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Age Differences in Young Children's Responses to Open-Ended Invitations in the Course of Forensic Interviews

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To elucidate age differences in responses to free-recall prompts (i.e., invitations and cued invitations) and focused recognition prompts (i.e., option-posing and suggestive utterances), the authors examined 130 forensic interviews of 4- to 8-year-old alleged victims of sexual abuse. There were age differences in the total number of details elicited as well as in the number of details elicited using each of the different types of prompts, especially invitations. More details were elicited from older than from younger children in response to all types of prompts, but there were no age differences in the proportion of details (about 50%) elicited using invitations. Cued invitations elicited 18% of the total details, and the number of details elicited using cued invitations increased with age. Action-based cues consistently elicited more details than other types of cues.

Many psychologists have demonstrated in laboratory analog contexts that freely recalled information is more likely to be accurate than information retrieved in response to recognition memory prompts, including those presented in yes/no and forced-choice formats (Dale, Loftus, & Rathbun, 1978; Dent, 1982, 1986; Dent & Stephenson, 1979; Goodman & Aman, 1990; Goodman, Bottoms, Schwartz-Kenney, & Rudy, 1991; Hutcheson, Baxter, Telfer, & Warden, 1995; Oates & Shrimpton, 1991; Ornstein, Gordon, & Larus, 1992). Although it is typically impossible to determine the accuracy of the information disclosed in forensic cases, close examinations of individual cases in which accuracy was assessed have yielded findings consistent with those obtained in the laboratory (Lamb & Fauchier, 2001; Orbach & Lamb, 1999, 2001). In forensic contexts, responses to individual free-recall prompts are also three to five times more informative than responses to more focused prompts (e.g., Lamb, Hershkowitz, Sternberg, Esplin, et al., 1996; Sternberg et al., 1996; Sternberg, Lamb, Davies, & Westcott, 2001). As a result, most professional and expert guidelines recommend that forensic interviewers should rely as much as possible on free-recall prompts to foster retrieval of uncontaminated information from the memories of alleged abuse victims (American Professional Society on the Abuse of Children, 1990; Bull, 1992, 1996; Fisher & Geiselman, 1992; Jones, 1992; Lamb, Sternberg, & Esplin, 1998; Lamb, Sternberg, Esplin, Orbach, & Hershkowitz, 1999; Memorandum of Good Practice, 1992; Poole & Lamb, 1998; Raskin & Esplin, 1991; Yuille, Hunter, Joffe, & Zaparniuk, 1993) and take special care to avoid the yes/no and forced-choice questions that are more likely to elicit erroneous information, especially from young children (e.g., Dent & Stephenson, 1979; Poole & Lindsay, 1998). Several researchers have cautioned that preschoolers' responses to free-recall prompts are typically brief and incomplete (for reviews see Bourg et al., 1999; Hewitt, 1999; Lyon, 1999; Saywitz & Goodman, 1996), but the inadequacies and capacities of preschoolers have not been examined closely in forensic contexts because previous field studies (Hershkowitz, 2001; Orbach et al., 2000; Sternberg, Lamb, Orbach, Esplin, & Mitchell, 2001) included few preschool-age children. The present study was designed to examine age differences in both quantitative and qualitative aspects of young children's responses to free-recall prompts.

Clearly, there are important differences between the autobiographical memory retrieval strategies and capacities of preschool-

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ers and older children (Schneider & Bjorklund, 1998). Younger children tend to remember less information and to provide briefer accounts of their experiences than older children do (Baker-Ward, Gordon, Ornstein, Larus, & Clubb, 1993; Lamb, Hershkowitz, Sternberg, Boat, & Everson, 1996; Lamb, Hershkowitz, Sternberg, Esplin, et al., 1996; Lamb, Sternberg, & Esplin, 2000; Ornstein et al., 1992; Sternberg et al., 1996). In addition, young children, especially preschoolers, are more likely than older children both to respond erroneously to suggestive questions about their experiences and to select erroneous options when responding to forced-choice questions (Bruck, Ceci, Francouer, & Renick, 1995; Ceci & Bruck, 1995; Goodman & Aman, 1990; Oates & Shrimpton, 1991; Poole & Lindsay, 1998; Walker, Lunning, & Eilts, 1996). Their free-recall reports are not less accurate than those of older children, however (Flin, Boon, Knox, & Bull, 1992; Goodman & Reed, 1986; Johnson & Foley, 1984; Marin, Holmes, Guth, & Kovac, 1979; Oates & Shrimpton, 1991).

Because forensic interviewers often have difficulty adhering to recommended interview practices in the field (Cederborg, Orbach, Sternberg, & Lamb, 2000; Craig, Scheibe, Kircher, Raskin, & Dodd, 1999; Davies, Westcott, & Horan, 2000; Lamb, Hershkowitz, Sternberg, Boat, & Everson, 1996; Lamb, Hershkowitz, Sternberg, Esplin, et al., 1996; Sternberg, Lamb, Davies, & Westcott, 2001; Walker & Hunt, 1998), researchers at the National Institute of Child Health and Human Development (NICHD) developed a structured interview protocol designed to translate professional recommendations into operational guidelines (Orbach et al., 2000). The structured protocol guides interviewers through all phases of the investigative interview, illustrating free-recall prompts and techniques to maximize the amount of information elicited from free-recall memory.

Two independent field studies demonstrated that (a) interviewers who use the protocol adhere to recommended practices more than interviewers who do not use the protocol and (b) children interviewed using the protocol provide more free-recall details than do children interviewed without the protocol (Orbach et al., 2000; Sternberg, Lamb, Orbach, et al., 2001). Moreover, children in the two youngest age groups (4- to 6-year-olds and 7- to 8-year-olds) interviewed using the NICHD protocol did not differ significantly with respect to the average number of details provided per invitation (i.e., open-ended free-recall prompts) and the total number of forensically relevant details provided in response to such invitations (Sternberg, Lamb, Orbach, et al., 2001). Half of the information provided by the 16 4- to 6-year-olds studied by Sternberg, Lamb, Orbach, et al. (2001) was elicited using open-ended invitations (i.e., free-recall prompts). These findings indicate that young children can respond informatively to open-ended free-recall prompts.

These studies included too few 4- to 6-year-old children, however, to permit close examination of age differences in children's responses to free-recall prompts. As indicated earlier, information elicited using free-recall prompts, which avoid potential contamination by the interviewer, should be more accurate than information elicited using yes/no and forced-choice questions (i.e., option-posing prompts). By using proportionally more free-recall prompts to elicit information, in other words, interviewers using the NICHD protocol establish superior retrieval conditions for young interviewees. In addition, less information is elicited using yes/no questions and suggestive prompts, which are more likely to elicit inaccurate information (Bell, 1984; Goodman & Aman, 1990; O'Callaghan & D'Arcy, 1989; Peterson & Biggs, 1997; Price & Goodman, 1990; Saywitz, Goodman, Nicholas, & Moan, 1991) when the protocol is used. All 130 of the 4- to 8-year-old child witnesses included in the present study were interviewed using the NICHD protocol, so the interviews studied contained more free-recall prompts than typical forensic interviews (Cederborg et al., 2000; Craig et al., 1999; Davies et al., 2000; Lamb, Hershkowitz, Sternberg, Boat, & Everson, 1996; Lamb, Hershkowitz, Sternberg, Esplin, et al., 1996; Sternberg, Lamb, Davies, & Westcott, 2001; Walker & Hunt, 1998).

The purpose of the present study was to examine age differences in the amount and quality of information provided by young children in response to the different types of free-recall prompts described by Hershkowitz (2001). The different kinds of open-ended invitations differ in scope, and it is possible that younger children may have greater difficulty than older children responding informatively to the more general invitations (e.g., "Tell me what happened" or "Tell me more about it") than to the narrower, refocusing cued invitations (e.g., "You said he kissed you on your lips; tell me about the kissing") included in the NICHD interview protocol. Cued invitations use predisclosed details as contextual cues to prompt further free-recall elaboration, with those that refocus on time periods labeled *time-segmenting cues*. Time-segmenting cues use predisclosed actions as temporal reference points for requesting event information about what happened before or after such reference points, during the time elapsing between two such temporal reference points, or at the same time as a designated act (e.g., "What happened while your mother was in the kitchen?" [predisclosed]).

Saywitz and her colleagues (Camparo, Wagner, & Saywitz, 2001; Dorado & Saywitz, 2001; Saywitz, Nathanson, Snyder, & Lamphear, 1993; Saywitz & Snyder, 1996) have shown that young children's narrative recollections of staged events can be enhanced using a narrative elaboration procedure that they developed. The narrative elaboration procedure involves visual cues, representing four retrieval categories (i.e., participants, settings, actions, and conversations), that expand the amount of information recalled and avoid the use of yes/no and forced-choice prompts when questioning 4- to 11-year-olds (Dorado & Saywitz 1997; Saywitz & Snyder, 1996). The narrative elaboration procedure has not yet been tested in actual forensic interviews, although the visual cues involved could function as visual prompts (cued recall) if they were introduced at the appropriate time to avoid suggestive contamination. The NICHD interview recommends extensive use of cued invitations to enhance the recall of forensically relevant information during investigative interviews, and the effectiveness of the cued-invitation technique was explored in the present study.

Although the narrative elaboration and the cued-invitation procedures are both designed to promote complete and accurate eyewitness recall by fostering further elaboration of previously disclosed information by use of cued-recall prompts, the two differ with respect to the memory processes tapped. Both procedures emphasize recall and avoid the confirmation, negation, or selection of interviewer-provided options as in yes/no or forced-choice questions. In the narrative elaboration procedure, however, cued recall is promoted using visual cards, implicitly providing "who, what, and where" questions (Dorado & Saywitz, 2001, p. 574), whereas the cued-invitation technique verbally refocuses on details

freely disclosed by the children themselves and then offers general invitations. The types of cued recall explored in the present study thus differ from that studied by Saywitz and her colleagues in the laboratory analog studies.

Method

Participants

The study included forensic interviews of 130 children (90 girls and 40 boys), 20, 29, 32, 29, and 20 of whom were 4-, 5-, 6-, 7-, and 8-years-old, respectively. All of these investigative interviews were designed to elicit complete and accurate episodic information about alleged incidents to facilitate decisions about child protection or criminal prosecution, and all were the first formal interviews of the alleged victims. These interviews were selected from a total of 271 interviews of 4- to 8-year-olds conducted in 1997–2001 by participating police officers in three police departments, one in the United Kingdom and two in the western United States, where the NICHD investigative interview protocol had been introduced. All forensic interviews of alleged victims of sexual abuse conducted by the 16 participating police officers during the study periods, which differed from site to site, were considered for inclusion in the study. Of the 141 interviews that were excluded, 60 yielded no allegation of abuse, 59 did not involve use of the protocol, 12 yielded allegation of physical abuse, 3 were interviews of witnesses rather than alleged victims, 3 were second interviews, and 4 involved intermediaries or other possible sources of confusion. Interviews of suspected victims who did not disclose abuse were excluded because these interviews did not yield any substantive information about specific incidents, which is the focus of the present study. The interviews excluded for this reason were conducted with children of all ages and were not disproportionately likely to involve the very young. No interviews yielded allegations that appeared to be false. Thus all available protocol-guided first interviews yielding explicit allegations of sexual abuse were included in the study. All of the alleged complaints were deemed valid by police investigators, but details of the actual incidents were not known because this was a field study. Sixty (46%) of the children reported a single incident, whereas 70 (54%) reported two or more incidents. In 48 (37%) of the cases, the reported offender was an immediate family member, 24 (19%) were more distant relatives, 56 (43%) were familiar but unrelated individuals, and only 2 (2%) were unfamiliar to the alleged victims. Five (4%) of the children reported exposure, 23 (18%) reported being fondled over their clothes, 71 (55%) reported touching under their clothes, and 31 (24%) described oral, anal, or vaginal penetration. There were no differences between children of each age with respect to the proportions involving different types of abuse, relationship to the perpetrator, or the reported number of abusive events.

All interviews studied followed the standard NICHD Investigative Protocol (see Orbach et al., 2000; Sternberg, Lamb, Orbach, et al., 2001). All interviewers received extensive training from researchers at NICHD on the use of the NICHD protocol while they conducted simulated and actual forensic interviews during the course of the project.

NICHD Investigative Protocol

The NICHD protocol is fully structured, covering all phases of the investigative interview. In the introductory phase, the interviewer introduces him- or herself, clarifies the child's task (the need to describe events in detail and to tell the truth), and explains the ground rules and expectations (i.e., that the child can and should say "I don't remember," "I don't know," "I don't understand," or correct the interviewer when appropriate). The rapport-building phase comprises two sections. The first is a structured open-ended section designed to create a relaxed, supportive environment for children and to establish rapport between the child and the interviewer (Sternberg et al., 1997). In the second section, children are prompted to describe a recently experienced neutral event in detail. This training in the presubstantive phase of the interview is designed to simulate the open-ended investigative strategies and techniques used in the substantive phase and the related pattern of interaction between interviewers and children, while demonstrating to children the specific level of detail expected.

In a transitional phase between the presubstantive and the substantive parts of the interview, a series of prompts are used to identify the target event or events under investigation nonsuggestively, beginning with "Tell me the reason you came to talk with me today." The interviewer only moves on to some carefully scripted and increasingly focused prompts (in sequence) if the child fails to identify the target event.

Following disclosure of the allegation, the free-recall phase begins with the main invitation ("Tell me everything that happened from the beginning to the end as best you can remember"). Follow-up free-recall prompts (i.e., invitations) are then recommended ("Tell me more about that," "Then what happened?"). As soon as the first narrative is completed, the interviewer prompts the child to indicate whether the incident occurred "one time or more than one time" and then proceeds to secure incident-specific information using follow-up and cued invitations (e.g., "Earlier you mentioned a [person, object, or action]. Tell me everything about that," making reference to details mentioned by the child) to elicit uncontaminated free-recall accounts of the alleged incident or incidents.

Only after exhaustive free-recall prompting do interviewers proceed to directive questions (focused questions [mainly when, where, who, or what questions]) that address details previously mentioned by the child and request information within specific categories (e.g., time, appearance) such as "When did it happen?" or "What color was his car?" after the child mentioned a car. If crucial details are still missing, interviewers then ask limited option-posing questions (mostly yes/no questions referencing new issues that the child failed to address previously) such as "Did he touch any part of your body when he was talking to you?" Suggestive utterances, which communicate to the child what response is expected ("At that time he was lying on top of you, wasn't he?"), are strongly discouraged in all phases of the interview.

Data Coding

Audiotapes of the interviews were transcribed and checked to ensure their completeness and accuracy. Two trained raters reviewed the portions of the interviews concerned with substantive issues and categorized each interviewer utterance, defined by a "turn" in the discourse or conversation, without distinguishing between questions and statements. Four categories introduced by Lamb and his colleagues (Lamb, Hershkowitz, Sternberg, Esplin, et al., 1996; Lamb, Hershkowitz, Sternberg, Boat, & Everson, 1996) were used to characterize interviewer utterances in the substantive portions of the interviews: invitations, directive utterances, option-posing utterances, and suggestive utterances.

1. *Invitations* prompted free-recall responses from the child. Such utterances did not limit the child's focus except in a general way. For purposes of some analyses reported below, we distinguished between general invitations (e.g., "Tell me everything that happened") and cued invitations, which were invitations in which reference was made to a detail mentioned earlier by the child (e.g., "You mentioned that he touched you. Tell me everything about the touching"). Cued invitations were further categorized depending on whether they referenced events, actions, segments of time, or other topics.

2. *Directive utterances* refocused the child's attention on details or aspects of the alleged incident that he or she had already mentioned, typically in the form of who?, what?, or when? questions, and requested specific categories or types of additional information about them. Examples included, "When did it happen?"

(when the child disclosed that something happened) or "What color was his T-shirt?" (when the child mentioned a T-shirt).

3. *Option-posing utterances* focused the child's attention on details or aspects of the alleged incident that the child had not previously mentioned. These utterances prompt the child to affirm, negate, or select an investigator-given option using recognition memory processes, but do not imply that a particular response is expected. For example, the investigator might ask, "Did he touch you over or under your clothes?" (when the child mentioned being touched).

4. *Suggestive utterances* were stated in such a way that the interviewer strongly communicated what response was expected (e.g., "He forced you to do that, didn't he?") or assumed details that had not been revealed by the child (e.g., child: "We laid on the sofa"; interviewer: "He laid on you or you laid on him?").

Coders then used a technique developed by Yuille and Cutshall (1986) and elaborated by Lamb, Hershkowitz, Sternberg, Esplin, et al. (1996) to measure the amount of new information provided by the children in each response by tabulating the number of details, operationally defined as the smallest units of forensically relevant information. By definition, details involved the identification of individuals, objects, and events and descriptions of their features (e.g., appearance, actions, locations). All were thus forensically relevant. Details were only counted when they added to understanding of the target incidents, so restatements of facts were not counted. Details provided following facilitators, defined as nonsuggestive words such as *ok* or *yes* that encouraged the child to continue with an ongoing response to the previous utterance, were attributed to the preceding substantive utterance (invitation, directive, option posing, or suggestive).

All coding was conducted by one of three coders who trained on an independent set of transcripts until they agreed with one another concerning the classification of at least 90% of the utterance types and details. During the course of rating, two or more of the raters independently coded 20% of the transcripts to ensure that they remained equivalently reliable. In these assessments, raters agreed regarding the classification of at least 90% of the interviewer utterances and 87% of the details provided by the children.

Results

Investigators' Behavior

In the substantive portions of the interviews, investigators posed an average of 15.81 ($SD = 9.08$) invitations, 17.31 ($SD = 13.03$) directive prompts, 12.62 ($SD = 8.43$) option-posing prompts, and 3.25 ($SD = 3.43$) suggestive prompts (see Table 1). The average number of prompts of each type did not vary significantly by age. The investigators asked an average of 8.08 ($SD = 7.15$) substantive questions (15% of the total number of substantive prompts) before their first substantive option-posing or suggestive prompt, and this did not vary depending on the children's ages.

The average interview included 5.36 ($SD = 4.41$) cued invitations. There was a significant effect for age with respect to the number of cued invitations, $F(4, 125) = 2.49$, $p < .05$, with more cued invitations being addressed to 4-, 5-, and 8-year-olds (Ms = 6.2, 6.4, and 6.8, respectively) than to 6- and 7-year-olds (Ms = 3.9 and 4.3, respectively) (Scheffé's ps $< .05$). With the exception of this one nonlinear association with age, these analyses indicate that the interviewers interacted similarly with children of all ages studied.

Children's Responses

Not surprisingly, there were significant age differences in the total number of details elicited, $F(4, 125) = 3.20$, $p < .05$, as well as in the number, multivariate $F(16, 373) = 1.96$, $p < .05$, elicited using each of the different types of prompts (see Table 2). Subsequent univariate analyses revealed significant effects for age with respect to the number, $F(4, 125) = 5.70$, $p = .0001$, of details elicited using invitations, with more details elicited from the older children. (Scheffé's tests showed differences between adjacent means, ps $< .05$.) Although the percentage of total details elicited using invitations was highest among the 8-year-olds (57%), the second highest percentage was among the 4-year-olds (48%). As a result, there was no significant effect for age with respect to the proportion of details elicited using invitations.

Univariate tests also revealed a significant effect for age with respect to the average number of details elicited by each invitation, $F(4, 125) = 3.61$, $p < .05$, with means of 2.66 ($SD = 1.95$), 3.59 (2.77), 4.59 (3.40), 5.55 (5.57), and 8.05 (9.26) details for responses by 4-, 5-, 6-, 7-, and 8-year-olds, respectively. (Scheffé's tests revealed significant differences between means for adjacent age groups.) General invitations (as opposed to cued invitations) likewise yielded an increasing number of details as children grew older, $F(4, 125) = 3.62$, $p < .05$: On average, 2.31 ($SD = 2.19$), 3.0 (2.38), 4.51 (3.73), 5.70 (6.91), and 7.86 (9.34) details were elicited by each general invitation addressed to 4-, 5-, 6-, 7-, and 8-year-olds, respectively (Scheffé's ps $< .05$).

There were no age differences in the number of utterances of each type that elicited one or more details, indicating that children of all ages were equivalently likely to respond informatively to similar types of prompts. There was, however, a near-significant

Table 1
Association Between Children's Age and the Investigators' Interview Strategies

	Invitations		Directive		Option posing		Suggestive	
Age (years)	*M* (*SD*)	% (*SD*)	*M* (*SD*)	% (*SD*)	*M* (*SD*)	% (*SD*)	*M* (*SD*)	% (*SD*)
4	16.60 (8.3)	38.20 (14.0)	13.45 (7.1)	29.4 (11.3)	11.45 (5.6)	25.2 (7.8)	3.50 (3.4)	7.20 (6.4)
5	18.24 (11.7)	39.80 (17.3)	15.07 (13.1)	27.2 (9.9)	13.45 (8.9)	27.7 (10.7)	3.34 (4.5)	5.21 (4.6)
6	13.31 (6.4)	30.00 (12.0)	19.53 (14.7)	37.9 (12.1)	11.94 (8.8)	24.1 (8.6)	3.50 (2.2)	8.00 (5.1)
7	14.72 (9.3)	31.30 (15.7)	19.07 (13.1)	34.2 (14.4)	14.28 (9.3)	27.6 (9.0)	3.45 (3.8)	6.90 (7.4)
8	17.15 (8.4)	38.80 (15.7)	18.30 (14.3)	34.3 (11.6)	11.30 (8.6)	22.5 (9.0)	2.15 (3.0)	4.30 (4.1)
Total	15.81 (9.1)	35.10 (15.4)	17.31 (13.0)	32.8 (12.5)	12.62 (8.4)	25.6 (9.2)	3.25 (3.4)	6.40 (5.8)

Table 2
Association Between Children's Age and the Number of Details Elicited Using Different Investigative Prompts

	Invitations	Directive	Option posing	Suggestive	Total
Age (years)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
4	39.95 (34.57)	21.30 (19.40)	15.80 (11.75)	6.05 (7.55)	83.10 (54.29)
5	54.45 (44.41)	32.76 (27.12)	22.71 (16.30)	6.14 (8.67)	115.55 (73.88)
6	58.09 (42.21)	50.97 (63.22)	30.31 (71.54)	8.81 (10.77)	148.19 (157.26)
7	65.55 (64.05)	43.00 (41.58)	26.48 (26.49)	9.03 (17.44)	144.07 (95.76)
8	139.65 (153.62)	42.05 (34.65)	31.60 (42.09)	7.10 (7.84)	220.40 (212.60)
Total	68.70 (79.89)	39.19 (42.73)	25.62 (41.42)	7.58 (11.37)	141.08 (133.67)

multivariate effect for age with respect to the proportion of utterances of each type eliciting one or more details, $F(16, 373) = 1.61$, $p < .10$. Univariate tests revealed a significant effect only for the proportion of invitations eliciting informative responses, $F(4, 125) = 3.02$, $p < .05$. Inspection of means revealed a U-shaped function, with 42, 44, 30, 30, and 48 of the invitations addressed to 4-, 5-, 6-, 7-, and 8-year-olds, respectively, eliciting informative responses.

There was also an effect of age, $F(4, 125) = 2.71$, $p < .05$, on the number of details provided before the first option-posing or suggestive prompt: the older the child, the more details were reported before the first option-posing or suggestive utterance. There was no significant effect with respect to the proportion of the total number of details elicited before the first such prompt, however: Despite differences in the total amount of information provided by children of different ages, younger and older children reported similar proportions (of their total amount of reported information) before the first introduction of interviewer input by means of option-posing or suggestive prompts.

Cued Invitations

Because preschoolers are often deemed incapable of providing informative responses to very general prompts (e.g., "Tell me what happened"), we were particularly interested in age differences in response to cued invitations, in which the interviewer made explicit reference to an event or informative detail previously mentioned by the child. An average of 25.32 ($SD = 29.95$) details per interview were elicited using cued invitations. Cued invitations thus elicited 18% of the total number of details elicited and 37% of the total number of details elicited using invitations.

Not surprisingly, the number of details elicited using cued invitations increased with age, $F(4, 125) = 4.22$, $p < .01$. Similarly, the average number of details per cued invitation tended to increase with age, $M_4 = 3.47$ (2.50), $M_5 = 4.75$ (4.61), $M_6 = 4.50$ (4.41), $M_7 = 5.76$ (5.83), and $M_8 = 9.55$ (14.31); $F(4, 125) = 2.34$, $p < .10$.

A one-way (age) multivariate analysis of variance with the number of details elicited by action, time segmenting, event, and other cued invitations as dependent variables revealed a significant effect for age, $F(16, 370) = 2.35$, $p < .01$. Subsequent univariate analyses revealed a significant effect only for action cues, $F(4, 124) = 6.63$, $p < .01$, with a near-significant effect for time-segmenting cues, $F(4, 124) = 2.31$, $p < .10$. Action cues elicited much more information from 8-year-olds ($M = 26.95$, $SD = 33.00$) than from 4- ($M = 8.45$, $SD = 6.96$), 5- ($M = 6.03$, $SD = 9.24$), 6- ($M = 6.42$, $SD = 8.85$), or 7- ($M = 10.48$, $SD = 12.58$) year-olds (Scheffé's ps $< .05$). Similarly, time-segmenting cues elicited more information from 8- ($M = 11.60$, $SD = 20.50$) than from 4- ($M = 3.65$, $SD = 4.69$), 5- ($M = 6.76$, $SD = 13.18$), 6- ($M = 4.69$, $SD = 10.41$), or 7- ($M = 1.97$, $SD = 3.63$) year-olds (Scheffé's ps $< .05$).

Age × Cue Type analyses focused on the average number of details provided in response to cues of each type revealed a significant effect, $F(3, 123) = 3.45$, $p < .05$: As shown in Table 3, action cues elicited more information from children than did time-segmenting, event-based, and other cue types. There was no significant Age × Cue Type interaction. Univariate analyses revealed significant or near-significant effects for age only with respect to time-segmenting, $F(4, 125) = 2.28$, $p < .10$, and action cues, $F(4, 124) = 6.63$, $p < .01$. Inspection of Table 3 shows that time-segmenting cues were more effective for 8-year-olds than for 4- to 7-year olds and that action cues were more effective for 7- and 8-year-olds than for 4- to 6- year-olds (Scheffé's ps $< .05$).

Table 3
Association Between Children's Age and the Average Number of Details Elicited by Cued Invitations

	Event cues	Time-segmenting cues	Action cues	Other cues
Age (years)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
4	1.07 (2.10)	1.67 (2.09)	3.65 (3.95)	2.02 (4.14)
5	4.20 (7.41)	1.34 (1.98)	3.13 (4.23)	2.26 (6.13)
6	2.98 (6.98)	2.74 (5.52)	2.27 (3.45)	2.27 (5.03)
7	2.15 (8.10)	0.91 (1.80)	6.19 (10.63)	2.74 (6.90)
8	1.30 (3.33)	4.59 (7.11)	8.62 (14.36)	2.79 (6.44)
Total	2.52 (6.44)	2.14 (4.30)	5.53 (8.31)	2.41 (5.77)

Qualitative Analyses

In 109 (83%) of the 130 interviews, children provided free-recall disclosures of the allegations (96 times in response to free-recall prompts and 13 times spontaneously). In 19 (17.0%) cases, the allegations emerged in response to option-posing (13) or suggestive (6) prompts. Thirty-eight (77.5%) of the 49 preschoolers provided free-recall disclosures of the allegations (28 in response to free-recall prompts and 10 spontaneously). Nine of the 49 (18.4%) preschoolers made allegations in response to option-posing (6) and suggestive (3) prompts.

As indicated earlier, many children of all ages did not allege that they had been abused in response to either the open-ended or later more focused prompts designed to shift focus from nonsubstantive to substantive issues. These children were thus not included in the study. It is unclear whether these children had actually been abused, but the fact that they were as likely to be 4 as 8 years old suggests that their behavior in the interviews did not simply reflect developmental differences in their motivation or in their understanding of the prompts.

Children of all ages provided forensically crucial "who?, what?, and when?" information about their alleged abuse. All participants specified the alleged incidents in terms of the perpetrators' actions and the body parts involved, and the findings reported above illustrate how this information was elicited. Nearly all (124) of the 128 children who alleged abuse by familiar individuals (2 were allegedly abused by strangers) identified the suspect; only three 6-year-olds and one 7-year-old failed to do so. Sixty-six percent of the children (60%, 71%, 61%, 64%, and 75%, respectively, of the 4-, 5-, 6-, 7-, and 8-year-olds) identified the suspect spontaneously or in response to invitations, whereas only 7% (20%, 4%, 7%, 7%, and 0% of the 4-, 5-, 6-, 7-, and 8-year-olds, respectively) did so in response to suggestive prompts. Only the information about timing was inadequate. Specifically, 10 (50%), 17 (59%), 19 (59%), 24 (83%), and 17 (85%) of the 4-, 5-, 6-, 7-, and 8-year-olds, respectively, indicated when at least one of the incidents took place, either by reference to the calendar (e.g., "last Tuesday") or to a discrete event ("the last time I slept over there"). Evidently, preschoolers were considerably less informative with respect to timing than the 7- and 8-year-olds were. All children responded informatively when asked whether the abuse happened "one time or more than one time."

Discussion

The results reported above clearly demonstrate that children as young as 4 years of age can provide substantial amounts of forensically important information about alleged abuse in response to free-recall prompts. On average, almost one half of the information provided by the children came in response to free-recall prompts. As expected, older children reported more details in total and in their average responses to invitations than the younger children did, but the proportion of details elicited using free-recall prompts did not increase with age. Moreover, the results reported here show that very young children are capable of providing most of the information (who?, what?, and when?) needed by forensic investigators in response to free-recall prompts, thereby reducing reliance on the more risky (potentially contaminating) yes/no and forced-choice questions. On average, invitations also elicited more forensically relevant details than did other types of utterances at all ages, as reported by other researchers (e.g., Lamb, Hershkowitz, Sternberg, Esplin, et al., 1996; Orbach et al., 2000; Sternberg et al., 1996; Sternberg, Lamb, Davies, & Westcott, 2001).

The results of the present study illustrate that cued invitations, particularly those that remind children of actions they have previously mentioned, constitute effective ways of triggering the recall of information that is more likely to be accurate than information elicited using forced-choice questions from alleged victims as young as 4 years of age. At all ages, furthermore, more information would likely have been elicited if the interviewers had made greater use of cued invitations (the average interview included 5.4 cued invitations), particularly those (i.e., action-based and time-segmenting cues) that made explicit reference to actions mentioned by the child. Cued invitations (e.g., "You said that he touched your vagina. Tell me more about that") constitute productive alternatives to risky yes/no and forced-choice questions (e.g., "So did he put his finger *in* your vagina?") when general invitations (e.g., "Then what happened?") appear to be ineffective. By structuring recall of experienced events, associating them with actions that have been mentioned, and breaking them into smaller units or segments of time, cued invitations enhance the capacity of young children to reconstruct past events and to elaborate upon their narrative accounts, avoiding interviewer contamination during the recall. Interestingly, action-based cues (e.g., "Tell me more about the touching") were consistently more effective than all other types of cues, regardless of age.

Developmental improvements in the effectiveness of cued invitations were especially dramatic with respect to time-segmenting cues, which were quite effective when addressed to 8-year-olds. At first glance, this may seem puzzling because action cues and time-segmenting cues both use details about actions mentioned by the child to request additional information, yet responses to action cues steadily improved with age, whereas time-segmenting prompts only helped 8-year-olds. Perhaps this is because time-segmenting cues differ from action cues with respect to the type of information they request. Whereas action cues seek more information about the action itself, time-segmenting cues solicit information about what happened during a period of time following or preceding the action referenced or during the period of time between two such actions. Thus actions are the focus of the information request in action cues and serve only as temporal reference points in time-segmenting cues. As a result, the cognitive demands of the two types of cued invitations are quite different.

The fact that 8-year-olds responded more informatively to time-segmenting cues than younger children did is consistent with Piaget's (1971) observation that temporal concepts are understood by children later than concepts related to objects and actions. Piaget explained that the comprehension of time is associated with the ability to observe the consequences of actions, to recognize causal relationships in event sequences, and to explain later occurrences in terms of former ones (Gibson, 1991; Piaget, 1964). Whereas action cues require further elaboration about the action itself, time-segmenting cues require a forward projection of events, starting with a given action and continuing sequentially, as well as the capacity to review events in reverse order, going from an effect to an earlier cause. Only when children are able to relate to time operationally are they able to understand and reconstruct time sequences in this fashion. Younger children cannot engage in such

operational reversibility "whereas 8-year-olds can make use of that power and thus reconstruct the true and irreversible order of events" (Piaget, 1971, p. 6). The development of this capacity at 7 to 8 years of age enables children to deal with event sequences more efficiently, and this may explain the dramatic increase we observed in the amount of information provided in response to time-segmenting cues by 8-year-olds. In addition, although they also request information about events, action cues involve more focused demands for information and are thus less cognitively demanding than time-segmenting cues.

Our compelling findings regarding the value of cued invitations indicate clearly that forensic interviewers need to provide children of all ages with opportunities to recall information in response to free-recall prompts before assuming that more risky interview techniques are needed. This admonition is especially important in light of repeated demonstrations that younger children are more likely than older children to give inaccurate responses to yes/no questions (Brady, Poole, Warren, & Jones, 1999), to respond affirmatively to misleading questions about nonexperienced events (Poole & Lindsay, 1998), and to acquiesce to suggestions (e.g., Cassel, Roebers, & Bjorklund, 1996; Ceci & Huffman, 1997; Ceci, Ross, & Toglia, 1987; Robinson & Briggs, 1997). Such findings indicate that risky questions are even riskier when addressed to children aged 6 and under and, thus, that forensic investigators need to make special efforts to maximize the amounts of information elicited from 4- to 6-year-olds using less risky, free-recall prompts.

Unfortunately, we could not verify the accuracy of the reported information because this was a field study. However, the results of recent field studies indicate that information elicited using free-recall prompts rather than forced-choice or suggestive questions is significantly more likely to be accurate in forensic contexts, just as in the laboratory (Lamb & Fauchier, 2001; Orbach & Lamb, 1999, 2001). Moreover, protocol interviews like those we studied include fewer of the yes/no and forced-choice questions likely to contaminate responses, especially by preschoolers. Thus, by maximizing reliance on free-recall prompts, interviewers using the NICHD protocol are likely to elicit more accurate information than interviewers following less detailed guidelines. Nevertheless, further research on real-world cases in which accuracy can be ascertained is certainly necessary.

Both laboratory analog and field studies consistently show that the information provided in response to invitations is more likely to be accurate than information provided in response to more focused questions (Dale et al., 1978; Dent, 1982, 1986; Dent & Stephenson, 1979; Goodman & Aman, 1990; Goodman et al., 1991; Hutcheson et al., 1995; Lamb & Fauchier, 2001; Oates & Shrimpton, 1991; Orbach & Lamb, 2001; Ornstein et al., 1992), suggesting that open-ended invitations, tapping free-recall memory, are superior investigative tools. Regardless of the interviewees' ages, open-ended invitations tend to elicit more complete and more accurate information than yes/no or forced-choice questions, which convey information from the interviewer, limit the response options, and foster guessing. The accuracy of children's reports can seldom be assessed in forensic contexts, of course, so it remains necessary to conduct laboratory analog studies in which the effectiveness of cued invitations can be explored.

In the present study, 48.7% of the informative details and 83.0% of the initial disclosures of sexual abuse were provided by preschoolers in response to free-recall prompts. Such findings suggest that the likely accuracy of information provided by alleged victims is enhanced when interviewers use free-recall prompts exhaustively before turning to more focused prompts. These findings also indicate that cued invitations should be exhausted before who? what? and when? prompts (whether visual or verbal) are introduced because cued invitations foster retrieval of free-recall information without limiting responses to investigator-specified categories. Nonsuggestive yes/no and forced-choice questions, in which interviewers provide content, should be used only if essential information is still missing after free-recall and directive prompts have been exhausted because these riskier alternatives are more likely to elicit inaccurate information.

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