars reflect 95% confidence intervals.

Table 4. Percentage of children answering 2/2 correct and the number of children answering

zero/one/two correct on the promise/will stories (Study 2)

4-year-olds	5-year-olds	6-year-olds	7-year-olds
21%	21%	33%	46%
11*/8/5	9/10/5	8/8/8	10/3/11*

Note. Asterisk denotes significantly above chance.