
Exploring Parent–Child Discussions of Crime and their Influence on Children’s Memory

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When children witness or experience criminal events, the first people they go to are generally parents. Typically, no one else is privy to these conversations, and consequently little is known about their specific content. Research has shown that children can be quite accurate witnesses at times. However, they can also incorporate information from misleading and suggestive questions into their recall, and once their event memory has been changed, children may be unable to provide accurate reports. It is important then to assess parent–child discussions about crime. In the present study, 7- to 10-year-old children watched a video of a theft and talked about it with a parent immediately afterwards, and half had a second immediate interview with a researcher. All were interviewed by a different interviewer 1 week later. Results showed that: parents relied on direct and yes/no questions; children made errors of commission in response to questions; some parents asked leading or misleading questions; children incorporated all correct information from leading questions and nearly 40% of incorrect information from misleading questions; children provided additional information when interviewed by an interviewer 1 week later; and children remained relatively accurate in their descriptions but some were more accurate with parents than with an interviewer 1 week later. Copyright © 2014 John Wiley & Sons, Ltd.

Over the past several decades, multiple cases have been presented in the media that illustrate the potentially negative effects of parent–child discussions of crime. These cases show that some children have been so suggestively questioned that their memories of an event may never be accurate. In the event a judge determines that children’s memory of an event is distorted or erased, the children are not permitted to testify (Goodman, 2006). If these children are the sole witnesses to the crimes, the consequence could be that the perpetrators of these crimes are left unpunished. Thus, it is important to explore the content of parent–child discussions of crime and how they may influence children’s memory.

There is little doubt that most parents who believe their children have been victimized or may have witnessed a crime talk to their children (i.e., interview them informally) prior to making a report to the police. In some situations, parents have something to gain from interfering with children’s testimony (e.g., custody cases), but in others they do not (e.g., potential molestation by a stranger). If parents have something to gain, they might deliberately coach children about what they should say. However, it seems unlikely that parents would do this if they had nothing to gain. The inadvertent use of improper questioning techniques, however, might interfere with

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children's ability to report accurately what they have witnessed or experienced, and relatively little research has explored this issue.

Questioning Children

The types of questions adults ask children can dramatically influence children's recall of events (e.g., Lamb, Hershkowitz, Orbach, & Esplin, 2008; Saywitz, Goodman, & Lyon, 2002). The most common distinction compares open-ended, direct, and yes/no questions. When children are asked open-ended questions, their responses are lengthier than when asked direct questions (Sternberg, Lamb, Esplin, Orbach, & Hershkowitz, 2002). However, children often fail to fully describe an event when interviewers solely rely on open-ended questions (e.g., Hutcheson, Baxter, Telfer, & Warden, 1995; Sternberg *et al.*, 2002). Hutcheson *et al.* (1995) and Poole and Lindsay (1995), for example, both reported that when children were asked to recall target events, they did not provide all of the information they could remember in response to open-ended questions, but added more when later asked direct questions. These studies show why, when asking children to recall an event, people typically resort to direct questions to ensure children recall all the information that they are able to. Unfortunately, asking direct questions can lead to increased error rates, and this has been shown repeatedly (Larsson, Granhag, & Spjut, 2003). Issues with the accuracy of children's recall are even more prevalent when yes/no questions are introduced (Brady, Poole, Warren, & Jones, 1999; Peterson & Biggs, 1997; Peterson, Dowden, & Tobin, 1999).

In addition to considering the type of questions, it is also important to consider their wording. Questions that suggest information to the respondent are labeled as leading or misleading questions, depending upon whether the suggested information is correct or not. Cassel, Roebers, and Bjorklund (1996) found that even if children and adults showed accurate recognition memory, they often gave in to the perceived social demands of leading or misleading questions. Thompson, Clarke-Stewart, and Lepore (1997) showed that when 5- to 6-year-olds were interviewed on four separate occasions about a janitor's actions, children who were initially interviewed in an incriminating manner that included misinformation changed their responses over time to match the suggestions of the initial interviewer, regardless of what they had actually seen. Other problematic questions are those that are unanswerable, either because children do not know the answer (e.g., did not see the perpetrator's shoes) or because the interviewer is mistakenly informed about what actually happened (Ricci & Beal, 1998). The correct answer to an unanswerable question is "I don't know." Unfortunately, children and often even adults seldom respond with this (Waterman, Blades, & Spencer, 2001, 2004).

The use of leading, misleading, or unanswerable questions is generally not intended. Rather, the questioner has prior beliefs about what happened that influence questioning, which is termed interviewer bias (Bruck & Ceci, 1997). Ceci and Huffman (1997) showed that when an interviewer was misinformed, 34% of 3- and 4-year-olds and 18% of 5- and 6-year-olds made false accusations that were in line with the interviewer's misinformation. When interviewed by a second misinformed interviewer 2 months later, children continued to provide the same story with added details and increased confidence in their accuracy. Perhaps most troubling is the fact that the use of improper questioning techniques can have a cumulative effect (Garven, Wood,

Malpass, & Shaw, 1998). The McMartin Preschool case is one of the most famous cases to demonstrate the negative effects of improper questioning. Preschoolers were suggestively questioned by parents and investigators about potential abuse at their school, with many of the investigators' interviews recorded. Interviewers used a combination of suggestive techniques, including suggestive questions, telling children what others had already said, stating that negative consequences would occur if the children did not say what happened, repeating questions, and inviting speculation (Garven *et al.*, 1998). When Garven *et al.* experimentally replicated these interview techniques with 3- to 6-year-olds, 58% of children made false accusations, compared with 17% of children who were only asked suggestive questions. The techniques that appeared most powerful were reinforcement (praise for desired answers or telling the child about potentially negative consequences of poor answers) and social influence (telling the children what others had said).

Parent-child Discussions

To date, few studies have assessed parent-child discussions of an event for which the parent was absent. In one such assessment, Leichtman, Pillemer, Wang, Koreishi, and Han (2000) investigated children's memory for a preschool event that did not include their mothers. The authors found that differences in the way mothers later discussed the event with children affected children's recall when questioned by an experimenter three weeks later. The influence of leading or misleading questions and the use of unanswerable questions were not explored.

Other studies that have examined parent-child discussions of events for which parents were absent have assessed potential problems that occur when parents question their children. Findings from these studies are mixed. Ricci, Beal, and Dekle (1996) had kindergarten children view a slideshow of a minor theft. These 5-year-olds were then interviewed by either a parent or a trained interviewer. Interviewers were given a typed list of questions and were told they could rearrange the questions however they wanted. Children recalled less accurate information when interviewed by their parents. The authors indicated that the parents' questioning style may have influenced children's responses: they were impatient and expected children to answer right away, and they repeated questions as if not believing children's responses and, as a consequence, some children actually changed their answers. Overall, 71% of parents used techniques that have been previously deemed ineffective. However, when parents were given a script and asked to follow it, children provided similar information to parents and interviewers.

By contrast, Jackson and Crockenberg (1998) had 4-year-old girls watch a video of two children having a snack before being interviewed by either a parent or stranger using a misleading or non-misleading standardized interview. When children were interviewed using non-misleading questions, they gave more correct and incorrect information to parents than to the stranger. But in the misleading condition, children were more suggestible when interviewed by the stranger than when interviewed by parents, and more likely to correct their parents than the stranger. The authors suggested that because of the daily conversations children have with parents, and the high likelihood that children have had occasion to contradict their parents, children may have felt more comfortable correcting their parents than a stranger. Thus, the demand characteristics of the interview might have led to some of the children's mistakes.

Goodman, Sharma, Thomas, and Considine (1995) examined the interview performance of 4-year-old children about a play session during which mothers were absent. Half of the parents were shown a video that had misinformation or missing information about what occurred during the play session. Children were interviewed by either their mothers or strangers using a free interview followed by a structured interview. Children were more accurate about actions and potential abuse in response to their mothers than in response to strangers. But there were no differences in accuracy for person or room information.

The results of these studies suggest that how children respond when questioned by parents is not necessarily the same as how they respond when questioned by strangers. With the exception of Goodman *et al.*'s (1995) study, parents have generally been provided with both information about the event and the questions they were to ask. In the free interview portion of Goodman *et al.*'s (1995) study, parents asked more direct questions than did the strangers. This suggests that when left to develop their own questions, parents may interview children differently than they did in these other studies.

There are other issues that can be raised, including the nature of the events discussed. These events have generally been fairly innocuous. Furthermore, in the one study that included a theft, a slideshow was used (Ricci *et al.*, 1996). The lack of continuous detail in a slideshow leads one to wonder about its usefulness as a memory stimulus. Age is also important. The children assessed have mostly been very young; only one study included children older than 5 years. Studies of older children are therefore needed. Finally, only Goodman *et al.*'s (1995) study looked at the specific types of information that were recalled. In a forensic scenario, some types of information would be more important than others. Thus assessing parental influence on the recall of varying types of information is essential.

The present study examined what parents actually ask if they believe their children have witnessed a theft in their absence and the influence such conversations have on children's later recall. Seven- to 10-year-old children were recruited because most studies that have assessed parent-child discussions have only focused on younger children. Parent interviews of their children were assessed to determine what parents asked children about, the number of open-ended, direct, and yes/no questions parents asked, how children responded to parent questions, and whether children incorporated information suggested by their parents into their responses. Children's 1-week recall was also assessed to determine what, if any, influence discussions with a parent had on later recall. All information was assessed for potential differences due to the gender or age of the child, and the video watched.

The following hypotheses were developed for this study:

1. Consistent with the free interview portion of Goodman *et al.*'s (1995) study, it was expected that parents would ask children a high proportion of direct and yes/no questions.
2. Children would make more errors in response to direct and yes/no questions than to open-ended ones. This is consistent with past literature.
3. Children would reject parent-suggested information when discussing the video with their parents because children were aware that parents had not seen the video. Past research shows that, when warned that the person questioning has no idea about what happened, children are better able to resist suggested information, especially when parents are the ones doing the suggesting (Jackson & Crockenberg, 1998).

- Children would be consistent in the amount and accuracy of recall across interviews (Peterson, Moores, & White, 2001) and would not include parent-suggested information in delayed recall for an interviewer, as prior research suggests that they reject such information when recall was immediate (Jackson & Crockenberg, 1998).

In addition, it is important to know the content of what parents ask about. Because this part of the study was exploratory, no hypotheses were proposed.

METHOD

Ethics approval was obtained, and the research was conducted in accordance with the ethical requirements of the university's interdisciplinary committee for ethics in human research. Prior to recruitment, school board and principal permission was obtained.

Participants

Seventy-nine parent-child dyads were recruited from local elementary schools in St. John's, Newfoundland and Labrador, Canada. There were 39 boys and 40 girls aged 7-10 years ($M_{\text{boys}} = 8.58$, $SD_{\text{boys}} = 0.95$; $M_{\text{girls}} = 8.65$, $SD_{\text{girls}} = 0.83$). The majority of parents were mothers ($n = 73$). An additional four children participated, but their data were removed due to difficulties with recording equipment ($n = 2$) or because children failed to complete all portions of the study (e.g., children went on vacation, $n = 2$). Almost all children were Caucasian.

Stimuli

Two videos were used to control for any idiosyncratic effect of stimuli. Both were approximately 90 seconds in length and featured both male and female confederates. There was no audio in either video. The first video took place inside a small toy store, and numerous toys and types of candy could be seen. A male storekeeper was stocking a shelf. A woman entered the store, and after handling some of the toys, she placed five bags of candy into her purse when the shopkeeper's back was turned, and then left the store. The storekeeper walked over to where she had been, and then followed her out of the store. Scoring included 10 action details, 14 perpetrator details, 10 setting details, and eight victim details.

The second video took place in a large waiting area at a school. A woman was sitting on a bench with a bag next to her, reading a book, when a man with a backpack walked in and sat next to her. When the woman got some change from her wallet (which she left behind) and went to a nearby vending machine, the man took out her wallet and took some bills. He then left. The woman came back, noticed her open wallet, and ran after him. Scoring included 18 action details, 13 perpetrator details, 13 setting details, and 14 victim details. (More detail on the videos can be obtained from the authors.)

Procedure

Letters of interest were sent home to parents of children in the appropriate classes at local elementary schools. Parents who expressed interest were contacted, and participation occurred at locations convenient for the parents (e.g., in their homes). Two female researchers were present. Children were randomly assigned to video conditions (candy or money theft) and interview conditions (two interviews vs. three interviews). Children were asked to watch a video by a researcher, who viewed it with them to ensure it worked properly (children were simply asked to watch a video and were not told about the video content). Parents were taken to a separate location by the second researcher and were given paperwork to complete, so they did not see the video. After the video, children were asked if they knew what a witness was. Regardless of their responses, all children were told that a witness was a person who had seen something happen and that they were now witnesses to what had happened in the video. Children were told that if they had witnessed something like they had seen in the video, they might be asked questions about what had happened. It was explained to each child that the video he/she had seen was, in fact, pretend but that the researchers wanted to know what the child could remember about it. The researcher explained that the child's parent had not seen the video and that it was up to the child to tell his/her parent what had happened. The parent was brought back into the room. Parents were not given a pre-established list of questions, but were instead told to question the child about the video as they thought they would if the child had actually seen something similar. Not giving parents a set of questions to ask was intended to mimic what would actually happen if children witnessed a theft. The experimenters left the room while the parents questioned their children. Parent-child discussions were audio-recorded.

To assess the influence of parent-child discussions on later memory, immediately following the discussion with parents, half of the children were interviewed by the interviewer who had not watched the video, using a semi-structured interview developed for the purposes of the study. One week later a different interviewer, whom the children had not previously met, interviewed all children using the same semi-structured interview. This meant half of the children were interviewed twice and the rest were interviewed three times. The semi-structured interview included four open-ended questions. First children were asked to talk about what they had seen in the video. This was followed with utterances of what else do you remember until the children indicated that they could not supply any additional information. Children were also asked to describe the location shown in the video and the actions in the video, and then the people. Again, these questions were followed by requests for additional information. Finally, the children were asked to start at the beginning of the video and to go to the end describing anything that they could remember happening. They were assured that it was okay to repeat previously mentioned information.

All children were shown the video using the same laptop computer. The researcher used a script to ensure each child received the same instructions. All interviews were transcribed and scoring was completed from transcripts.

Coding Procedure

Parent questions were categorized as: open-ended questions, direct questions, yes/no questions, or statements. This question breakdown has been used elsewhere (e.g., Fivush,

Peterson, & Schwarzmuller, 2002). Questions for which there were many possible answers were coded as open-ended questions (e.g., what happened?). Questions for which there were a limited number of answers, such as either/or questions, were coded as direct questions (e.g., was the person who took the money a boy or a girl?). Questions that required a yes/no response were coded as yes/no questions. Comments made by parents that did not require any response were coded as statements. Parent questions were then further categorized as being relevant or safety questions. Questions that required the children to talk about the video were categorized as relevant. Questions that explored the children's feelings about what had been seen or the rightness/wrongness of the act were categorized as safety questions.

The number and accuracy of details children provided to each question type (open-ended, direct, yes/no) were tabulated. Finally, details, if any, that parents suggested to their children (e.g., the parent assumed the shopkeeper was female) were recorded. Suggested information was categorized as either accurate (occurred in the video) or inaccurate (did not occur or occurred differently in the video) information. Children's responses were checked to determine whether children included the suggested information in their responses.

To determine the completeness and accuracy of children's recall, five independent observers were asked to watch the videos and record everything they could see. The observers were asked to group information according to setting, actions, perpetrator description, and victim description. Perpetrator and victim descriptions were further broken down into age, clothing, gender, and features (e.g., eye colour or hairstyle). This information was used to compile a list of items people watching the video could be expected to remember. To obtain a completeness score, the total number of details children provided was divided by the number of details children could have provided. Overall completeness scores were tabulated as well as completeness scores for each category of information (e.g., setting). To obtain accuracy scores, the total number of accurate details a child provided was divided by the number of details the child provided. Again, overall scores were calculated as well as scores for each category of information.

To assess interrater reliability, 25% of the transcripts were coded by a second individual who was trained in the coding procedure, and the percentage agreement was calculated. This individual was blind to the hypotheses and to all conditions but the video condition. Interrater agreement for the various types of item coding (i.e., the questions used by parents and the information provided by children in both the parent interview and the semi-structured interviews) ranged from 85% to 100% with an average reliability of 95%. For discrepancies, agreed-upon responses were used.

RESULTS

In assessing the parent interview, the major points of interest concerned the types of questions parents posed to their children, the type of information children provided, the amount and accuracy of information children provided, and child incorporation of parent-suggested information. A series of analyses of variance (ANOVAs) and correlations indicated no differences in questions posed or in the information (content, amount, or accuracy) children provided as a function of child age, child gender, parent gender, or video. Accordingly, the data were collapsed across these variables for subsequent analyses. The video shown did influence children's later (1-week) although not earlier recall, and consequently, this variable is included in analyses pertaining to later recall.

Characteristics of the Parent Interview

Parent questions were divided into two categories: questions relevant to the video and safety questions. The mean number of relevant and safety questions broken down by question type (open-ended, direct, yes/no, statement) can be found in Table 1. The safety questions were of little interest for the current study and were omitted from analyses.

A one-way repeated-measures ANOVA assessing the number of questions asked across four levels of question type (open-ended, direct, yes/no, statement) was completed to get a sense of parents' questioning style. Mauchly's test indicated that the assumption of sphericity had been violated ($\chi^2 = 128.74$, $p < 0.001$), and therefore degrees of freedom were corrected using Greenhouse–Geisser estimates of sphericity ($\epsilon = 0.54$). Parents were more likely to use some question types than others [$F(1.63, 127.15) = 58.73$, $p < 0.001$, partial $\eta^2 = 0.43$, 95% CI: 3.51–5.10] (see Table 1)}. Follow-up paired-sample t -tests showed that parents relied on yes/no questions more than on open-ended questions [$t(78) = 7.08$, $p < 0.001$, $r^2 = 0.19$, 95% CI: 3.90–6.96], direct questions [$t(78) = 4.75$, $p < 0.001$, $r^2 = 0.50$, 95% CI: 1.65–4.02], or statements [$t(78) = 9.21$, $p < 0.001$, $r^2 = 0.02$, 95% CI: 6.04–9.37]. Parents relied more on direct questions than on open-ended questions [$t(78) = 4.98$, $p < 0.001$, $r^2 = 0.12$, 95% CI: 1.56–3.63] or statements [$t(78) = 9.20$, $p < 0.001$, $r^2 = 0.08$, 95% CI: 3.82–5.93]. Finally, parents relied more on open-ended questions than on statements [$t(78) = 9.23$, $p < 0.001$, $r^2 = 0.16$, 95% CI: 1.79–2.77].

Information Provided by Children

Next, children's responses to parents' questions were assessed to determine whether the information children provided would be of potential forensic interest. Children's responses were categorized as being descriptive of the perpetrator, actions, setting, or the victim. Mauchly's test indicated that the assumption of sphericity had been violated ($\chi^2 = 26.53$, $p < 0.001$), therefore degrees of freedom were corrected using Greenhouse–Geisser estimates of sphericity ($\epsilon = 0.84$). A one-way repeated-measures ANOVA comparing the number of details children provided across four levels of content (perpetrator, actions, setting, victim) showed that children were more likely to provide information about some forensically relevant items than others [$F(2.52, 196.38) = 39.89$, $p < 0.001$, partial $\eta^2 = 0.34$, 95% CI: 4.17–5.39]. Follow-up paired-sample t -tests revealed that children were equally likely to discuss the actions ($M = 6.48$, SD

Table 1. Means and standard deviations for the questions posed by parents across question type ($n = 79$)

Information assessed	Question type				Overall
	Open ended	Direct prompt	Yes/no	Statement	
Relevant					
<i>M</i>	2.84	5.43	8.27	0.56	17.09
<i>SD</i>	2.38	4.90	7.51	1.16	13.08
Safety/parental concern					
<i>M</i>	1.08	0.63	1.67	0.39	3.77
<i>SD</i>	1.59	1.36	2.70	1.01	5.12

=4.41) and the perpetrator ($M = 6.46$, $SD = 4.68$). Actions were talked about more often than the setting ($M = 3.52$, $SD = 2.65$) [$t(78) = 6.78$, $p < 0.001$, $r^2 = 0.24$, 95% CI: 2.09–3.83] or the victim ($M = 2.66$, $SD = 2.24$) [$t(78) = 9.71$, $p < 0.001$, $r^2 = 0.38$, 95% CI: 3.04–4.61]. Likewise, the perpetrator was talked about more often than the setting [$t(78) = 6.36$, $p < 0.001$, $r^2 = 0.24$, 95% CI: 2.02–3.86] or the victim [$t(78) = 7.43$, $p < 0.001$, $r^2 = 0.09$, 95% CI: 2.78–4.81]. Finally, children were more likely to talk about the setting than about the victim [$t(78) = 2.72$, $p = 0.008$, $r^2 = 0.12$, 95% CI: 0.23–1.49].

Another question was how parents acquired information from children. Again, Mauchly's test indicated that the assumption of sphericity had been violated ($\chi^2 = 41.69$, $p < 0.001$); therefore degrees of freedom were corrected using Greenhouse–Geisser estimates of sphericity ($\epsilon = 0.71$). A one-way repeated-measures ANOVA assessing the number of details children provided across three types of questions (open-ended, direct question, yes/no) indicated that children provided more information to some question types than to others [$F(1.41, 110.01) = 23.90$, $p < 0.001$, partial $\eta^2 = 0.24$, 95% CI: 5.55–7.19]. Follow-up paired-sample t -tests revealed that children provided less information in response to yes/no questions ($M = 2.57$, $SD = 4.04$) than to either open-ended questions ($M = 8.72$, $SD = 7.83$) [$t(78) = 5.99$, $p < 0.001$, $r^2 = 0.01$, 95% CI: 4.11–8.20] or direct questions ($M = 7.82$, $SD = 5.94$) [$t(78) = 8.83$, $p < 0.001$, $r^2 = 0.24$, 95% CI: 4.07–6.44], which in turn did not differ.

Accuracy of Information Children Provided

Approximately 11% of the details children provided were incorrect. A summary of the specific errors children made can be found in Table 2. A one-way repeated-measures ANOVA assessing the proportion of errors children made that were in response to each of the three question types (open-ended, direct question, yes/no) indicated that errors were more likely to be made in response to some types of questions than to others [$F(2, 84) = 5.91$, $p = 0.004$, partial $\eta^2 = 0.12$, 95% CI: 0.09–0.15]. Follow-up paired-sample t -tests showed children made proportionately more errors in response to direct prompts ($M = 0.22$, $SD = 0.25$) than to open-ended questions ($M = 0.06$, $SD = 0.14$) [$t(64) = 4.43$, $p < 0.001$, $r^2 = 0.001$, 95% CI:

Table 2. Errors made in response to parent questioning ($n = 79$)

Category of information	Number of children who made the error
Actions	6
Perpetrator	
Age	23
Clothing	27
Gender	1
Features	17
Setting	10
Victim/witness	
Age	8
Clothing	7
Gender	0
Features	3
Item taken	21

0.09–0.23], or to yes/no questions ($M = 0.08$, $SD = 0.18$) [$t(46) = 2.89$, $p = .006$, $r^2 = 0.04$, 95% CI: 0.04–0.23]. The proportion of errors in response to open-ended and yes/no questions did not significantly differ.

Children's Incorporation of Parent Suggested Information

Another question was whether or not children included information suggested by their parents in their accounts of the video. Of interest, only 22 parents (27.9%) included any suggestions in the questions they asked their children. Of the parents who included suggestive information, 13 included one suggestion, two included two suggestions, four included three suggestions, one included four suggestions, and two included five suggestions. Of the 43 suggested pieces of information, 28 pieces were incorrect. Children incorporated 100% of correct pieces of information from leading questions. Of the 28 incorrect pieces of information, 11 were accepted; that is, these children incorporated 39% of incorrect pieces of information from misleading questions. Incorrect information suggested by parents included an incorrect item stolen, an assumption that the perpetrator was male and the victim was female, incorrect clothing worn by the perpetrator, incorrect setting for the offence, and incorrect actions on the part of the perpetrator. Only two parents asked an unanswerable question, and in both cases children correctly responded with "I don't know."

Consistency of Recall

To assess consistency in the amount of information recalled, a series of ANOVAs was completed with the proportion of information recalled (parent discussion vs. 1-week recall) as a within-subjects variable and with both the number of interviews (two vs. three) and the video seen (candy store vs. purse theft) as between-subjects variables. Children consistently recalled more information in the 1-week interview than in the discussion with their parents (see Table 3). This was true regardless of whether

Table 3. The completeness and accuracy of children's recall

Category of information	Interview	
	Parent-child discussion	One-week follow-up
	Proportion complete $M (SD)$	
Actions	0.37 (0.23)	0.59 (0.17)*
Perpetrator	0.34 (0.20)	0.43 (0.14)*
Setting	0.23 (0.13)	0.44 (0.15)*
Victim	0.20 (0.16)	0.21 (0.13)
Overall	0.30 (0.14)	0.43 (0.11)*
	Proportion accurate $M (SD)$	
Actions	0.99 (0.05)	0.97 (0.07)
Perpetrator	0.79 (0.21)	0.76 (0.17)
Setting	0.83 (0.24)	0.80 (0.17)
Victim	0.92 (0.16)	0.96 (0.13)
Overall	0.87 (0.11)	0.87 (0.09)

* $p < 0.01$.

Note. $n = 79$ for the completeness of information recalled. However, n varies from 71 to 79 for the accuracy of information, as not all children were able to recall specific categories of information.

overall recall was assessed [$F(1, 74) = 73.07, p < 0.001, \text{partial } \eta^2 = 0.50, 95\% \text{ CI: } 0.10\text{--}0.16$], or if recall was divided into information about the perpetrator [$F(1, 74) = 11.79, p = 0.001, \text{partial } \eta^2 = 0.14, 95\% \text{ CI: } -0.03\text{--}0.09$], the setting [$F(1, 75) = 165.90, p < 0.001, \text{partial } \eta^2 = 0.69, 95\% \text{ CI: } -0.24 \text{ to } -0.18$], and the actions [$F(1, 75) = 73.04, p < 0.001, \text{partial } \eta^2 = 0.49, 95\% \text{ CI: } 0.17\text{--}0.28$]. There was no difference in the proportion of information children recalled about the victim when talking to their parents immediately following the video and when talking to an interviewer 1 week later. There were no significant effects of video, number of interviews, or the interaction between these variables on children's overall recall or on their recall of the perpetrator, setting, or victim. However, there was a significant two-way interaction between recall and video for the proportion of information recalled about the actions [$F(1, 75) = 6.68, p = 0.01, \text{partial } \eta^2 = 0.08$]. Simple effects analysis using one-way ANOVAs showed that children recalled more of the actions from the candy store video when they were interviewed 1 week later ($M = 0.66, SD = 0.15$) than when they discussed the video with a parent ($M = 0.37, SD = 0.26$) [$F(1, 37) = 48.19, p < 0.001, \text{partial } \eta^2 = 0.57, 95\% \text{ CI: } 0.21\text{--}0.38$] and more of the actions from the purse theft video when they were interviewed 1 week later ($M = 0.52, SD = 0.17$) than when they discussed the video with a parent ($M = 0.36, SD = 0.20$) [$F(1, 38) = 24.40, p < 0.001, \text{partial } \eta^2 = 0.39, 95\% \text{ CI: } 0.09\text{--}0.22$]. However, the difference was more pronounced in children's recall of the candy store than the purse theft video.

To assess accuracy differences across interviews, ANOVAs were also conducted with the proportion of accurate information recalled (parent discussion vs. 1-week recall) as a within-subjects variable and with both the number of interviews (two vs. three) and the video (candy store vs. purse theft) as between-subjects variables. There was no significant difference in overall recall accuracy between the parent-child discussion and the 1-week follow-up interview (see Table 3). Likewise there was no significant difference in recall accuracy when children were describing the setting or the victim. However, there was a significant two-way interaction between accuracy and video for the accuracy of children's recall of the perpetrator [$F(1, 72) = 5.33, p = 0.02, \text{partial } \eta^2 = 0.07$]. Simple effects analysis using one-way ANOVAs showed that, when recalling the candy store video, children were more accurate in their recall of the perpetrator when talking with a parent immediately following the video ($M = 0.84, SD = 0.23$) than when talking with an interviewer 1 week later ($M = 0.74, SD = 0.18$) [$F(1, 35) = 5.63, p = 0.02, \text{partial } \eta^2 = 0.14, 95\% \text{ CI: } 0.01\text{--}0.16$]. In contrast, there was no significant difference in recall accuracy across interviews ($M = 0.75, SD = 0.18$ and $M = 0.78, SD = 0.16$ for the parent and 1-week interviews, respectively) when discussing the purse theft video. There was also a significant two-way interaction between accuracy when discussing the actions and whether children had been interviewed twice or three times [$F(1, 73) = 4.73, p = 0.03, \text{partial } \eta^2 = 0.06$]. Simple effects analysis using one-way ANOVAs showed there was no significant difference in accuracy between the discussion with parents ($M = 0.98, SD = 0.05$) and the 1-week follow-up interview ($M = 0.99, SD = 0.03$) when children were interviewed three times, but children were more accurate in their discussion with parents ($M = 0.99, SD = 0.04$) than in the 1-week follow-up interview ($M = 0.96, SD = 0.08$) when they were only interviewed twice [$F(1, 37) = 4.98, p = 0.03, \text{partial } \eta^2 = 0.12, 95\% \text{ CI: } 0.00\text{--}0.06$]. It is important to note that there were ceiling effects in children's accuracy regardless of the condition to which children were assigned or the time of interview.

Finally, the extent to which children continued to incorporate information that had been suggested by parents in the initial interview was assessed. Children continued to incorporate 100% of the accurate parent-suggested information in subsequent interviews. Of the 28 incorrect pieces of information parents suggested, 11 were accepted only in the initial parent interview and seven of those parent-suggested pieces of incorrect information continued to be mentioned in subsequent interviews.

DISCUSSION

The media's presentation of legal trials and hearings, in which the suggestive questioning of children has been noted, has led to questions regarding how parents discuss negative experiences with their children (Goodman, 2006). Research has clearly demonstrated that good questioning techniques are important for obtaining complete and accurate event reports from children, and that individuals who talk to children about negative events should avoid questions that suggest information. Such a task is not easy when a person does not know what happened in his/her absence, making virtually every question potentially leading or misleading (Ricci & Beal, 1998). In the present study, parent-child discussions of crime were assessed in an attempt to determine how parents question their children about a crime and how children respond to parent questioning.

In terms of the sorts of content parents asked about, parents focused the majority of the discussion around the actions and the perpetrator in the video, with relatively fewer questions about the setting and the victim. This suggests that despite a lack of training, parents recognized the importance of acquiring information about what had happened and about the person who had committed the criminal act.

Effective interviewing techniques require a combination of both open-ended and direct questions. More information is obtained when open-ended questions are asked (Sternberg *et al.*, 2002), but direct questions may be needed to ensure the completeness of children's reports (Hutcheson *et al.*, 1995; Poole & Lindsay, 1995). When children are asked direct questions however, they often make mistakes in their responses (Larsson *et al.*, 2003; Peterson *et al.*, 1999). Regardless of the type of question asked, information that suggests to a child what might have happened needs to be excluded (Cassel *et al.*, 1996; Thompson *et al.*, 1997). Part of the concern regarding parent questioning techniques, then, is whether parents rely on direct questions or include suggestive information.

In the present study, supporting the first hypothesis, parents did ask more direct and yes/no questions than open-ended questions. Those parents who asked open-ended questions more often received lengthier responses than those who asked more yes/no questions. Coinciding with this, and consistent with the second hypothesis, children made more errors in response to the direct questions posed by parents than to open-ended questions. Fortunately, children's accuracy was at near ceiling levels regardless of the condition to which children were assigned or the time at which they were interviewed. However, approximately a quarter of the parents included suggestive information in their questions. Children recognized the correct information suggested by parents and included it in their event reports. Unfortunately, in contrast to the third hypothesis, children failed to recognize nearly 40% of the incorrect information suggested by parents and also included this in their reports. Most disturbing is that

children continued to include misinformation when interviewed by a different interviewer a week later, a finding that contrasts with the fourth hypothesis. Past studies have shown a lack of acceptance of interviewer-suggested details when it has been emphasized that the person questioning the children has no awareness of the event (Goodman & Bottoms, 1993; Jackson & Crockenberg, 1998). Similarly, Jackson and Crockenberg (1998) suggest that children seem more comfortable rejecting parent-suggested than stranger-suggested misinformation, and Goodman *et al.* (1995) found children were more accurate in answering misleading abuse-related questions when they were questioned by their mothers than when asked similar questions by a stranger. In this study, even though only a minority of parents suggested incorrect information, many of the suggestions were accepted. This is a cause for concern. A subtle effect of interviewer bias could be seen through the misinformation parents provided. For example, several parents assumed that the storekeeper was female and that the thief was male. However, there were too few incidents of interviewer bias to formally assess when it occurred or when children chose to incorporate it.

Even though it is not really surprising, the findings that parents rely so heavily on direct questions and yes/no questions and that children could not always resist misinformation are troubling. Tremendous effort has been directed toward training police officers and other legal personnel to avoid using these questions (e.g., Orbach *et al.*, 2000), and as Thompson *et al.* (1997) have shown, even if legal personnel ask the right questions, earlier interviews can interfere with children's ability to correctly recall an event. In the present study, children recalled more information when interviewed by an interviewer 1 week following the video than they recalled when initially discussing the video with a parent. Results also suggested that the additional recall for actions was more pronounced when discussing the candy theft than the purse theft. Parents spent a lot of time discussing the candy store itself with their children, which might explain the bigger discrepancy for this video. Of importance, even with this discussion, is the fact that 1 week later children could recall additional details regarding the actions that occurred. With respect to accuracy, there were few differences between the discussion with the parent and the 1-week follow-up interview. However, when discussing the perpetrator in the candy store video, children were more accurate in their initial discussion with a parent than in the 1-week follow-up interview. Additionally, when discussing actions, children were more accurate in their discussion with their parents than in the 1-week follow-up interview if they were only interviewed twice, but there was no difference in accuracy across interviewers if the children were interviewed three times. These findings may be due to the proximity of the two interviews after viewing the video. Perhaps an additional interview right after the initial discussion with the parent can protect the accuracy of some information. Future research should assess these possibilities. Regardless, these results suggest the importance of interviewing children about the perpetrator as early as possible.

In contrast to past studies, children in this study were shown one of two realistic thefts, events that are more comparable to the real-life acts that children who witness a crime could be asked to describe. In addition, this study contained a realistic assessment of parent questioning. Although they were informed in the parent letter that they would question their children, most parents seemed unaware that they would actually generate their own questions. This lack of parental awareness likely added a dimension of realism to the parent interviews. With little background information to use in

generating questions, parents were forced to question their children about an event the children potentially viewed as negative. Parents quickly composed questions that were mostly direct. One could expect something similar from parents who are actually put in a similar situation.

The present results may not generalize to other crimes such as abuse or maltreatment. If one looks at legal case hearings discussed in the media, where the manner in which children have been interviewed has been called into question, most, if not all, pertain to abuse or maltreatment. Theft is very minor in comparison, and even if the experience was real, parents likely would not have the same reaction to their children potentially witnessing a theft as they would to their children potentially being abused or maltreated. Although it would be unethical to show children more serious crimes, these findings could be replicated with other minor crimes to determine whether there are differences depending on the type of crime children are asked to discuss.

In the present study, some factors that have been previously shown to influence parent-child discussions of events were not assessed. These include parent-child attachment (Alexander *et al.*, 2002) and parenting style (Imhoff & Baker-Ward, 1999). Future research should assess individual difference factors that may help to explain how parents talk to children about such events. Also, in assessing the potential influence of misinformation, a future study might tell parents their children had witnessed a theft when in actuality they had not. It may be that parents would become more misleading in an attempt to get children to discuss what they believe the children actually witnessed. It is also important to assess how parents would respond to younger children. It would be especially interesting to see whether parents would provide additional misinformation when trying to help younger children elaborate on an event.

In the present study, children simply watched a video of a staged theft. In comparison to actually witnessing a theft, this event was relatively unemotional. Children would likely experience far greater emotional upheaval if they actually witnessed such an event, and parents would likely be far more panicked in their questions. Nevertheless, parents relied heavily on direct and yes/no questions, and children had difficulty resisting misinformation. Although it would be unfair to generalize these findings to what would happen in a real-world situation, it is possible that parents would rely on even more yes/no and direct questions and that children would show even greater difficulty in resisting misinformation. Parents should be taught the importance of avoiding such questions when discussing events of this nature with their children through parent-education programs. What remains to be determined is the influence parent questioning could have on later interviews with the authorities.

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REFERENCES

- Alexander, K. W., Goodman, G. S., Schaaf, J. M., Edelstein, R. S., Quas, J. A., & Shaver, P. R. (2002). The role of attachment and cognitive inhibition in children's memory and suggestibility for a stressful event. *Journal of Experimental Child Psychology, 83*, 262–290.
- Brady, M. S., Poole, D. A., Warren, A. R., & Jones, H. R. (1999). Young children's responses to yes-no questions: Patterns and problems. *Applied Developmental Science, 3*, 47–57.
- Bruck, M., & Ceci, S. J. (1997). The suggestibility of young children. *Current Directions in Psychological Science, 6*, 75–79.
- Cassel, W. S., Roebbers, C. E. M., & Bjorklund, D. F. (1996). Developmental patterns of eyewitness responses to repeated and increasingly suggestive questions. *Journal of Experimental Child Psychology, 61*, 116–133.
- Ceci, S. J., & Huffman, M. L. C. (1997). How suggestible are preschool children? Cognitive and social factors. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*, 948–958.
- Fivush, R., Peterson, C., & Schwarzmueller, A. (2002). Questions and answers: The credibility of child witnesses in the context of specific questioning techniques. In M. L. Eisen, J. A. Quas, & G. S. Goodman (Eds.), *Memory and suggestibility in the forensic interview* (pp. 331–354). Mahwah, NJ: Erlbaum.
- Garven, S., Wood, J. M., Malpass, R. S., & Shaw, J. S. (1998). More than suggestion: The effect of interviewing techniques from the McMartin Preschool case. *Journal of Applied Psychology, 83*, 347–359.
- Goodman, G. S. (2006). Children's eyewitness memory: A modern history and contemporary commentary. *Journal of Social Issues, 62*, 811–832.
- Goodman, G. S., & Bottoms, B. L. (1993). *Child victims, child witnesses: Understanding and improving testimony*. New York, NY: Guilford Press.
- Goodman, G. S., Sharma, A., Thomas, S. F., & Consideine, M. F. (1995). Mother knows best: Effects of relationship status and interviewer bias on children's memory. *Journal of Experimental Child Psychology, 60*, 195–228.
- Hutcheson, G. D., Baxter, J. S., Telfer, K., & Warden, D. (1995). Child witness statement quality: Question type and errors of omission. *Law and Human Behavior, 19*, 631–648.
- Imhoff, M. C., & Baker-Ward, L. (1999). Preschooler's suggestibility: Effects of developmentally appropriate language and interviewer supportiveness. *Journal of Applied Developmental Psychology, 20*, 407–429.
- Jackson, S., & Crockenberg, S. (1998). A comparison of suggestibility in 4-year-old girls in response to parental or stranger misinformation. *Journal of Applied Developmental Psychology, 19*, 527–542.
- Lamb, M. E., Hershkowitz, I., Orbach, Y., & Esplin, P. W. (2008). *Tell me what happened. Structured investigative interviews of child victims and witnesses*. Mississauga, ON: John Wiley and Sons Ltd.
- Larsson, A. S., Granhag, A. P., & Spjut, E. (2003). Children's recall and the cognitive interview: Do the positive effects hold over time? *Applied Cognitive Psychology, 17*, 203–214.
- Leichtman, M. D., Pillemer, D. B., Wang, Q., Koreishi, A., & Han, J. J. (2000). When baby Maisy came to school: Mothers' interview styles and preschoolers' event memories. *Cognitive Development, 15*, 99–114.
- Orbach, Y., Hershkowitz, I., Lamb, M. E., Sternberg, K. J., Esplin, P. W., & Horowitz, D. (2000). Assessing the value of structured protocols for forensic interviews of alleged child abuse victims. *Child Abuse & Neglect, 24*, 733–752.
- Peterson, C., & Biggs, M. (1997). Interviewing children about trauma: Problems with "specific" questions. *Journal of Traumatic Stress, 10*, 279–290.
- Peterson, C., Dowden, C., & Tobin, J. (1999). Interviewing preschoolers: Comparisons of yes/no and wh-questions. *Law and Human Behavior, 23*, 539–555.
- Peterson, C., Moores, L., & White, G. (2001). Recounting the same events again and again: Children's consistency across multiple interviews. *Applied Cognitive Psychology, 15*, 353–371.
- Poole, D. A., & Lindsay, D. S. (1995). Interviewing preschoolers: Effects of nonsuggestive techniques, parental coaching, and leading questions on reports of nonexperienced events. *Journal of Experimental Child Psychology, 60*, 129–154.
- Ricci, C. M., & Beal, C. R. (1998). Effect of questioning techniques and interview setting on young children's eyewitness memory. *Expert Evidence, 6*, 127–144.
- Ricci, C. M., Beal, C. R., & Dekle, D. J. (1996). The effect of parent versus unfamiliar interviewers on children's eyewitness memory and identification accuracy. *Law and Human Behavior, 20*, 483–500.
- Saywitz, K. J., Goodman, G. S., & Lyon, T. D. (2002). Interviewing children in and out of court: Current research and practice implications. In J. E. B. Myers, L. Berliner, J. Briere, C. T. Hendriz, & C. Jenny (Eds.), *The APSAC handbook on child maltreatment* (pp. 349–377). Thousand Oaks, CA: Sage.

- Sternberg, K. J., Lamb, M. E., Esplin, P. W., Orbach, Y., & Hershkowitz, I. (2002). Using a structured interview protocol to improve the quality of investigative interviews. In M. Eisen, J. A. Quas, & G. S. Goodman (Eds.), *Memory and suggestibility in the forensic interview* (pp. 409–436). Mahwah, NJ: Lawrence Erlbaum Associates.
- Thompson, W. C., Clarke-Stewart, K. A., & Lepore, S. J. (1997). What did the janitor do? Suggestive interviewing and the accuracy of children's accounts. *Law and Human Behavior, 21*, 405–426.
- Waterman, A. H., Blades, M., & Spencer, C. (2001). Interviewing children and adults: The effect of question format on the tendency to speculate. *Applied Cognitive Psychology, 15*, 521–531.
- Waterman, A. H., Blades, M., & Spencer, C. (2004). Indicating when you do not know the answer: The effect of question format and interviewer knowledge on children's 'don't know' responses. *British Journal of Developmental Psychology, 22*, 335–348.