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Children's Conceptual Knowledge of Lying and its Relation to Their Actual Behaviors: Implications for Court Competence Examinations

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Child witnesses must undergo a competence examination in which they must show appropriate conceptual understanding of lying and truth-telling, and promise to tell the truth. Three experiments (Ns = 123, 103, 177) were conducted to address the assumptions underlying the court competence examination that (1) children who understand lying and its moral implications are less likely to lie and (2) discussing the conceptual issues concerning lying and having children promising to tell the truth promotes truth-telling. Both measures of lying and understanding of truth- and lie-telling were obtained from children between 3 and 7 years of age. Most children demonstrated appropriate conceptual knowledge of lying and truth-telling and the obligation to tell the truth, but many of the same children lied to conceal their own transgression. Promising to tell the truth significantly reduced lying. Implications for legal systems are discussed.

KEY WORDS: competence; deception; honesty; legal testimony; lying.

Over the last three decades, there has been a dramatic increase in court cases involving child witnesses. One U.S. estimate puts the number of children testifying in court at 100,000 per year (Bruck, Ceci, & Hembrooke, 1998). In the 1970s it was rare for a preadolescent child to testify, but by the 1990s Gray (1993) reported that 40% of children testifying in sexual abuse cases were younger than age 5. A survey of Canadian lawyers, judges, and victim-witness workers found that children as young as 3 years old have been allowed to testify (Bala, Lee, Lindsay, & Talwar, 2000).

In most North American jurisdictions, unlike adult witnesses, children are required to undergo examinations in court to determine whether they are considered legally competent to testify (Bala et al., 2000; Haugaard, Reppuci, Laird, & Nauful, 1991; Myers, 1996). Questions are asked to test the child's conceptual understanding of truth-telling and lying and to establish the child's moral commitment

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to truth-telling (Bala et al., 2000; Haugaard et al., 1991; Lyon, 2000). If the judge is satisfied with the child's answers, the child will be asked to promise to tell the truth. Only then is the child allowed to testify. If not satisfied with the child's answers, the judge will not permit the child to testify, which could result in the acquittal of a person guilty of abusing the child.

Children's understanding of lies and truth has played a critical role in court decisions to permit children to testify (Bala et al., 2000; Haugaard, 1993; Haugaard et al., 1991; Lyon, 2000). Prosecutors in a 1993 survey reported that in most sexual abuse cases the testimonial competence of child witnesses was an issue at trial (Smith & Elstein, 1993). In *Galindo v. United States* (1993), the court stated that a child is competent to testify if he or she is able to "recall the events which are the subject of the testimony; and... understand[s] the difference between truth and falsehood and appreciates[s] the duty to tell the truth" (pp. 206–207). In that case, the District of Columbia Court of Appeal upheld a decision that a 3-year-old was competent to testify because of the child's "repeated spontaneous insistence that she doesn't tell lies, that she does tell the truth, that she in her minds feels it was important to tell the truth and not to tell a lie" (p. 207). The same court in *Owens v. United States* (1996) upheld a trial judge's ruling that an 8-year-old was not competent to testify because "she specifically stated that she did not understand the difference between the truth and a lie" (p. 404).

North American legal systems only permit children to testify (1) if they can provide appropriate answers to questions concerning the concepts of the truth and lies, and about the moral implications (henceforth referred to as the "concept" component of the competence examination) and (2) if they explicitly promise to tell the truth. There are two major assumptions underlying this judicial requirement: (1) children with appropriate understandings of truth- and lie-telling are more likely to tell the truth (Bala et al., 2000; Lyon, 2000) and (2) the assessment of children's conceptual understanding of lie- and truth-telling and having children promise to tell the truth promotes truth-telling in court (Bala, Lee, & Lindsay, 2001; Huffman, Warren, & Larsen, 1999). There is, however, limited empirical evidence to support either of the assumptions.

Developmental psychologists have studied extensively children's concepts and moral judgments of lying and truth-telling (e.g., Bussey, 1992; Haugaard, 1993; Haugaard et al., 1991; Lee, Cameron, Xu, Fu, & Board, 1997; Siegal & Peterson, 1998; Strichartz & Burton, 1990; Wimmer, Gruber, & Perner, 1984; for reviews, see Lee, 2000). Children's knowledge about truth- and lie-telling emerges early and develops rapidly. Children from preschool years onward often show sophisticated understandings of the concepts of lying and truth-telling, rate truthful statements about rule violations positively, and judge lying to conceal rule violations negatively. Such early understanding can be revealed when appropriate assessment methods are used (e.g., using concrete and familiar examples when questioning). When assessment methods are inadequate (e.g., asking children to define "the truth" or asking abstractly about the moral implications of lying), children's responses frequently are not satisfactory (e.g., Huffman et al., 1999; Lyon & Saywitz, 1999; Siegal & Peterson, 1998).

A few researchers have examined young children's lie-telling behaviors (Hala, Chandler, & Fritz, 1991; Honts, 1994; Lewis, Stranger, & Sullivan, 1989; Peskin, 1992;

Polak & Harris, 1999; Talwar & Lee, in press). They have shown that children as young as 3 years of age tell lies. By 4 years of age, children display clear signs of the intention to deceive others (Polak & Harris, 1999). Three-year-olds are already successful lie-tellers. Adults who solely rely on nonverbal behaviors displayed by child lie-tellers often fail to detect their lies (Lewis et al., 1989; Talwar & Lee, in press).

Despite the extensive research on children's conceptual knowledge of lie- and truth-telling and to a lesser extent, research on lie- and truth-telling behavior, no study has directly examined the relation between the two. This raises questions about the validity of the two major assumptions underlying current court competence examinations. The present set of three experiments bridges the gap in the literature and specifically addressed these two assumptions.

In Experiment 1, we both assessed 3–7-year-olds' conceptual understanding of truth- and lie-telling, and placed them in a situation where they might be motivated to lie. This design allowed an examination of the relation between children's conceptual knowledge about truth- and lie-telling and their actual behavior. Because this study focused on the applied aspect of this relation, we simulated the questions commonly used in competence examinations in North American courtrooms (Bala et al., 2000; Huffman et al., 1999; Lyon & Saywitz, 1999). During such examinations, children are often told about hypothetical situations in which individuals or the children themselves have violated a simple rule and made a false statement about it. Children are then asked to label or determine whether such a statement is a lie and to evaluate its moral implications. Thus, the questions used in the present experiment to assess children's conceptual knowledge regarding truth- and lie-telling are representative of those asked in competence examinations in North American courtrooms.

To assess children's actual lie- and truth-telling behavior, we used a temptation-resistance paradigm in which children could be tempted to cheat at a game to gain a prize (Lewis, 1993; Lewis et al., 1989; Polak & Harris, 1999; Talwar & Lee, in press). Then, they were probed about whether they had cheated. This procedure created a naturalistic situation in which children might be motivated to lie to cover their transgression. In fact, this situation is similar to those in which children tend to lie at home (Newton, Reddy, & Bull, 2000; Smith, Wilson, & Ross, 1997). It should be noted that the court competence examination is designed to reduce the likelihood that children give false testimony about another's alleged serious criminal acts, which is seemingly far different from lying about such a minor transgression as cheating at a game. However, as mentioned above, in the current court competence examination, children are often asked questions concerning truth- or lie-telling about others' and their own minor transgressions. If the court's first assumption is correct (that children's conceptual knowledge about truth- and lie-telling is related to their actual behavior), then children's conceptual knowledge about truth- and lie-telling about minor transgressions and their actual behavior regarding their own minor transgression should be related. Thus, the present situation is a relevant paradigm for testing the court's assumption.

Experiment 2 examined the second assumption underlying the competence examination, whether discussing lie- and truth-telling and having children promise to tell the truth leads them to be more likely to tell the truth. Children first participated in the game and then were questioned about conceptual and moral issues related

to truth- and lie-telling. They also were asked to promise to tell the truth. Finally, they were questioned about their behaviors, simulating the natural course of events when children testify in court. Experiment 3 further explored whether the truth-promoting function of the competence examination is due to the discussion of truth- and lie-telling or due to the act of promising to tell the truth.

EXPERIMENT 1

This experiment has two components. In the "concept" component, children were questioned about their conceptual knowledge about lying or truth-telling to conceal transgressions. In the "action" component, the children played a game that involved guessing the identity of toys by listening to the sound made by each toy. At some point in the game, the child was left alone in the room and instructed not to peek at the toy. Because of the highly tempting situation, most children peeked and thus violated the researcher's instruction. When the researcher returned, children were asked if they had peeked, providing children with an opportunity to lie to conceal their transgressions.

If the first assumption on which the legal competence examination is based is correct, there should be a significant relation between children's conceptual knowledge about lie- and truth-telling and their actual behavior such that the better the children understand the concept and the moral implications of lying, the less likely they are to lie.

Method

Participants

Three- to 7-year-olds participated ($N = 123$). Children for this and the subsequent experiments were recruited from an advertisement in the local newspaper. Each child participated in only one experiment. There were 66 children in the Action First Condition (with the action component first followed by the concept component) and 57 children in the Concept First Condition (see Table 1). Parental permission was obtained prior to children's participation in this and subsequent experiments.

Materials

Several well-known commercial toys were used. All were recognizable from either movies or TV programs. Each had a specific sound associated with it (e.g., Buzz Light Year said, "To infinity and beyond"). Two toys were randomly chosen to be presented to each child. The "target" toy was a Barney doll. The audio clue played for Barney was music from a greeting card and was not associated with the Barney character in any way. A hidden camera recorded the child's responses.

Procedure

Children were seen individually and randomly assigned to either the Action First Condition or the Concept First Condition. In the Action procedure, children

Table 1. Age and Number of Participants in Experiments 1, 2, and 3

	Age (in years)				
	3	4	5	6	7
Experiment 1					
Mean in months (*SD*)	40 (3)	54 (4)	66 (4)	77 (4)	89 (4)
No. of children					
Action First (girls)	13 (8)	10 (7)	15 (10)	16 (11)	12 (5)
Concept First (girls)	15 (9)	12 (7)	12 (5)	9 (4)	9 (5)
Experiment 2					
Mean in months (*SD*)	42 (4)	54 (3)	65 (3)	77 (4)	88 (3)
No. of children (girls)	21 (10)	22 (11)	21 (8)	20 (6)	19 (9)
Experiment 3					
Mean in months (*SD*)	41 (3)	53 (3)	66 (4)	77 (5)	90 (4)
No. of children					
Discussion (girls)	20 (10)	20 (8)	20 (7)	15 (7)	20 (7)
Promise (girls)	20 (10)	15 (6)	17 (5)	13 (3)	16 (7)

played a game in which they guessed the name of different toys. They were told to turn their back to the experimenter who then brought out a toy and played an audio clue associated with that toy. For each toy, the experimenter instructed the child not to turn round to peek at the toy. The children correctly guessed the first two toys. Before the target toy (Barney) was brought out, an assistant interrupted to inform the experimenter that there was a phone call. The experimenter explained that the child would be left alone for a moment while she took the phone call. Children were told that the next toy would be placed on the table with the audio clue playing, and when the experimenter returned, they would be asked to guess what the toy was. They were told not to peek and that they would receive a prize if they guessed the toy correctly. The experimenter then left the room, saying "Remember, no peeking" and shut the door loudly behind her. After a minute the experimenter, unaware of whether the child had peeked, reentered the room. Before entering, the experimenter turned the doorknob several times to warn the child that she was returning. Upon reentering, she immediately covered the toy with a cloth. The children were asked to turn around to face the experimenter. The experimenter then asked the "peeking question": "When I was gone, did you peek to see who it was?"

Children were classified into those that peeked (peekers) and those that did not (nonpeekers). They were coded as having peeked if they turned their head more than 90 degrees with their eyes open and gazed directly at the toy. The peekers were categorized as having lied if they replied "no" to the peeking question. If they peeked and responded "yes" to the peeking question, they were categorized as "confessors." These criteria are similar to those used in previous research (e.g., Lewis et al., 1989; Polak & Harris, 1999).

Children also participated in two procedures to assess their conceptual knowledge about truth- and lie-telling. First, children were told a story in which a girl (Katy) ate a candy that her teacher had told her not to eat. When Katy's teacher returned, she asked, "Katy, did you eat the candy?" Children were asked, "What should Katy say?" Then they were told that Katy denied eating the candy. Children were then asked, "Is what Katy said a lie or the truth?"; "Is what Katy said good or bad?"; "Is it

a little or very good/bad?"; and "Why (is it good or bad)?" In the second procedure, children were asked questions about how they would react in a hypothetical situation. They were told by their mother not to play with a glass. While their mother is out of the room, they drop the glass and it breaks. Their mother returns and asks them if they broke the glass. The children were asked, "What would you say?" and "Why?" These two specific procedures were used because of their common occurrence in the actual court competence examinations (Bala et al., 2000; Huffman et al., 1999; Lyon & Saywitz, 1999). A recent study suggests that questions about concrete and familiar events are the preferred method to obtain "correct" answers from young children on questions about truth-telling and lying (Lyon & Saywitz, 1999).

The same experimenter interacted with all children. At the end of the study, parents, children, and the experimenter discussed issues regarding truth- and lie-telling. Children were not confronted by the experimenter or their parents about their behavior. All the children were thanked and received a prize.

Results

No significant sex differences were found in any of the experiments in terms of the children's responses in the concept or the action component. The results for both sexes were combined for all subsequent analyses.

Peeking Behavior

In the Action First Condition, 82% of the 66 children peeked; in the Concept First Condition, 83% of the 57 children peeked. Twelve children in the Action First Condition and 10 in the Concept First Condition did not peek. These children formed a nonpeeker group. A hierarchical logistic regression was performed with the condition entered first, followed by age (in months). The dependent variable was the children's peeking or nonpeeking behavior. The condition effect was not significant, $\chi^2(1, N = 123) = 0.01$, *ns*. After partialling out the effect of condition, the age effect was not significant, $\chi^2(4, N = 123) = 0.29$, *ns* (Table 2). All peekers, after peeking,

Table 2. Number (%) of Peekers and Lie-Tellers in Experiments 1, 2, and 3

	Age (in years)					
	3	4	5	6	7	Total
Experiment 1						
Peekers	24 (85.7)	19 (86.3)	20 (74.0)	19 (76.0)	19 (90.5)	101 (64.7)
Lie-tellers	9 (37.5)	16 (84.2)	16 (80.0)	18 (94.7)	16 (84.2)	75 (74.3)
Experiment 2						
Peekers	20 (95.2)	17 (77.3)	19 (90.5)	17 (85.0)	13 (68.4)	86 (83.5)
Lie-tellers	9 (45.0)	9 (52.9)	12 (63.2)	8 (47.1)	11 (84.6)	49 (57)
Experiment 3						
Peekers						
Discussion	14 (70)	17 (85)	14 (70)	12 (80)	14 (70)	71 (74.7)
Promise	15 (75)	12 (80)	14 (82.4)	12 (92.3)	13 (81.3)	66 (81.5)
Lie-tellers						
Discussion	7 (50)	12 (70.6)	11 (78.6)	30 (100)	30 (78.6)	53 (74.6)
Promise	7 (46.7)	8 (66.7)	9 (64.3)	8 (66.6)	7 (53.8)	39 (59.1)

returned to their original posture (i.e., with their back to the toy) either as soon as they finished peeking or when they heard the opening of the door. This observation suggests that the children understood the experimenter's instruction that they should not peek.

Answers to the Peeking Question

In the Action First Condition, of the 54 children who peeked, 79.6% (43) responded that they did not peek at the target toy and thus lied. In the Concept First Condition, 68.1% (32/47) lied. A hierarchical logistic regression was performed with the condition entered first and age (in months) second, and the dependent variable was the peekers' actual lie- or truth-telling behavior. The analysis revealed that the condition effect was not significant, $\chi^2(1, N = 101) = 1.75$, *ns*. The age effect was, however, significant (Table 2), $\chi^2(1, N = 101) = 16.45$, $p < .001$. This age effect was mainly due to the difference between 3-year-olds and the older children. Eighty-six percent of children between 4 and 7 years of age lied, and only 37% of 3-year-olds lied.

Answers to Questions in the Concept Component

Separate hierarchical logistic or linear regression analyses with the condition entered first and age (in months) second were performed with children's responses to each question of the Katy story as well as that of the hypothetical story as the dependent variables (Table 3). All children (lie-tellers, confessors, and nonpeekers) except for those who did not give any response or responded "I don't know" were included

Table 3. Children's Answers to the Conceptual Questions in Experiments 1, 2, and 3

	Age (in years)				
	3	4	5	6	7
Katy story					
Katy should tell the truth					
Experiment 1 (%)	19 (73.1)	17 (77.3)	20 (74.0)	23 (92.0)	19 (90.5)
Experiment 2 (%)	14 (73.7)	14 (70.0)	20 (95.2)	16 (80.0)	16 (84.2)
Experiment 3 (%)	14 (73.3)	18 (94.7)	16 (80.0)	12 (80.0)	19 (95.0)
Identified lie correctly					
Experiment 1 (%)	19 (76.0)	18 (85.7)	24 (92.3)	24 (96.0)	21 (100)
Experiment 2 (%)	10 (58.8)	19 (86.4)	20 (95.2)	16 (80.0)	16 (84.2)
Experiment 3 (%)	8 (57.1)	17 (94.4)	19 (95.0)	13 (86.7)	19 (95.0)
Ratings of lies					
Experiment 1 (*SD*)	−0.83 (1.64)	−0.85 (1.54)	−1.72 (0.77)	−1.87 (0.35)	1.89 (0.32)
Experiment 2 (*SD*)	−1.14 (1.19)	−1.14 (1.32)	−1.62 (0.49)	−1.80 (0.41)	−1.79 (0.42)
Experiment 3 (*SD*)	−1.00 (1.59)	−1.41 (0.93)	−1.45 (0.31)	−1.93 (0.26)	−1.91 (0.95)
Hypothetical story					
Said they would tell the truth					
Experiment 1 (%)	6 (31.7)	11 (61.1)	23 (88.4)	19 (82.6)	21 (100)
Experiment 2 (%)	9 (50.0)	11 (61.0)	19 (90.5)	18 (90.0)	18 (94.7)
Experiment 3 (%)	10 (52.6)	13 (65.0)	15 (75)	14 (93)	19 (100)

in the analyses.[3] For the dependent variable "What should Katy say?" the condition effect was not significant, $\chi^2(1, N = 121) = 1.40$, *ns.* After partialling out the condition effect, the age effect was marginally significant, $\chi^2(1, N = 121) = 3.75$, $p = .053$. The majority of children said Katy should admit to the transgression, whereas older children were more inclined to do so than younger children. For their identification of Katy's untruthful statement as a lie (dependent variable), a similar hierarchical logistic regression revealed that the condition effect was not significant, $\chi^2(1, N = 118) = 0.06$, *ns*, but the age effect was, $\chi^2(1, N = 118) = 9.31$, $p < .01$. Most children correctly identified Katy's statement "I did not eat the candy" as a lie, with older children responding more correctly than younger children. With regard to children's ratings of Katy's lying behavior (dependent variable), a linear regression analysis revealed that the condition effect was not significant, R^2 change $= .01$, $F(1, 118) = 0.58$, *ns.* After partialling out the condition effect, children's ratings of Katy's statement became more negative as age increased, R^2 change $= .16$, $F(1, 117) = 21.98$, $p < .001$ (Table 3).

With regard to children's responses to the hypothetical story (dependent variable), the condition effect was not significant, $\chi^2(1, N = 107) = 3.07$, *ns.* With results from both conditions combined, 75% of children said they would confess to their transgression. As age increased, children increasingly responded that they would confess in the hypothetical situation, $\chi^2(1, N = 107) = 26.54$, $p < .001$ (Table 3).

To examine directly the relation between children's responses in the concept and the action components, a hierarchical logistic regression analysis was performed with the peekers' actual lie- or truth-telling behavior as the predicted dependent variable. The peekers' age (in months) was entered into the regression model first, followed by their responses to conceptual questions concerning Katy (three questions) and themselves (one question) as predictors. After partialling out the effect of age, children's responses to the conceptual questions collectively were not significantly related to their actual lie- and truth-telling behavior, $\chi^2(4, N = 82) = 5.80$, *ns.*

One possible explanation for the lack of significant relation between action and concept is the lack of variability in children's responses. To address this issue, we analyzed the data of the 3-year-olds separately because they were highly variable in both their behaviors and their responses to the conceptual questions (Table 3). Whether 3-year-olds lied or confessed (dependent variable) was not related to their responses to any of the questions: "What would Katy say?" $\chi^2(1, N = 23) = 2.61$, *ns*; "Is what Katy said a lie or the truth?" $\chi^2(1, N = 23) = 1.79$, *ns*; "How good or bad is what Katy said?" (Pearson $r = .18$, *ns*); and "What would you say (in the hypothetical situation)?" $\chi^2(1, N = 23) = 0.64$, *ns.*

Discussion

In the guessing game, the majority of children peeked at the toy despite being told not to peek, with the proportion of peekers similar to that reported in previous

[3]Two children responded "I don't know" to the question, "What should Katy say?" For the questions "Is what Katy said a lie or the truth?" and "How good or bad is what Katy said?" 5 children said, "I don't know," or did not respond. Fifteen children did not respond or said "I don't know" for the "What would you say?" in the hypothetical situation.

studies (Lewis et al., 1989; Polak & Harris, 1999). Similarly, the majority of peekers lied about their transgression, except for 3-year-olds, of whom two thirds confessed.

In the concept component, the majority of children correctly identified an untruthful statement as a lie and correct identification increased with age. This result is consistent with previous research indicating that most young children have a basic understanding of what a lie is (e.g., Bussey, 1992; Haugaard et al., 1991; Lee et al., 1997; Peterson, Peterson, & Seeto, 1983). Also consistent with previous research, as age increased children's moral judgments of Katy's statement became increasingly negative. Younger children tended to say that Katy's statement was only a little bad, whereas older children were more censorious and rated it as very bad. Also, as age increased, more children claimed that they would tell the truth about their own transgression in a hypothetical situation.

Despite many children's appropriate responses to truth- and lie-telling questions, results from the action component revealed that children did not practice what they preached. Even though most children recommended that another child should tell the truth about her transgression and claimed that they themselves would tell the truth about their own misdeed, they told lies. This lack of a significant relation between children's conceptual understanding of lie- and truth-telling and their actual behavior is not likely to be due to the lack of variability in our data. When we analyzed the data of the 3-year-olds whose responses to both the conceptual questions and the peeking question were highly variable, no significant relations were obtained. This finding casts doubt on the validity of the first assumption underlying the court competence examination; specifically that children who have appropriate understandings of truth- and lie-telling are more likely to tell the truth than those who do not. Further, the order that the children participated in the action and the concept components did not affect children's actual behavior or their responses to questions about lie- and truth-telling. This result also casts doubt on the second assumption of the competence examination that discussions of truth- and lie-telling prior to testimony have a truth-promoting effect.

However, it should be noted that in the actual court competence examination, children usually take part in an event about which they must testify. After this event, children are questioned about their conceptual knowledge of truth- and lie-telling. Then, they are asked to promise to tell the truth before testifying. Only after these steps are children questioned about the event itself. This sequence of events in court differs from the order in which children in the present experiment were tested and includes a promise component absent from Experiment 1. Experiment 2 was conducted to examine more closely the claim that the discussion of truth- and lie-telling in court and having children promise to tell the truth has a truth-promoting effect.

EXPERIMENT 2

In Experiment 2, children participated in the guessing game first, but unlike Experiment 1, they were not immediately asked about their peeking behavior. First, they were questioned about their conceptual knowledge about lie- and truth-telling. Second, they were asked to promise to tell the truth. Finally, they were questioned

about whether they had peeked. Thus, the sequence of these activities was similar to the actual order of events in the courts. If the discussion about lie- and truth-telling and the act of promising to tell the truth has a truth-promoting effect, more peekers should confess in the present experiment than those in Experiment 1.

Method

Participants

A total of 103 children between 3 and 7 years of age participated (see Table 1).

Procedure

As in Experiment 1, children participated in the guessing game. After the guessing game, they participated in the same concept component of questioning as in Experiment 1. After this questioning, they were asked to promise to tell the truth. Then, the experimenter asked the critical question: "When I was gone, did you peek to see who the toy was?" The same criteria as in Experiment 1 were used for determining peekers, lie-tellers, and confessors.

Results

Peeking Behavior

A logistic regression with children's peeking or nonpeeking behavior as the dependent variable and the age (in months) as the predictor revealed that the age effect was not significant, $\chi^2(1, N = 103) = 2.73, ns.$ Of the 103 children, 84% peeked at the toy when the experimenter was absent (see Table 2).

Answers to the Peeking Question

Of the 86 peekers, 57% (49) lied (Table 2). A logistic regression with the peekers' lie- or truth-telling behavior as the dependent variable and age (in months) as the predictor revealed no significant age difference, $\chi^2(1, N = 86) = 2.26$, *ns*. An exploratory logistic regression analysis compared the proportion of the lie-tellers with that in the Action First Condition of Experiment 1 where children either lied or confessed without being asked questions about lying and promised to tell the truth. The dependent variable was the peekers' actual lie- or truth-telling behavior. After partialling the age effect, significantly fewer children lied in the present experiment (57%) than those in Experiment 1 (79.6%), $\chi^2(1, N = 140) = 7.26$, $p < .01$.

Answers to Questions in the Concept Component

Separate logistic or linear regression analyses with the age (in months) as the predictor were performed with children's responses to each question of the Katy story as well as that of the hypothetical story as the dependent variables (Table 3). All children (lie-tellers, confessors, and nonpeekers) except for those who did not

give any response or responded "I don't know" were included in the analyses.[4] With regard to children's responses to the question "What should Katy say?" the age effect was not significant, $\chi^2(1, N = 98) = 0.38$, *ns*. Most children (82%) responded that Katy should admit to her transgression. When asked to determine whether Katy had lied, the age effect was significant, $\chi^2(1, N = 99) = 6.83$, $p < .05$. The age difference was due to fewer 3-year-olds correctly identifying the lie in comparison to older children. A regression analysis of children's ratings of Katy's untruthful statement as good or bad (dependent variable) produced a significant age effect, R^2 change = .09, $F(1, 98) = 9.99$, $p < .01$. As age increased, children's ratings became more negative. With regard to children's response to the hypothetical story involving themselves (dependent variable), 78% of children said they would confess to their own transgression. The age effect was significant, $\chi^2(1, N = 95) = 15.48$, $p < .01$. As age increased, children increasingly responded that they would confess in the hypothetical situation involving themselves.

To examine directly the relation between the peekers' responses in the concept component and their lie- or truth-telling behavior in the "action" component, a hierarchical logistic regression analysis was conducted with the same regression model as that used in Experiment 1. The dependent variable was the peekers' actual lie- or truth-telling behavior. After partialling out the effect of age, children's responses to the conceptual questions collectively were significantly related to their actual lie- and truth-telling behavior, $\chi^2(1, N = 77) = 10.30$, $p < .05$. Further inspections of the regression model revealed that this significant effect was due to children's categorization of Katy's untruthful statement as a lie or not a lie, $B = -2.18$, Wald $(1, N = 77) = 6.13$, $p < .05$. More lie-tellers than confessors correctly categorized Katy's statement as a lie. The regression coefficients for the other questions were all not significant.

To address the issue of variability, we analyzed the data of 3-year-olds because they were highly variable in both their behaviors and their responses to the conceptual questions. Whether 3-year-olds lied or confessed (dependent variable) was not related to their responses to any of the following questions: "What would Katy say?" $\chi^2(1, N = 19) = 0.01$, *ns*; "Is what Katy said a lie or the truth?" $\chi^2(1, N = 17) = 1.63$, *ns*; "How good or bad is what Katy said?" Pearson $r(df = 19) = .14$, *ns*; and "What would you say (in the hypothetical situation)?" $\chi^2(1, N = 18) = 0.90$, *ns*.

Discussion

Similar to Experiment 1, most children in Experiment 2 suggested that Katy should tell the truth. As age increased, more children correctly identified Katy's statement as a lie and made appropriate moral judgments about Katy's lie-telling. They also claimed they would not lie if they transgressed in a hypothetical situation. Unlike the findings of Experiment 1, in the present experiment, children's responses to conceptual questioning collectively were significantly related to their actual lie- or

[4]Five children responded "I don't know" to the question "What should Katy say" and "How good or bad is what Katy said?" For the questions "Is what Katy said a lie or the truth?" 4 children said "I don't know" or did not respond. Eight children did not respond or said "I don't know" for the "What would you say?" in the hypothetical situation.

truth-telling behaviors. The significant age effect was mainly due to children's categorization of Katy's statement as a lie. Significantly more lie-tellers than confessors correctly categorized Katy's false statement as a lie! This significant relation is in the opposite direction to what is suggested by the legal assumption. Thus, children's appropriate understanding of the concept and moral implications of truth- and lie-telling does not predict that they are more inclined to tell the truth.

With regard to children's actual lie-telling behavior, fewer children lied in the present experiment than those in Experiment 1. Thus, although children's conceptual knowledge about lie- and truth-telling was not related to their behavior, discussing lie- and truth-telling with children and asking them to promise to tell the truth appeared to lead to less lie-telling among the children (particularly those older than 3 years of age), supporting the second assumption underlying the court competence examination.

However, this experiment does not permit a determination of whether either discussing with children about the concepts and moral implications of lie- and truth-telling, or the act of promising to tell the truth alone is sufficient to increase the likelihood of truth-telling. Results of Experiment 1 suggest that the decrease in lie-telling in the present experiment was perhaps the result of the act of promising to tell the truth. Note that in the Concept First Condition of Experiment 1, discussions of lie- and truth-telling were conducted prior to children being asked the critical peeking question. This sequence of events was similar to that in the present experiment. The proportion of children in that condition of Experiment 1 (74%) was higher than that in the present experiment (57%). Although this suggestion seemed plausible, it was still inconclusive whether the suggestion was true because the procedures used in Experiments 1 and 2 were sufficiently different. A direct comparison was needed to ascertain whether the act of promising to tell the truth alone is sufficient to lead more children to tell the truth. Experiment 3 was conducted to address this possibility.

EXPERIMENT 3

In Experiment 3, children were randomly assigned to one of two conditions. In the Discussion Condition, children participated in the same procedure as that used in Experiment 2 except that they were not asked to promise to tell the truth before responding to the critical peeking question. In the Promise Condition, children were not asked any questions about lie- and truth-telling. They were asked only to promise to tell the truth before the peeking question. On the basis of our analyses of the results from Experiments 1 and 2, we hypothesized that children in the Promise Condition would be more likely to tell the truth than those in the Discussion Condition.

Method

Participants

Three- to 7-year-olds participated ($N = 177$). There were 95 children in the Discussion Condition and 81 children in the Promise Condition (see Table 1). Parental permission was obtained prior to testing.

Procedure

The procedure was similar to Experiment 2. Children were assigned to one of two conditions. In the Discussion Condition children played the guessing game and answered questions about lie- and truth-telling (they were not asked to promise to tell the truth) before answering the peeking question. In the Promise Condition, children first played the guessing game. When the experimenter returned, the experimenter asked the child to promise to tell the truth (they were not asked questions about lie- and truth-telling) before she asked the peeking question.

Results

Peeking Behavior

A hierarchical logistic regression analysis with the peeking behavior as the predicted dependent variable and the age (in months) entered first and the condition second as predictors revealed that both condition and age effects were not significant, $\chi^2(1, N = 176) = 0.09$, *ns*, and $\chi^2(1, N = 176) = 1.17$, *ns*, respectively. As shown in Table 2, children were equally likely to peek in the Discussion Condition (75%) and the Promise Condition (82%).

Answers to the Peeking Question

A hierarchical logistic regression analysis was performed with the peekers' actual lie- or truth-telling behavior as the dependent variable and the age (in months) entered first and the condition second as predictors. The analysis revealed that the age effect was not significant, $\chi^2(1, N = 137) = 2.65$, *ns*. After partialling out the age effect, significantly fewer children lied in the Promise Condition than those in the Discussion Condition, $\chi^2(1, N = 137) = 3.97$, $p < .05$. In the Discussion Condition, 75% of the 71 children, who peeked, lied. In the Promise Condition, 59% of the 66 children, who peeked, lied (Table 2).

Answers to Questions in the Concept Component

Separate logistic or linear regression analyses with the age (in months) as the predictor were performed with children's responses to each question of the Katy story as well as that of the hypothetical story as the dependent variables (Table 3). Only the responses of children (lie-tellers, confessors, and nonpeekers) in the Discussion Condition were analyzed because the Promise Condition did not have a concept component.[5] With regard to children's responses to the question "What should Katy say?" the age effect was not significant, $\chi^2(1, N = 93) = 2.35$, *ns*. With regard to the correct identification of Katy's untruthful statement as a lie as age

[5]Two children responded "I don't know" to the question "What should Katy say?" Eight children did not respond or said "I don't know" for the questions "Is what Katy said a lie or the truth?" and "What would you say?" in the hypothetical situation. For the question "How good or bad is what Katy said?" 22 children said "I don't know" or did not respond.

increased, more children responded correctly, $\chi^2(1, N = 87) = 8.18$, $p < .01$. A linear regression analysis on children's ratings of Katy's untruthful statement (dependent variable) revealed a significant age effect, R^2 change $= .05$, $F(1, 73) = 4.95$, $p < .05$. As age increased, children's ratings became increasingly more negative. With regard to the hypothetical situation involving children themselves (dependent variable), the age effect was significant, $\chi^2(1, N = 93) = 18.76$, $p < .001$. As age increased, children increasingly responded that they would confess in the hypothetical situations.

To examine directly the relation between the peekers' responses in the concept component and their lie- or truth-telling behavior in the action component, a hierarchical logistic regression analysis was conducted with the same regression model as that used in Experiment 1. The dependent variable was the peekers' actual lie- or truth-telling behavior. After partialling out the effect of age, children's responses to the conceptual questions collectively were not significantly related to their actual lie- and truth-telling behavior, $\chi^2(1, N = 63) = 0.86$, *ns*.

To address the issue of variability, we analyzed the data of 3-year-olds because they were highly variable in both their behaviors and their responses to the conceptual questions (see Table 3). Whether 3-year-olds lied or confessed (dependent variable) was not related to their responses to any of the following questions: "What would Katy say?" $\chi^2(1, N = 13) = 1.04$, *ns*; "Is what Katy said a lie or the truth?" $\chi^2(1, N = 10) = 0.63$, *ns*; "How good or bad is what Katy said?" Pearson $r(df = 19) = .07$, *ns*; and "What would you say (in the hypothetical situation)?" $\chi^2(1, N = 14) = 0.05$, *ns*.

Discussion

With regard to the concept component, once again, most children in the Discussion Condition showed appropriate conceptual knowledge about lie- and truth-telling, but the majority of them lied about their transgressions anyway. These results replicated the findings of Experiments 1 and 2.

With regard to the action component, a significant condition effect was obtained. When children only answered questions about truth- and lie-telling, 75% of them lied about their transgression (Discussion Condition). When children were simply asked to promise to tell the truth, only 59% of children lied about their transgression (Promise Condition). These results suggest that the promise component of the competence examination is more likely to promote truth-telling than questioning children about their conceptual knowledge of lie- and truth-telling.

However, because no control condition was used in the present experiment in which children were neither asked to promise to tell the truth nor questioned about lie- and truth-telling, it is unclear whether questioning children about lie- and truth-telling has any truth-promoting effect at all. We used an exploratory logistic regression to compare the rates of lying in the Promise (59%) and Discussion (75%) conditions to that in the Action First Condition of Experiment 1 (79.6%, akin to a "no discussion, no promise" condition) and that (57%) in Experiment 2 (the discussion and promise condition). The rate of lying in Experiment 2 did not differ significantly from that in the Promise Condition but was significantly lower than that in the Discussion Condition and that in the Action First Condition of Experiment 1

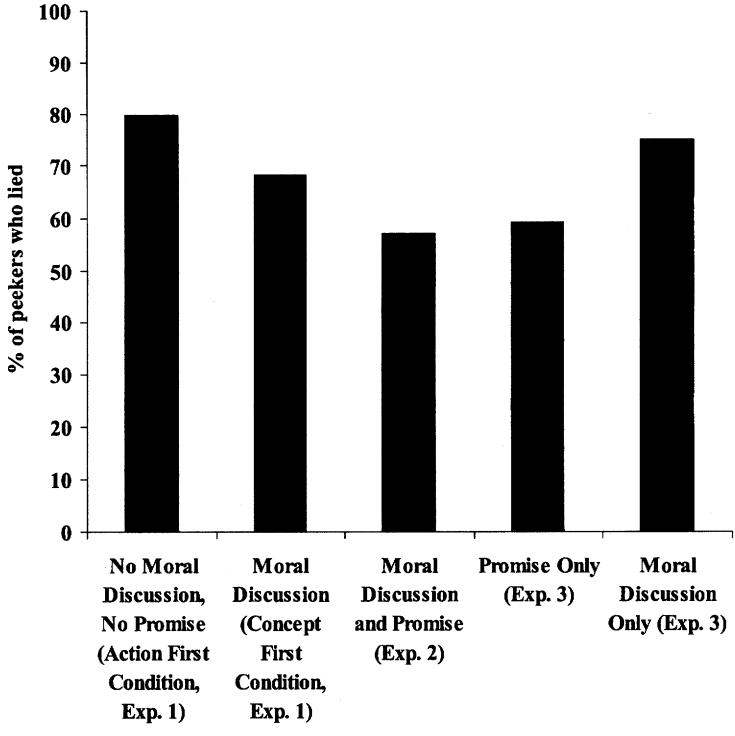

Fig. 1. Percent of children who lied in each condition of Experiments 1, 2, and 3.

(Fig. 1). The rates of lying in the latter two conditions were not significantly different from each other. Thus, the act of promising to tell the truth has the truth-promoting effect, whereas questioning children about lie- and truth-telling might not have such an effect.

GENERAL DISCUSSION

The findings of this study supported the second legal assumption underlying the court competence examination that discussion with children about the concepts and moral implications of lie- and truth-telling in combination with the act of a child promising to tell the truth has a truth-promoting effect. In addition, the act of promising to tell the truth alone has a significantly stronger effect on children's subsequent truth-telling behavior than discussing the concepts and moral implications of lie- and truth-telling. The latter appears to have very limited, if any, truth-promoting effect. Although the act of promising clearly does not eliminate lying—more than half of the children continued to lie after promising to tell the truth—it has a significant impact on children's truth telling behavior about their own transgressions.

This study failed to confirm the first legal assumption underlying the court competence examination that children who, understanding the concept and moral

implications of truth- and lie-telling, are more likely to tell the truth than those who do not understand these concepts. Rather, in Experiment 1, no significant relation was found between children's conceptual knowledge about lie- and truth-telling and their actual behavior. In Experiment 2, although the relation between the two was significant, the significant relation was limited to children's categorization of Katy's untruthful statement as a lie. Further, the direction of this significant relation was opposite to what was predicted by the assumption.

Overall, most children said that a story character who commits a misdeed should tell the truth and they would confess about their own transgression in a similar, hypothetical situation, but most children lied about their own transgression. That these children told lies was not because they were unaware that untruthful statements about transgressions were lies, nor because they had yet to learn about the negative moral value of lying. Rather, most of them clearly knew that an untruthful statement about a transgression was a lie and rated it very negatively. They simply failed to translate their conceptual knowledge into the action anticipated by the courts.

Our failure to confirm the first legal assumption about the relation between children's conceptual knowledge and action is not likely due to the specific procedures we used. In fact, our results from either the "concept" procedure or the "action" procedure were highly comparable to those found in previous studies using a variety of procedures. Our experiments consistently show that many 3-year-olds confessed to their transgression, whereas older children lied about it. Using a similar paradigm, Lewis and colleagues reported that about 50% of 3-year-olds confessed about their transgression, but after 3 years of age most children lied (Lewis, 1993; Lewis et al., 1989). Using different paradigms, Peskin (1992) reported lie-telling rates ranging from 20% for 3-year-olds to 87% for 5-year-olds in a competitive game. Taken together, these findings suggest that lying behavior emerges early in the preschool years and develops rapidly.

With regard to children's conceptual knowledge about truth- and lie-telling, our results yielded consistent findings. As age increased, children's conceptual knowledge about lie- and truth-telling increased significantly. They became increasingly more accurate in labeling an untruthful statement as a lie, more inclined to recommend that others tell the truth, and more likely to give negative ratings to acts of lying to conceal a misdeed. As age increased, increasingly more children claimed that they would tell the truth about their own transgression.

A number of studies have specifically investigated young children's concept of lying and their moral judgments (for a review, see Lee, 2000). These studies used a variety of procedures and examined children's conceptual understanding of truth- and lie-telling in various contexts. In general, their findings are highly similar to ours (Bussey, 1992; Haugaard, 1993; Haugaard et al., 1991; Lee et al., 1997, 2001; Peterson et al., 1983). This suggests that our concept procedure is an effective method to reliably assess children's basic knowledge about lie-telling. It should be noted that the questions and procedures used in our concept component, according to Lyon and Saywitz (1999), are the best form of questions used in the court competence examination and are more likely to obtain appropriate assessments of children's conceptual understanding than, for example, definition questions (e.g., What is a "lie"?) that are sometimes used in courts (Bala et al., 2000).

One can argue that our failure to confirm the first legal assumption is due to the lack of variability in terms of both children's lie-telling behavior (most of them lied) and their answers to the conceptual questions (many of them answered correctly). However, this argument is inconsistent with our findings. Despite substantial response variability among the 3-year-olds in both the concept and action components, our analysis failed to obtain a significant relation between concept and action. More importantly, although we failed to establish significant relations between children's actual behavior and their responses to most of the conceptual questions, our results suggest that children responded systematically. They responded opposite to what was expected given the assumptions underlying the legal competence examination. Most of them correctly labeled a false statement as a lie, they made appropriate moral judgments about lying, they suggested that other people should confess to their transgressions, and claimed that they would tell the truth if in a situation of transgression. Despite all these appropriate responses, they did just the opposite in the action component: lying about their own transgression! Clearly, this pattern of results strongly contradicts the first assumption of the competence examination. Understanding the concept of lying and its negative moral implications does not mean that the child will not lie.

This finding is consistent with both the moral development literature and social psychological research. Moral developmental researchers have shown that children's moral developmental level (e.g., as assessed by Kohlberg's moral dilemmas), although revealing their cognitive sophistication, has rarely been found to predict their moral conduct in laboratory or real-life settings (e.g., Blasi, 1980, 1990; Burton, 1976; Hartshorne & May, 1928). Also, research in social psychology indicates a parallel tendency for adults to express attitudes that do not accurately predict their behaviors (Batson & Thompson, 2001; Wicker, 1969). When confronted with morally challenging situations, adults' actions often do not reflect their proclaimed attitude. As Batson and Thompson (2001) put it, moral people do not always do moral things. One reason for this mismatch may be that people do not express their true attitudes because they know that their actual behaviors are not socially desirable (Paulhus, 1991). It also is possible that situational factors may conflict with and override the individuals' inclination to act according to their moral knowledge (Batson & Thompson, 2001). Thus, the children in our studies may say that lying is bad and that they would not lie only because they know that adults want and expect such statements. Also, such knowledge was insufficient to guide children to practice what they preach and to tell the truth.

Our findings have important implications for the competence examination in court cases involving child witnesses. As mentioned earlier, there have been trials in which a child's failure to answer adequately conceptual questions about lie- and truth-telling have precluded them from testifying (Bala et al., 2000). Sometimes, an appeal court will review the transcript of a child's competence inquiry and conclude that a conviction should be overturned solely on the ground that the child failed to give adequate answers to these conceptual questions, even though the child otherwise appeared to be a competent and compelling witness (Bala et al., 2001).

Our findings do not support the exclusion of children from testifying because they fail certain conceptual questions about lie- and truth-telling. The fact that a

child understands lie- and truth-telling conceptually does not relate to his or her actual truthfulness. Thus, using competence examinations to screen out children with limited understanding of lie- and truth-telling is problematic. Such a practice will prevent children who are able to give truthful and useful testimony from testifying. Ironically, the inverse expectation, that lacking conceptual knowledge about lie- and truth-telling will predict a higher likelihood of inaccurate statements, is also misguided. The 3-year-olds in our study were the age group that had most difficulty with the conceptual questions and were the least likely to lie. Overall, on the basis of our findings, questioning children about their understanding of lying and truth-telling does not have any bearing on the truthfulness of their subsequent testimony. Asking children to promise to tell the truth, however, has some real value, although it does not eliminate lying in all children.

It is important to address some arguments that might limit the relevance of these research findings to the legal context. First, one can argue that in our study children lied to conceal their own minor transgression, whereas in actual legal cases they may lie about an adult's serious criminal behavior. The latter situation should be simulated to establish whether children's conceptual understanding of truth- and lie-telling is indeed related to their actual truth- or lie-telling behavior in the court. Ethical concerns notwithstanding, additional research regarding children's lying behavior in such a situation is needed to test further this relationship. However, it should be noted that our procedure to assess children's actual lying behavior about a minor transgression is relevant for the court competence examination. This is because, as said earlier, children in the actual court competence examination are often asked questions about their own or others' minor transgressions. Thus, if the legal assumption is correct that children's conceptual knowledge is related to their actual behavior, this relationship at least should be obtained when both the action and concept procedures involve minor transgressions. Furthermore, abused children often feel that they have transgressed rather than their abuser, and so it is relevant to explore situations in which children feel responsible for a transgression and their lying behavior in relation to such situations.

One can further argue that the minor transgressions discussed in our concept procedure do not match the transgression that children commit in the action procedure. Had we asked children questions regarding lying about cheating at a game in the concept procedure or created an action procedure involving children breaking a glass or eating a forbidden candy, we could have obtained a significant relation between children's responses in the two procedures. Further experiments are needed to address this possibility. However, if the relation between children's conceptual knowledge about lie- and truth-telling and their actual behavior could only be obtained under highly matched, situation-specific conditions, this would also suggest that the current competence examination is problematic because conceptual questions in the court competence examination are seldom, if ever, concerned with the alleged criminal acts that children are about to testify.

Another argument is that in our study, whether children are truthful or not is of limited consequence. In real-life situations, children often testify against relatives (e.g., parents) or other individuals (e.g., teachers) with whom they have strong emotional and social relations. Their testimony may result in the loss of such relations.

There is much more at stake for children when testifying against these individuals than lying or confessing about their own minor misdeeds. The current simulation may not fully reflect the process of lying in court in cases involving such issues as abuse. The association between knowledge and truth-telling behavior for an event such as abuse may be different. Children in cases of abuse may have different motivations and experiences that will affect their truth-telling. The findings of this study may not be direct tests of the relationship between knowledge and behavior as found in forensically significant cases. There are, however, significant ethical constraints that prevent the direct testing of the applicability of these results in cases involving abuse or similar issues.

The marked differences between the situation in our study and the actual court situations, however, do not make our findings less relevant to the current practices in the legal system. It is true that in our study the transgression that children committed was minor, and very little was at stake if children lied or confessed about it. Yet, most children were motivated to lie about it. If children lie about something that is of little consequence, they may be more motivated to give untruthful testimony in a court of law for fear of grave consequences if they tell the truth (e.g., losing their parents, being placed in a foster home, etc.). If questioning children about lie- and truth-telling does not lead to significant reduction in lying about a minor transgression, the effect of such a procedure on children's truth-telling about more serious criminal behaviors should be in grave doubt.

Our findings raise questions about whether to change or improve the current competence examination procedure. In the past few years, there have been many reforms to the laws governing child witnesses, for example, to permit use of videotapes and closed circuit television (Lindsay, Ross, Lea, & Carr, 1995; Myers, 1996; Ross et al., 1994). However, North American jurisdictions have largely maintained the conventional competence examination procedure. A few jurisdictions, such as England, have enacted legislation to modify dramatically the process for qualifying children as witnesses, focusing solely on the competence of the child to communicate effectively in a court setting (Bala et al., 2000). Our findings suggest that the enactment of reforms based on the English model in North America may be one alternative to the current practice, although the requirement that children be asked to promise to tell the truth before testifying should be retained.

Our research is consistent with other research findings and with psychological theories about child development and truth- and lie-telling behavior. An understanding of why people lie is a complex and multifaceted issue (DePaulo & Kashy, 1998; DePaulo, Stone, & Lassiter, 1985). The decision to lie is a function of an often complex interaction of a person's psychological motivations, cultural factors, and situational context. Lying is not, however, linked to the cognitive development needed to answer "correctly" the types of questions that are asked at a competency inquiry. A conclusion that should not be drawn from our research is that children generally lie and should not be allowed to testify. It is clear that adults may have a very thorough knowledge of the concept of an oath and importance of truth-telling but they still lie. Witnesses of all ages will lie when conditions motivate them to do so. It is not reasonable to discriminate against children because they act like adults in this regard. The more serious error is to exclude the evidence of child witnesses, particularly victims,

based on the faulty reasoning that their inability to define "truth" implies that they are more likely to lie than witnesses who can provide such a definition.

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