The Effects of Mental Context Reinstatement on Children's Accounts of Sexual Abuse

IRIT HERSHKOWITZ,[1] YAEL ORBACH,[2] MICHAEL E. LAMB,[2*]
KATHLEEN J. STERNBERG[2] AND DVORA HOROWITZ[3]

[1]*University of Haifa, Israel*
[2]*National Institute of Child Health and Human Development, USA*
[3]*Ministry of Labor & Social Affairs, Jerusalem, Israel*

SUMMARY

Forensic interviewers guided 46.4- to 13-year-old alleged victims of sexual abuse to recall the context in which the reported incidents had taken place. A comparable group of 50 alleged victims were interviewed using an interview protocol that was identical except that the mental context reinstatement (MCR) techniques were not included. MCR did not increase the total number of event-related details reported, but it did lead children to reported proportionally more details (55% versus 46%) in response to invitations rather than focused prompts. Such information is more likely to be accurate. MCR had an especially powerful effect on the youngest children (4- to 6-year-olds) studied. The results suggest that non-suggestive contextual cues may indeed be useful in forensic interviews. Published in 2001 by John Wiley & Sons, Ltd.

Many researchers have studied the role played by contextual cues in the retrieval of memories. In general, memory retrieval should be enhanced by reinstatement of the context in which the to-be-remembered (TBR) event occurred, particularly when the original and retrieval contexts are extremely similar (Tulving, 1983; Underwood, 1969). As a result, forensic researchers have made extensive efforts to understand the ways in which context reinstatement might affect the completeness and accuracy of the accounts provided by victims and witnesses. Both physical context reinstatement (exposure to the actual setting in which the TBR event occurred) or mental context reinstatement–(MCR), achieved by guiding the interviewee to 'reconstruct' the setting in which the event occurred, have been studied in both laboratory analog and forensic settings. The present study was the first designed to assess the utility of MCR procedures in the course of forensic interviews with alleged victims of child sexual abuse.

We expected that MCR would enhance children's memory, particularly because children have less effective retrieval strategies and rely less than adults do on semantic encoding processes (Ackerman, 1981; Daehler and Greco, 1985; Gee and Pipe, 1995). Several researchers have in fact reported that children recount more information, with equivalent levels of accuracy, when contextual cues are provided (Pipe and Wilson, 1994;

*Correspondence to: Michael E. Lamb, Section on Social and Emotional Development, National Institute of Child Health and Human Development, 9190 Rockville Pike, Bethesda, MD 20892, USA.
E-mail: Michael_Lamb@nih.gov

Price and Goodman, 1990; Smith *et al.*, 1987; Wilkinson, 1988). In the laboratory, the magnitude of the effects reported varies depending on the children's ages (Gee and Pipe, 1995; Pipe and Wilson, 1994), and the extent of the delay between the TBR event and its recall (Pipe *et al.*, 1993; Powell and Thompson, 1996). The effectiveness of physical context reinstatement has also been explored in two forensic studies (Hershkowitz *et al.*, 1998; Orbach *et al.*, in press b). In both studies, the researchers expected that forensic interviews at the scene of the incident would be more beneficial for children who reported abuse in unfamiliar locations, since those children faced more difficult retrieval tasks and should, therefore, benefit from environmental cues at the time of retrieval more than children who reported abuse in familiar locations, and could thus reconstruct the scene mentally without such cues. Unexpectedly, however, physical context reinstatement did not increase the total number of details provided by child victims in the two studies (Hershkowitz *et al.*, 1998; Orbach *et al.*, in press b). Moreover, the study designs did not allow the researchers to distinguish between the independent effects of context reinstatement and mere re-interviewing (Hershkowitz *et al.*, 1998) nor the effect of context reinstatement from a disruptive interruption of the children's narratives (in order to get from the office to the scene; Orbach *et al.*, in press b). Orbach *et al.* (in press b) thus recommended that mental context reinstatement in the investigators' offices be used as an alternative non-suggestive means for providing context reinstating cues.

Within the Cognitive Interview (CI; Fisher and Geiselman, 1992) MCR is used alongside requests that interviewees repeat everything, recall events in different sequences (e.g. from the end to the beginning), and describe events from a perspective other than their own. Witnesses interviewed using the CI report more accurate information than do those interviewed using other strategies (see meta-analysis reported by Köhnken *et al.*, 1999) and although more inaccurate details are reported too, the accuracy *rate* appears to be unaffected. CI strategies appear especially helpful when the TBR event was actually experienced rather than passively viewed, and may also reduce the contaminating effects on memory of misleading information (Bekerian and Bowers, 1983; Geiselman *et al.*, 1986; Malpass, 1996). Police officers in the United States appear to elicit more information from witnesses when they employ CI techniques (Fisher *et al.*, 1985; Geiselman *et al.*, 1985). Although George and Clifford (1992, 1995) found that police officers in the United Kingdom employed more openended prompts and elicited more information following CI training, however, Memon *et al.* (1994) found that the CI did not significantly increase correct recall, but was instead associated with more errors, when employed by British police officers. A qualitative analysis of interviewer behaviour in the latter study revealed that many officers had difficulty employing the CI techniques, however, continuing to use focused techniques. This might explain the unexpected results and this leads us to urge caution when interpreting the results of that study.

With children, the CI likewise produces an increase in the amount of information recalled, although the effects on accuracy are somewhat unclear. Some researchers have reported increases in the numbers of inaccurate details without corresponding increases in the numbers of inaccurate details and confabulations (Geiselman and Padilla, 1988; Milne *et al.*, 1995; Saywitz *et al.*, 1992) whereas others have reported that increases in the amount of information correctly recalled is paralleled by increases in the number of incorrect details provided (Köhnken *et al.*, 1992; McCauley and Fisher, 1995; Memon *et al.*, 1997a). MCR, the 'repeat everything' instructions and preparatory comments are typically included among the CI techniques employed with both adults and children (Dietze and Thompson, 1993; Geiselman and Padilla, 1988; Memon *et al.*, 1993, 1996,

1997b) although some of the techniques appear problematic or inappropriate for children under 7 (Cronin *et al.*, 1992; Köhnken *et al.*, 1992; Memon *et al.*, 1993, 1996; Milne *et al.*, 1995; Saywitz *et al.*, 1992). MCR appears to be the most important component of the CI (Bekerian *et al.*, 1990; Memon and Bull, 1991), although the 'report everything' admonition (Saywitz *et al.*, 1992), preparatory techniques (Gee *et al.*, 1999), and rapport-building (Boggs and Eyberg, 1990) appear to be influential as well.

Unfortunately, few researchers have studied the independent effects of MCR. Malpass and Devine (1981) used guided memory techniques to enhance eyewitness identification, whereas Gibling and Davies (1988) found that this procedure reduced the adverse effects of misleading information introduced between the TBR event and an interview about it. Bekerian *et al.* (1990) reported that MCR led to significant increases in the 'recall' of both accurate and inaccurate details, whereas McCauley and Fisher (1995, 1996) reported that second graders provided up to twice as many accurate details when MCR techniques were employed than when they were not. Further complicating our understanding of MCR techniques are variations in the ways that context is conceptualized and reinstated mentally (e.g. Malpass, 1996; Malpass and Devine, 1981; Memon and Bull, 1991; Memon *et al.*, 1994). The 'mental reinstatement' interview developed by Dietze and Thomson (1993), for example, comprised retrieval instructions designed to reinstate, in the subject's mind, the environmental and personal context at the time the event (a film) was witnessed, as well as the context of the film itself. Such references to content would be considered suggestive in forensic contexts.

In the present study, we assessed the usefulness of MCR techniques for enhancing the amount of information provided by alleged victims of sexual abuse in the course of investigative interviews. Unlike researchers studying descriptions of staged events, we were unable to assess the accuracy of the children's accounts but were able to address two methodological problems that have bedeviled much of the research conducted to date. First, we were able to disentangle the potentially confounded effects of MCR and the interviewer's individual styles by having the same interviewers conduct both the MCR and non-MCR interviews, in each case following strict interview protocols which differed only with respect to the MCR instructions. By contrast, previous researchers have not controlled the interviewing styles, and have frequently commented on group differences in this regard (Geiselman *et al.*, 1985; Köhnken *et al.*, 1994; Mantwill *et al.*, 1995) which may themselves influence the children's informativeness independent of the MCR techniques (Poole and Lindsay, 1998). Second, the MCR techniques we employed avoided the suggestive components that are problematic in forensic contexts but are frequently ignored in laboratory analogue contexts. Unlike interviewers in analogue studies, forensic interviewers are typically unfamiliar with uncontroverted details of the alleged TBR event, so any attempts to reinstate specific aspects of the context may be risky, particularly because leading and misleading guided imagery are associated with increases in the amounts of false information reported (Garry *et al.*, 1996; Johnson *et al.*, 1993; Loftus, 2000; Roberts, 1996).

We attempted to intervene minimally, encouraging children to depend on their subjective representations of the context by referring only to sensory modalities (Paivio, 1971). Children were instructed to focus on each of their senses and to remember what they could have heard, seen, or smelled as they recalled the TBR event. In order to facilitate concentration on sensory modalities, the children were asked to close their eyes. Such instructions do not convey expectations about the types of information expected, and enable children to use individually salient cues to define the relevant context.

The results of the research summarized above led us to expect that the MCR techniques would lead children to report more information about the substantive TBR events than when context reinstatement was not attempted. In addition, we expected that MCR techniques would have a more powerful effect on information retrieved using recall prompts than on information retrieved using recognition based prompts because recognition prompts already provide retrieval cues that swamp the effects of context (Ascherman *et al.*, 1991; Cutler *et al.*, 1986, 1987; Davies and Milne, 1985; McCauley and Fisher, 1995, 1996; Memon and Bull, 1991; Sanders, 1984). As suggested by Smith's (1988) 'outshining hypothesis', context cues should be more effective when other retrieval cues are absent. We also expected that older children would provide more information than younger children would, but could offer no predictions regarding the differential effects of MCR on younger and older children because the previous literature has been so inconsistent.

METHOD

Subjects and procedures

Forensic interviews were conducted by six experienced youth investigators (two males, four females) with 101 alleged victims of sexual abuse in various parts of Israel. These youth investigators have undergraduate degrees in social work and were employed by the Israeli Ministry of Labor and Welfare as the only professionals authorized to conduct forensic interviews of children under 14 years of age. The six interviewers were all senior investigators representing the six main geographical regions in Israel. All cases that were referred to these investigators during 1995 were considered for inclusion in the study, provided the alleged crimes involved extra-familial perpetrators and took place outside the victims' homes. The focus on extra-familial abuse cases was designed to limit mental context reinstatement to less familiar contexts that were also less likely to be associated with other experiences than settings in the home might be. Five of the original 101 cases were excluded from the sample because the investigators failed to follow the interview protocol closely. The remaining 96 children, 74 females and 22 males, ranged in age from 4.4 to 13.4 years ($M = 9.4$; SD $= 2.3$) and appeared to have made valid or credible allegations consistent with independent evidence when this was available.
The children were randomly assigned to two groups. Fifty of the children, 40 girls and 10 boys, ranging in age from 4.4 to 13.4 years ($M = 9.4$, SD $= 2.4$), were interviewed using the standard NICHD investigative protocol (see Orbach *et al.*, in press a). Forty-six of the children (34 girls and 12 boys) ranging in age from 4.4 to 13.0 years ($M = 9.4$; SD $= 2.2$) were interviewed using a version of the protocol which included MCR techniques in both the pre-substantive and substantive phases of the interview. The children in each of the two experimental groups (comparison and MCR interviews) were divided into three age groups: 4- to 6-year-olds ($n = 9$ and 6 in the comparison and MCR groups, respectively), 7- to 9-year-olds ($n = 16$ and 21 in the comparison and MCR groups, respectively), and 10- to 13-year-olds ($n = 25$ and 19 in the comparison and MCR groups, respectively).

The alleged crimes included anal or genital penetration ($N = 10$), fondling of sexual organs ($N = 34$), touching of sexual organs over the clothes ($N = 21$), and exposure ($N = 31$). Sixty-seven of the children reported a single incident, whereas 27 reported multiple incidents. Information about the number of incidents was missing for two cases.

The time gap between the incident (or last incident, in multiple incident cases) and the interview ranged between 0 and 90 days ($M = 13.6$; $SD = 16.3$), with 26 children experiencing a delay of one week or less, and 35 children experiencing a delay of more than one week. Information about delay was missing for 35 cases. There were no differences between children in the two conditions with respect to age, the frequency of abuse, type of abuse, time delay, and familiarity with the scene.

All interviews included in the sample tightly followed a structured interview protocol available from the authors upon request. The interview protocol used for children in the comparison group was published as an appendix to a report by Orbach *et al.* (in press a) and the version used for children in the MCR group differed in the manner described below.

The investigative protocols

The investigative strategies reflected in these structured protocols give priority to open-ended questions, probes, and retrieval cues, encouraging eyewitnesses to provide as much information as possible from free-recall and to report event-specific information. These strategies are universally recommended by expert professional groups (e.g. American Professional Society on the Abuse of Children (APSAC) 1990, 1997, Bull, 1992, 1995, 1996; Lamb *et al.*, 1995, 1998a; 1998b; *Memorandum of Good Practice,* 1992; Poole and Lamb, 1998; Yuille *et al.*, 1993) and are consistent with empirical research demonstrating that open-ended questions elicit more accurate event information than focused questions do (e.g. Dent and Stephenson, 1979; Oates and Shrimpton, 1979).

The interview began with a pre-substantive phase in which the interviewer introduced him/herself and built rapport with the child. This phase of the interview was also used to explain the importance of telling the truth, encourage the child to correct the interviewer and to request clarification when necessary, and train the child in memory retrieval by asking him or her to tell 'everything about [a recent holiday] from the beginning to the end as best as you can.' In the pre-substantive phase and throughout the substantive phase of the interview, investigators were instructed to probe further, using open-ended follow-up utterances, such as 'Tell me about [a person, object, or action, mentioned by the child]'; 'Tell me more about. . .'; or 'Then what happened?' when appropriate. Following the pre-substantive section, the interviewer shifted focus to the alleged or suspected abuse using a non-suggestive utterance: 'Now that I know you a little better, I would like to discuss the reason you came here today.' Other non-suggestive prompts were used at this stage if the child did not make an allegation in response to the first non-suggestive prompt.

If an allegation was made, the children were given an open 'invitation': 'Tell me everything that happened to you, from the beginning to the end, as best you can remember.' This first substantive 'invitation' was followed by open-ended probes ('Tell me more about that', or 'And then what happened?') and cue questions ('Tell me more about [something the child had mentioned]') referring to information provided by the children earlier. Focused non-suggestive questions were asked only if some crucial information was still missing after exhaustive open-ended questioning. If multiple incidents were reported, the investigators asked children to discuss each incident separately. Investigators then asked children if there was anything else they wanted to tell, anything they thought the interviewer should know, or anything they wanted to ask. Thereafter, the interviewers thanked the children for their cooperation and shifted focus to a neutral topic.

The investigative protocol used in the MCR condition was identical to that used in the other ('comparison') condition, except that MCR techniques were modeled in the pre-substantive portion of the interview and were employed again when the children began describing the alleged incidents of abuse.

In the pre-substantive phase of the interview, the first MCR instructions were provided when the children were asked to provide a detailed account of a recent nonabusive event. At that time, children were instructed to 'close your eyes and think about that time, as if you were there again. [Pause] Think about what was happening around you [Pause], think about the weather and how you felt [Pause], think of what sounds or voices you could hear [Pause] and what special smells you could smell [Pause]!' Children who gave brief descriptions were encouraged to retrieve further information and the context reinstating instructions were given again. In the substantive portion of the interview, the same instruction was given again right before the child was asked to 'tell everything' about the incident or event he or she had mentioned. As in the pre-substantive phase, the instructions were repeated when the child's response was brief. When the child reported multiple incidents of abuse, the MCR instructions were repeated each time the investigator switched focus to a different incident or event.

Data coding

Audiotapes of the interviews were transcribed and checked to ensure their completeness and accuracy. Two raters then tabulated the number of details conveyed in each of the children's substantive utterances by employing a technique first developed by Yuille and Cutshall (1986, 1989) and elaborated by Lamb *et al.* (1996). Details were defined as words or phrases identifying or describing individuals, objects, or events (including actions) which were integrally related to the alleged incident(s). Details were only counted when they were new and added to the understanding of the target incidents. As a result, restatements were not counted.

Coders also reviewed the portions of the interviews concerned with substantive issues and categorized each interviewer utterance, defined by a 'turn' in the discourse or conversation, using the categories developed by Lamb *et al.* (1996). For the purpose of these ratings, we did not distinguish between questions and statements. Twelve utterance types were distinguished, but we focus here on the four utterance types that are both the most common and the most important conceptually:

(1) Invitations. Utterances, including questions, statements, or imperatives, prompting free-recall responses from the child. Such utterances do not delimit the child's focus except in a general way (for example, 'Tell me everything that happened').

(2) Directive utterances. These refocus the child's attention on details or aspects of the alleged incident that the child has already mentioned. Some involve requests for additional information using Wh questions (cued recall).

(3) Option-posing utterances. These focus the child's attention on details or aspects of the alleged incident that the child has not previously mentioned, but do not imply that a particular response is expected. These utterances usually offer the child an explicit ('Were your clothes on or off?') or implicit ('Did he touch you?') option. Such utterances were called 'leading' in previous reports by Lamb and his colleagues (e.g. 1996).

(4) Suggestive utterances. These are stated in such a way that the interviewer strongly communicates what response is expected (for example: 'He forced you to do that, didn't he?') or they assume details that have not been revealed by the child (for example: *Child:* 'We laid on the sofa?' *Interviewer:* 'He laid on you or you laid on him?').

For the purpose of some of the analyses reported below, directive, option-posing, and suggestive utterances were all considered focused utterances.

Before coding transcripts for the study, two Hebrew-speaking raters were trained on an independent set of transcripts until they agreed on the identification of at least 89% of the details and utterance types. During the course of coding, 20% of the transcripts were independently coded by both coders to ensure that they remained reliable, with agreement at or above 89%.

RESULTS

As shown in Table 1, the interviewers used very similar numbers and types of utterances in the MCR and comparison interviews. In both conditions, furthermore, the first option-posing utterance-that is, the first utterance in which the investigator specifically focused on a detail not previously mentioned by the child-occurred after similar amounts of information had been provided by the children (Details: $M = 77.85$; $SD = 67.78$ and $M = 76.47$; $SD = 78.66$ in the MCR and the comparison condition, respectively), or following similar proportions of the children's details ($M = 0.33$; $SD = 0.25$ and $M = 0.34$; $SD = 0.28$ in the MCR and comparison conditions, respectively). Analyses of both absolute (raw) numbers and proportions were conducted in order to minimize the effects of variations in the complexity of the reported incidents and the length of the interviews.

The total number of substantive words and details provided by children in the two conditions did not differ significantly (see Table 2), and there were no significant group differences in the numbers of details provided in the children's responses to the first invitation. There were significant differences between the conditions with respect to the proportion of information elicited using invitations, however, as evidenced by a main effect of group on the proportion of words ($F_{1.95} = 5.32$; $p < 0.02$) and details ($F_{1.95} = 4.01$; $p < 0.048$) elicited by invitations. Specifically, significantly higher proportions of the total number of words and details provided by the children were elicited using invitations

Table 1. The distribution of interviewers' utterances in MCR and comparison interviews

Types of utterance	MCR interviews[a] N=46		Comparison interviews[b] N=51	
	%	#	%	#
Invitations	0.32 (0.15)	14.87 (10.16)	0.30 (0.14)	13.48 (9.04)
Directive	0.43 (0.13)	23.61 (17.99)	0.45 (0.12)	25.32 (22.93)
Option-posing	0.17 (0.08)	8.57 (6.95)	0.17 (0.08)	8.98 (7.18)
Suggestive	0.08 (0.05)	4.22 (4.31)	0.08 (0.07)	4.26 (5.18)

Notes:
[a]$M = 51.4$ utterances.
[b]$M = 52.9$ utterances.
Numbers in parentheses are standard deviations.

Table 2. Proportions of children's responses in MCR and comparison interviews

Eliciting utterance type	MCR interviews N=46		Standard interviews N=51	
	Words (M=859)	Details (M=243)	Words (M=856)	Details (M=234)
Invitations	0.55 (0.19)	0.56 (0.21)	0.46 (0.20)	0.47 (0.22)
Focused	0.45 (0.19)	0.44 (0.21)	0.54 (0.20)	0.53 (0.22)

Note: Numbers in parentheses are standard deviations.

in the MCR condition than in the comparison interviews. Correspondingly, significantly smaller proportions of words spoken by children in the MCR group were elicited using focused prompts than in the comparison group ($F_{2.95} = 4.53$; $p < 0.04$; see Table 2).

An Age (4 to 6, 7 to 9 and 10 to 13 years old) by Condition (Protocol and Non-protocol) ANOVA revealed no statistically significant interaction (see Table 3). Nevertheless a one-way Analysis of Variance involving children in each of the three age groups revealed that 4- to 6-year-old children in the MCR condition provided more invitation-elicited details than those in the comparison group ($F_{1.95} = 5.19$; $p < 0.04$). Cell sample sizes were very small, however, although the greater benefits of the MCR for children in the youngest age group were also suggested by a within-condition analysis of age differences in the number and proportion of details elicited using invitations as opposed to focused utterances. Comparison group children in the youngest age group provided proportionally and absolutely fewer details in response to invitations and correspondingly more details in response to focused questions than children in the two older age groups did ($F_{2.47} = 3.35$, $p < 0.05$ and $F_{2.47} = 5.94$; $p < 0.005$ for proportion and numbers, respectively), whereas this was not true in the MCR condition.

DISCUSSION

This study was the first in which it was possible to assess the effects of MCR on children's accounts of abuse in forensic contexts. The evaluation was both conservative and precise because we were able to (1) structure interviews in both conditions quite tightly, (2) ensure that the interviewers' individual styles were similar in the two conditions, and (3) show that all interviews were of high quality, with much greater proportions of the information elicited using open-ended prompts than is the case when interviewers are not guided by structure interview protocols (e.g. Lamb *et al.*, 1996). Thus any differences between reports provided by children in the two groups are attributable to the MCR techniques rather than to other uncontrolled differences between the interviews, interviewers, or children studied.

Although the MCR techniques did not lead children to provide more information than was provided by children not exposed to these techniques, they did affect the amounts of information retrieved using open-ended recall processes. This is an important and desirable effect inasmuch as information retrieved using recall processes is significantly more likely to be accurate than is information elicited using focused prompts (see Lamb *et al.*, 1999; and Poole and Lindsay, 1998, for recent reviews). Thus the MCR techniques were associated with improvements in the quality (probable accuracy) of the information

Table 3. Age differences in children's responses to invitations and focused prompts

Age	Eliciting utterance type	MCR interviews N = 46			Comparison interviews N = 51		
		Words (%)	Details (%)	Details (#)	Words (%)	Details (%)	Details (#)
4–6	Invitations	0.46 (0.15)	0.44 (0.15)	79.83 (33.46)	0.34 (0.17)	0.31 (0.14)	40.89 (31.76)
	Focused	0.54 (0.15)	0.56 (0.15)	114.83 (95.42)	0.66 (0.17)	0.69 (0.14)	83.67 (35.70)
			(N = 6)			(N = 9)	
7–9	Invitations	0.57 (0.20)	0.56 (0.22)	131.67 (80.79)	0.48 (0.19)	0.50 (0.20)	132.94 (85.54)
	Focused	0.43 (0.20)	0.44 (0.22)	119.14 (94.04)	0.52 (0.19)	0.50 (0.20)	137.94 (97.23)
			(N = 21)			(N = 16)	
10–13	Invitations	0.57 (0.19)	0.59 (0.20)	130.74 (67.66)	0.49 (0.21)	0.51 (0.23)	114.60 (60.79)
	Focused	0.43 (0.19)	0.41 (0.20)	99.21 (79.41)	0.51 (0.21)	0.49 (0.23)	130.80 (117.07)
			(N = 19)			(N = 25)	

Note: Numbers in parentheses are standard deviations.

retrieved. The greater reliance on open-ended as opposed to focused prompts as well as the timing (later in the interview) of the focused prompts also speak to improvements in the quality of the information obtained. Because investigative interviewers seldom, if ever, know exactly what happened, they are heavily dependent on young victims' accounts and any technique that maximizes the probable accuracy of the information obtained is desirable.

The beneficial effects of MCR on free recall were also anticipated in light of earlier research in laboratory analog contexts revealing the same effects (Ascherman *et al.*, 1991; Cutler *et al.*, 1987; McCauley and Fisher, 1995, 1996; Memon and Bull, 1991; but not Memon *et al.*, 1997a). Such findings are consistent with the prediction that contextual influences are most powerful when no other cues are provided. Focused questions by definition provide such cues, whereas open-ended invitations do not. Interestingly, furthermore, Orbach *et al.* (in press b) reported that physical context reinstatement (a visit to the scene of the alleged events) also failed to affect the total number of details reported, although it facilitated the free-recall retrieval of information.

The adverse effects of MCR on the informativeness of responses to focused questions were not expected. In earlier studies, researchers reported that the CI had a smaller or non-significant effect on responses to recognition memory probes, but adverse effects have not been noted before (Ascherman *et al.*, 1991; Cutler *et al.*, 1987; McCauley and Fisher, 1995, 1996; Memon and Bull, 1991; but not Memon *et al.*, 1997a). Because focused questions tended to be asked later in the interviews than invitations were, it is possible that the children's memories were more likely to have been exhausted before focused questions were asked. Recall that details were only counted when they were new, and thus focused questions that elicited 'old details' would appear to elicit no details.

Our findings appear to contradict those of Dietze and Thomson (1993) with respect to the amount of information retrieved from children in MCR and free-recall interviews. Dietze and Thomson focused on the accuracy of children's responses but their MCR instructions first focused the children's attention on contextual cues that they had not mentioned whereas retrieval instructions in the open-ended condition involved less 'contamination' by the interviewer. Because our MCR instructions avoided the inclusion of potentially contaminating or suggestive information in order to permit assessment of free recall instructions, they are not analogous to Dietze and Thomson's assessments of suggested free recall.

The age differences observed, though equivocal because so few younger children were studied, may be important too. Older children reliably produce more information in total and in response to individual prompts – especially recall prompts – than younger children do (see Lamb *et al.*, in press for a review), but age differences were not evident among children interviewed using MCR techniques. Inspection of Table 3 reveals that the age differences were not significant because the youngest children in the MCR group performed so well. Specifically, the 4- to 6-year-olds in the MCR group provided 41 % more information from free recall than their peers in the comparison group; corresponding benefits for children aged 7 to 9 years and 10 to 13 years were 15% and 17%, respectively. Such effects are noteworthy in light of widespread claims that children under 7 are unable to benefit from contextual cues because they lack the necessary meta-cognitive skills (Cronin *et al.*, 1992; Köhnken *et al.*, 1992; Memon *et al.*, 1993, 1996; Milne *et al.*, 1995; Saywitz *et al.*, 1992). Our results suggest that researchers might want to question this assumption and conduct further research, involving larger numbers of young children, on the most effective ways of cueing young children. From a forensic perspective, this

research may be especially valuable because young children's accounts of alleged abuse tend to be the most sparse and skeletal. As a result, any techniques which increase the amount of high-quality information children provide are valuable.

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REFERENCES

Ackerman BP. 1981. Encoding specificity in the recall of pictures and words in children and adults. *Journal of Experimental Child Psychology* **31**: 193–211.

American Professional Society on the Abuse of Children. 1990. *Guidelines for Psychosocial Evaluation of Suspected Sexual Abuse in Young Children.* APSAC: Chicago, IL.

Ascherman E, Mantwill M, Köhnken G. 1991. An independent replication of the effectiveness of the Cognitive Interview. *Applied Cognitive Psychology* **5**: 489–495.

Bekerian DA, Bowers JM. 1983. Eyewitness testimony: Were we mislead? *Journal of Experimental Psychology: Learning, Memory, and Cognition* **9**: 133–145.

Bekerian DA, Dennet JL. 1995. Assessing the truth in children's statements. In *True and False Allegations of Child Sexual Abuse: Assessment and Case Management,* Ney T (ed.). Brunner/Mazel: New York; 163–175.

Bekerian DA, Dennet JL, Hill K, Hitchcock R. 1990. Effects of detailed imagery on simulated witness recall. Paper presented at the Second European Conference on Law and Psychology, Nuremberg, Germany.

Boggs SR, Eyberg S. 1990. Interview techniques and establishing rapport. In *Through the Eyes of the Child: Obtaining Self-reports from Children and Adolescents,* La Greca AM (ed.). Allyn 85-108.

Bull R. 1992. Obtaining evidence expertly: The reliability of interviews with child witnesses. *Expert Evidence* **1**: 5–12.

Bull R. 1995. Innovative techniques for the questioning of child witnesses, especially those who are young and those with a learning disability. In *Memory and Testimony in the Child Witness,* Zaragoza MS, Graham JR, Hall GCN, Hirschman R, Ben-Porath YS (eds). Sage: Thousand Oaks, CA; 179–194.

Bull R. 1996. Good practice for video-recorded interviews with child witnesses for use in criminal proceedings. In *Psychology, Law, and Criminal Justice: International Developments in Research and Practice,* Davies G, Lloyd-Bostock S, McMarran M, Wilson C. (eds). Walter de Gruyter: Berlin/New York; 100–117.

Cronin O, Memon A, Eaves R, Kupper B, Bull R. 1992. The cognitive interview with child witnesses: A child centred approach? Paper presented at NATO Advanced Study Institute, The Child Witness in Context, Marateo, Italy.

Cutler BL, Penrod SD, Martens TK. 1987. Improving the reliability of eyewitness identification: Putting context into context. *Journal of Applied Psychology* **72**: 629–637.

Cutler BL, Penrod SD, O'Rourke TE, Martens TK. 1986. Unconfounding the effects of contextual cues on eyewitness identification accuracy. *Social Behavior* **1**: 113–134.

Daehler MW, Greco C. 1985. Memory in very young children. In *Cognitive Learning and Memory in Children: Progress in Cognitive Development Research,* Pressley M, Brainerd CJ (eds). Springer-Verlag: New York; 49–79.

Davies G, Milne A. 1985. Eyewitness composite production: A function of mental and physical reinstatement of context. *Criminal Justice & Behavior* **12**: 209–220.

Dent HR, Stephenson GM. 1979. An experimental study of the effectiveness of different techniques of questioning child witnesses. *British Journal of Social and Clinical Psychology* **18**: 41–51.

Dietze PM, Thomson DM. 1993. Mental reinstatement of context: A technique for interviewing child witnesses. *Applied Cognitive Psychology* **7**: 97–108.

Fisher RP, Geiselman RE. 1992. *Memory–enhancing Techniques for Investigative Interviewing: The Cognitive Interview.* Charles C. Thomas: Springfield, IL.

Fisher RP, Geiselman RE, Amador M. 1989. Field test of the Cognitive Interview. Enhancing the recollection of actual victims and witnesses of crime. *Journal of Applied Psychology* **74**: 722–727.

Garry M, Manning CG, Loftus EF, Sherman SJ. 1996. Imagination inflation: Imagining a childhood event inflates confidence that it occurred. *Psychonomic Bulletin and Review* **3**: 208–214.

Gee S, Gregory M, Pipe ME. 1999. 'What color is your pet dinosaur?' The impact of preinterview training and question type on children's answers. *Legal and Criminological Psychology* **4**: 111–128.

Gee S, Pipe ME. 1995. Helping children to remember: The influence of object cues on children's accounts of a real event. *Developmental Psychology* **31**: 746–758.

Geiselman RE, Fisher RP, Cohen G, Holland H. 1986. Eyewitness responses to leading and misleading questions under the Cognitive Interview. *Journal of Police Science and Administration* **14**: 31–39.

Geiselman RE, Fisher RP, MacKinnon DP, Holland HL. 1985. Eyewitness memory enhancement in the police interview: Cognitive retrieval mnemonics versus hypnosis. *Journal of Applied Psychology* **70**: 401–412.

Geiselman RE, Padilla J. 1988. Cognitive interviewing with child witnesses. *Journal of Police Science and Administration* **16**: 236–242.

George RC, Clifford BR. 1992. Making the most of witnesses. *Policing* **8**: 185–198.

George RC, Clifford BR. 1995. The Cognitive Interview: Does it work? In *Psychology, Law and Criminal Justice,* Davies G, Lloyd-Bostock S, McMurran M, Wilson C (eds). Walter de Gruyter: New York; 146–154.

Gibling F, Davies G. 1988. Reinstatement of context following exposure to post-event information. *British Journal of Psychology* **79**: 129–141.

Hershkowitz I, Orbach Y, Lamb ME, Sternberg KJ, Horowitz D, Hovav M. 1998. Visiting the scene of the crime: Effects on children's recall of alleged abuse. *Legal and Criminological Psychology* **3**: 195–207.

Johnson MK, Hashtroudi S, Lindsay DS. 1993. Source monitoring. *Psychological Bulletin* **114**: 3–28.

Köhnken G, Finger M, Nitshe N, Höfer E, Ascherman E. 1992. Does a cognitive interview interfere with a subsequent statement validity analysis? Paper presented at the American Psychology and Law Society meeting, San Diego.

Köhnken G, Milne R, Memon A, Bull R. 1999. The Cognitive Interview: A meta-analysis. *Psychology, Crime and Law* **5**: 3–27.

Köhnken G, Thürer C, Zoberbier D. 1994. The cognitive interview: Are interviewers' memories enhanced, too? *Applied Cognitive Psychology* **8**: 13–24.

Lamb ME, Hershkowitz I, Sternberg KJ, Esplin P, Hovav M, Manor T, Yudilevitch L. 1996. Effects of investigative utterance types on Israeli children's responses. *International Journal of Behavioral Development* **19**: 627–637.

Lamb ME, Sternberg KJ, Esplin PW. 1995. Making children into competent witnesses: Reactions to the amicus brief *In re Michaels. Psychology, Public Policy, and Law* **1**: 438–449.

Lamb ME, Sternberg KJ, Esplin PW. 1998a. Conducting investigative interviews of alleged sexual abuse victims. *Child Abuse and Neglect* **22**: 813–823.

Lamb ME, Sternberg KJ, Esplin PW. in press. Effects of age and delay on the amount of information provided by alleged sex abuse victims in investigative interviews, *Child Development.*

Lamb ME, Sternberg KJ, Orbach Y, Hershkowitz I, Esplin PW. 1999. Forensic interviews of children. In *Handbook of the Psychology of Interviewing,* Memon A, Bull R (eds). Wiley: Chichester; 253–277.

Loftus E. 2000. Suggestion, imagination, and the transformation of reality. In *The science of self report,* Stone AA, Turkkan J (eds). Erlbaum, Mahwah NJ; 201–210.

Malpass RS. 1996. Enhancing eyewitness memory. In *Psychological Issues in Eyewitness Identification,* Sporer SL, Malpass RS, Köhnken G (eds). Erlbaum: Mahwah, NJ.

Malpass R, Devine P. 1981. Guided memory in eyewitness identification. *Journal of Applied Psychology* **66**: 343–350.

Mantwill M, Köhnken G, Ascherman E. 1995. Effects of the Cognitive Interview on the recall of familiar and unfamiliar events. *Journal of Applied Psychology* **80**: 68–78.

McCauley MR, Fisher RP, 1995. Facilitating children's eyewitness recall with the revised Cognitive Interview. *Journal of Applied Psychology* **80**: 510–516.

McCauley MR, Fisher RP. 1996. Enhancing children's eyewitness testimony with the Cognitive Interview. In *Psychology, Law, and Criminal Justice: International Developments in Research and Practice,* Davies G, Lloyd-Bostock S, McMurran M, Wilson C (eds). Walter de Gruyter: Berlin; 127–134.

Memon A, Bull R. 1991. The Cognitive Interview: Its origins, empirical support, evaluation and practical implications. *Journal of Community and Applied Social Psychology* **1**: 291–307.

Memon A, Cronin O, Faves R, Bull R. 1993. The Cognitive Interview and child witnesses. *Issues in Criminology and Legal Psychology* **20**: 3–9.

Memon A, Holley A, Milne R, Köhnken G, Bull R. 1994. Towards understanding the effects of interviewer training in evaluating the cognitive interview. *Applied Cognitive Psychology* **8**: 641–659.

Memon A, Holley A, Wark L, Bull R, Köhnken G. 1996. Reducing suggestibility in child witness interviews. *Applied Cognitive Psychology* **10**: 503–518.

Memon A, Wark L, Bull R, Köhnken G. 1997a. Isolating the effects of the Cognitive Interview techniques. *British Journal of Psychology* **88**: 179–197.

Memon A, Wark L, Holley A, Bull R, Köhnken G. 1997b. Eyewitness performance in cognitive and structural interviews. *Memory* **5**: 639–656.

Memorandum of Good Practice. 1992. Her Majesty's Stationery Office: London.

Milne R, Bull R, Köhnken G, Memon A. 1995. The Cognitive Interview and suggestibility. In *Criminal Behavior, Perception, Attributions, and Rationality,* Stephenson GM, Clark NK (eds). British Psychological Society: Leicester; 21–27.

Oates K, Shrimpton S. 1991. Children's memories for stressful and non-stressful events. *Medical Science and Law* **31**: 4–10.

Orbach Y, Hershkowitz I, Lamb ME, Sternberg KJ, Esplin PW, Horowitz D. in press a. Assessing the value of scripted protocols for forensic interviews of alleged abuse victims. *Child Abuse and Neglect.*

Orbach Y, Hershkowitz I, Lamb ME, Sternberg KJ, Horowitz D. in press b. Interviewing at the scene of the crime: Effects on children's recall of alleged abuse. *Legal and Criminological Psychology.*

Paivio A. 1971. *Imagery and Verbal Processes.* Holt, Rinehart, & Winston: New York.

Pipe ME, Gee S. Wilson C. 1993. Cues, props and context: Do they facilitate children's event reports? In *Child Victims, Child Witnesses: Understanding and Improving Testimony,* Goodman GS, Bottoms BL (eds). Guilford: New York; 25–45.

Pipe ME, Wilson JC. 1994. Cues and secrets: Influences on children's event reports. *Developmental Psychology* **30**: 515–525.

Poole DA, Lamb ME. 1998. *Investigative Interviews of Children: A Guide for Helping Professionals.* American Psychological Association: Washington DC.

Poole DA, Lindsay DS. 1998. Assessing the accuracy of children's reports: Lessons from the investigation of child sexual abuse. *Applied & Preventative Psychology* **7**: 1–26.

Powell MB, Thompson DM. 1996. Children's memory of an occurrence of a repeated event: Effects of age, repetition, and retention interval across three question types. *Child Development* **67**: 1988–2004.

Price DWW, Goodman GS. 1990. Visiting the wizard: Children's memory of a recurring event. *Child Development* **61**: 664–680.

Roberts KP. 1996. How research on source monitoring can inform Cognitive Interview techniques: Commentary on Memon and Stevenage (1996). *Psycholoquoy* **7**: 15.

Sanders G. 1984. Effects of context cues on eyewitness identification responses. *Journal of Applied Social Psychology* **14**: 386–397.

Saywitz KJ, Geiselman RE, Bornstein GK. 1992. Effects of cognitive interviewing and practice on children's recall performance. *Journal of Applied Psychology* **77**: 744–756.

Smith BS, Ratner HH, Hobart CT. 1987. The role of cueing and organization in children's memory for events. *Journal of Experimental Child Psychology* **44**: 1–24.

Tulving E. 1983. *Elements of Episodic Memory.* Clarendon Press: Oxford.

Underwood BJ. 1969. Attributes of memory. *Psychological Review* **76**: 559–573.

Wilkinson J. 1988. Context effects in children's event memory. In *Practical Aspects of Memory: Current research and issues: Memory in everyday life* Vol. 1, Gruneberg MM, Morris PE, Sykes RN (eds). Wiley: New York; 107–111.

Yuille JC, Cutshall JL. 1986. A case study of eyewitness memory of a crime. *Journal of Applied Psychology* **71**: 291–301.

Yuille JC, Cutshall JL. 1989. Analysis of the statements of victims, witnesses, and suspects. In *Credibility Assessment*, Yuille JC (ed.). Kluwer Academic: Norwell, MA; 175–191.

Yuille JC, Hunter R, Joffe R, Zaparniuk J. 1993. Interviewing children in sexual abuse cases. In *Child Victims, Child Witnesses: Understanding and Improving Testimony,* Goodman GS, Bottoms BL (eds). Guilford: New York; 95–115.