Children's Memory and Event Reports: The Current State of Knowledge and Best Practice

LINDSAY C. MALLOY

Florida International University, Miami, Florida, USA

JONNI L. JOHNSON and GAIL S. GOODMAN

University of California, Davis, Davis, California, USA

Decades of research on children's eyewitness reports highlight a multitude of influences on the accuracy of children's memory. Given the significance of children's eyewitness testimony in criminal and social service investigations of maltreatment, as well as of other crimes, the task of eliciting accurate reports while still considering children's needs can be quite daunting for interviewers. Researchers stress the importance of taking into account children's abilities and limitations as well as external influences, including from the interview context. In this article, the authors review scientific research within the study of children's eyewitness memory and suggestibility, examining both cognitive and sociomotivational influences on children's reports. They also review studies of child forensic interview protocols and describe current best practices for interviewers who have the crucial task of questioning child witnesses.

Professionals who conduct and evaluate child maltreatment investigations have a particularly difficult job. They must "seek the truth" about incidents that do not readily lend themselves to investigation. Their job requires asking children difficult or uncomfortable questions while remaining cognizant of children's capabilities and limitations as eyewitnesses. They must provide support to reluctant children while simultaneously guarding against

Address correspondence to Dr. Gail S. Goodman, Department of Psychology, University of California, 1 Shields Avenue, Davis, CA 95616. E-mail: ggoodman@ucdavis.edu.

interviewer bias and suggestion. Overall, they strive to balance the need to protect children and innocent suspects—a delicate balance indeed.

Why is investigating the crime of child maltreatment so difficult, at least in comparison to investigating many other types of crime? Why is it important to have specially trained individuals conducting forensic interviews with children? First, for some types of abuse, most notably child sexual abuse, there is typically no external evidence indicating that a child has been abused due to the nature of the crime (e.g., fondling), the common delays between the crime's occurrence and reporting that may prevent the collection and testing of evidence, and/or the inability to tie evidence (e.g., bruises) to a particular suspect. This leaves social service and legal professionals with little else than the statements from children themselves (and, potentially, conflicting statements from suspects) to prosecute this crime, making it critically important to obtain complete and accurate reports from children. Second, to an extent, children's developmental status and associated tendencies (e.g., developing language abilities) may constrain their eyewitness capabilities and effective legal participation. Specially trained interviewers can potentially optimize children's abilities to provide complete and accurate eyewitness reports.

Decades of research have focused on children's memory and event reports—with considerable theoretical and practical advances made. Many scientific studies confirm that children can be quite accurate and reliable witnesses (see Goodman, 2006, for review). Moreover, children's testimony has been vital to the success of many legal cases. For example, in one well-known California case, Samantha Runnion was kidnapped in front of her home and later sexually assaulted and murdered. Her 5-year-old friend witnessed the kidnapping and was able to provide investigators with a description of the suspect resulting in a widely distributed sketch of him. She also described his vehicle. Her statements were critical to the apprehension of the perpetrator, who was subsequently sentenced to death after DNA evidence linked him to Samantha's murder. Consistent with this case example, scientific research shows that even preschoolers can provide accurate and detailed accounts of their experiences, even distressing or negative experiences. For example, in many studies, children have provided accurate narratives about stressful medical procedures, emergency room visits, and natural disasters (e.g., Eisen, Goodman, Quin, Davis, & Crayton, 2007; Fivush, Sales, Goldberg, Bahrick, & Parker, 2004; Goodman, Quas, Batterman-Faunce, Riddlesberger, & Kuhn, 1997; Ornstein, Baker-Ward, Gordon, & Merritt, 1997; Peterson & Bell, 1996) and remained largely accurate even in the face of misleading questions and suggestions (e.g., Goodman, Bottoms, Schwartz-Kenney, & Rudy, 1991; Quas et al., 2007; see Eisen, Quas, & Goodman, 2002, for review).

However, other studies and some actual legal cases demonstrate that children, at times, provide false information in their reports. For example, in the highly publicized daycare sexual abuse cases that occurred in the 1980s,

some children made strange allegations about satanic and ritualistic abuse that were likely untrue (Bottoms, Shaver, & Goodman, 1996). In laboratory analogue studies, children have made false reports about various kinds of events, including events with negative, positive, and neutral content. Children have falsely assented to injuring their hand by getting it caught in a mouse-trap, being lost in a shopping mall, catching a monkey in a park, having nose surgery, and riding in a helicopter (Bruck, Ceci, & Hembrooke, 2002; Ceci, Huffman, Smith, & Loftus, 1994; Garven, Wood, & Malpass, 2000; Pezdek & Hodge, 1999; Quas et al., 1999). At times, these reports have involved detailed narratives about never-experienced events.

The mixed performance of children evidenced in both the real world and in the laboratory begs the question: What can we conclude from this relatively large and ever-increasing body of literature? With considerable advances made over the last few decades, researchers are rarely asking, "Are children reliable or unreliable in forensic contexts?" Instead, the question has shifted to the more complex: "Under what circumstances are child witnesses more or less reliable?" There are numerous cognitive and sociomotivational influences on the reliability of children's memory and event reports, and the influences may be different for children at varying points in development. Furthermore, children's (and even adults') reports are affected by the manner in which they are interviewed. Awareness of the cognitive and sociomotivational influences on children's reports has helped to determine the types of questions and interview techniques most appropriate for use with children.

In this article, first, we will review several cognitive and socio-motivational factors that influence children's memory and event reports. Although our review is not exhaustive, we will highlight a number of key factors influencing children's memory and event reports. Second, we will discuss several developmentally appropriate interview questions and best-practice interviewing strategies. By "best practice," we mean interviewing strategies that have received empirical support and have been incorporated into guidelines put forth by researchers, professional bodies, and/or government organizations. Third, we will highlight the crucial issue of training for promoting and maintaining best practice in the field. The information provided in this review has been gleaned from hundreds of studies on children's eyewitness capabilities conducted in the laboratory using creative paradigms that maximize ecological validity and conducted in the field with actual suspected victims of child abuse. Both types of research have been crucial for advancing science and practice.

COGNITIVE FACTORS

Several cognitive components (e.g., memory, language, conceptual knowl-edge) have been shown to influence children's reports and are important

developmental contributors to how children talk about past events. That there are limitations to human memory is evident among individuals of all ages. However, age is an important determinant of memory capacity. As children develop, they can encode and recall more detailed memories and remember details for longer periods of time (Lloyd, Doydum, & Newcombe, 2009; see Newcombe, Lloyd, & Ratliff, 2007, for a review). The typical developmental limitations of children's memory are eventually overcome by, for example, growth of areas of the brain that facilitate memory and through new experiences that together enable more interconnection, elaboration, and inclusion of relevant information to support encoding and consolidating memories (Conway, Pleydell-Pearce, Whitecross, & Sharpe, 2003; Howe & Courage, 1997).

Although age-related changes facilitate memory performance, even 2- and 3-year-olds are capable of storing and verbally recounting memories (e.g., Bauer, Burch, Scholin, & Güler, 2007; Howe, 2011). For example, Bauer et al. (2007) interviewed 7- to 10-year olds about positive or neutral past events using a cue word paradigm, wherein children were primed with common words and were told to recount any memory in their past that was associated with the cue word. The details were corroborated by parent report. Researchers found that children were able to recall memories that were formed as early as 3 years of age. The majority of children were able to provide specific and accurate details about these memories, despite the memory interview occurring 4 or more years after the event. Although distant memories (i.e., memories formed at age 3) were recalled and described accurately, it is worth noting that the majority of memories recounted by children occurred within a year of when they were interviewed (e.g., a 7-year-old more frequently recounted an event she had experienced when she was 6- vs. 3-years-old). Also, age influenced the amount of details recalled for each event: Children provided more autobiographical details when reporting about events that happened when they were age 4 or older than when reporting about events that occurred when they were age 3 or younger. In a recent study by Jack, Simcock, and Hayne (2011), 27- to 51-month-old children who had taken part in a unique event were interviewed about it twice, after 24-hr and 6-year delays. During the 6-year interview, nine of the children verbally recalled the event, including 2 who were under 3-years-old when the event occurred. Such data show that distinctive early experiences can be verbally recalled by children even after long delays.

Similar findings have been reported in studies examining children's abilities to recall negative, stressful experiences. For instance, Quas et al. (1999) interviewed children who had experienced an invasive medical procedure when they were between 2 and 7 years of age. Participants were interviewed about their memories for this event approximately 1 to 5 years after the procedure. Children who experienced the procedure when they were age 4 or older retained memories and details for the event more so than

children who were age 3 or younger at the time of the procedure. For this younger subset of children, only half of the participants could recall details, and none of the participants who were age 2 at the time of the procedure displayed any verifiable memory for the experience. For traumatic events such as child sexual abuse, Terr (1988) found the age cut off for consciously accessible memory to be around 2.5 to 3.0 years of age. These findings are largely consistent with the well-established phenomenon commonly known as infantile or childhood amnesia. That is, many adults have virtually no memories prior to the age of 3 or 4 years (see Bauer, 2006; Pillemer & White, 1989). Although adults are typically unable to access memories from this very early period of life, children often can. For example, a 3-year-old can accurately recall an experience that occurred at age 2 but, by adulthood, will likely have forgotten this experience (however, some adults can recall events back to 2 years of age; Usher & Neisser, 1993). A more stable autobiographical memory system emerges as children acquire language and more sophisticated abilities to conceptualize and organize interpersonal events around an established sense of self (Howe & Courage, 1997). Because of the well-established phenomenon of infantile amnesia, forensic interviewers should be wary of asking older children or adults to report about events that occurred prior to age 2.5 or 3 years because it is doubtful that detailed statements will be based on clear and complete memories.

Like memory capacity, verbal and narrative abilities (e.g., production, comprehension) improve with age, although there is considerable variation within age groups (Baird, Dworzynski, Slonims, & Simonoff, 2010). This has resounding implications for children's testimony because eyewitness reports rely on children's ability to comprehend interview questions and to communicate effectively in response. Although findings are somewhat mixed, overall research has revealed that children with less advanced verbal abilities do not perform as accurately on memory tests as do their more verbally advanced peers (Kulkofsky & Klemfuss, 2008; Roebers & Schneider, 2005). There are several possible explanations for this finding: For example, perhaps more verbally advanced children are better equipped to understand interview questions (e.g., the vocabulary, syntax) or to articulate their responses in a way that meets the demands of the interviewer.

Young children, particularly preschoolers, readily use words before fully understanding their actual, conventional meaning, or context-dependent meaning (see Walker, 1999). This has implications for words with key forensic relevance such as "touch." Bruck (2009) interviewed children using human figure drawings and found that children had restricted definitions of "touch," instead assigning labels of more idiosyncratic actions, such as "rubbing" or "scratching." Children's concrete or literal interpretation of language means that they may fail to understand the true, underlying purpose of an interview question. For instance, children may respond with a simple "yes" or "no" to questions such as, "Can you tell me what happened?" or "Do you remember

his name?" Also, they may fail to identify a target event when asked what happened at their "house" if they live in an "apartment" (Walker, 1999).

Some concepts relevant to providing forensically relevant details in interviews develop gradually. For example, children have an incomplete understanding of time until adolescence, and children often struggle with making judgments about time (Friedman, 2000). In one field study of 4- to 10-year-old suspected victims of child sexual abuse, there was an increase in overall and spontaneous use of temporal references with age, with the greatest increase occurring between ages 7 to 10 years (Orbach & Lamb, 2007). Although the accuracy of these references cannot be verified because this was a field study, the increase in temporal language during these years is of note. Results from this study and others (Friedman, 2007; Friedman & Lyon, 2005; Wandrey, Lyon, Quas, & Friedman, 2012) suggest that prior to the ages of 7- to 10-years-old, it is unlikely that children will provide extensive temporal references spontaneously or otherwise. It is thus important that legal professionals place reasonable expectations on children regarding their abilities to reference the timing of past events reliably.

Children's developing language skills may be exacerbated by complex legal jargon and complicated questions that are often asked by lawyers (Brennan & Brennan, 1988; Walker 1993). Children (kindergarten, 4th grade, and 9th grade) and college students have difficulty understanding and answering questions correctly when questions are formulated in a complex manner versus when questions are phrased simply (Perry et al., 1995). For example, the question "Is it not true that Katie did not make Sam cry?" contains a double negative and can be asked more simply (e.g., "Is it true that Katie made Sam cry?" or "Did Katie make Sam cry?"). Complex questions are particularly risky with children because they too rarely respond by asking for clarification or by saying, "I don't know" (Saywitz, Snyder, & Nathanson, 1999; Waterman, Blades, & Spencer, 2004). Instead, they may simply answer questions that they do not understand.

Developmental differences in verbal ability are substantial; however, interviewers should also be aware of individual differences when evaluating children's reports. For example, Kulkofsky (2010) interviewed 3- to 5-year-olds about a visitor to their daycare—Jenny Jungle. Children were split into low, average, and high vocabulary skill groups based on their scores on a vocabulary measure. Regardless of age, children who had high compared to low vocabulary skills were more accurate on free recall, direct yes/no, and suggestive questions about Jenny Jungle's visit.

In sum, several cognitive factors have implications for what and how children report past events when questioned. With age, children are generally better equipped to narrate about past events due to developmental improvements in language and understanding of forensically relevant concepts such as time. Although awareness of general patterns of developmental differences is critical, it is important to recognize that (a) even preschool children are

capable of providing accurate event reports, and (b) there is considerable within-age variation.

SOCIO-MOTIVATIONAL FACTORS

Awareness of cognitive influences on children's memory and event reports is crucial for understanding how best to interview children and how to evaluate their reports. However, sociomotivational influences are also at work influencing whether, when, how much, and to whom children tell. Although children may have sufficient cognitive abilities to accurately remember and report past experiences, they may be unwilling or unmotivated to do so. To date, sociomotivational factors have received less research attention than cognitive factors. As we discuss next, multiple sociomotivational influences may impact children's reports and may do so differently depending on children's ages.

Delayed disclosure of child sexual abuse is common, and victims are often reluctant to disclose until adulthood, if at all (e.g., London, Bruck, Wright, & Ceci, 2008). Children may be especially reluctant to disclose wrongdoing, in general, when a parent is implicated (e.g., Lyon, Ahern, Quas, & Malloy, 2010; Tye et al., 1999). Goodman-Brown et al. (2003) reviewed over 200 legal cases concerning 2- to 16-year-old alleged victims of child sexual abuse to identify predictors of delayed disclosure. Closeness of the victim–perpetrator relationship (i.e., whether the alleged perpetrator was an immediate family member), victim age, the victim's perceived responsibility, and fear of various negative repercussions (e.g., harm to a third party such as a nonoffending parent) were predictive of longer delays to disclosure. Perceived responsibility, fear of negative consequences, and closeness of the victim–perpetrator relationship were influential at all ages; however, with age, children were more likely to perceive responsibility for the abuse and to fear negative consequences of disclosure. In a study examining forensic interviews with 5- to 13-year-old suspected victims of child sexual abuse, Malloy, Brubacher, and Lamb (2011) found that children who expected consequences to befall themselves or others (e.g., sibling, non-offending caregiver), but not the suspect, were more likely to delay disclosure.

Although researchers cannot examine children's disclosure of abuse in the laboratory, experiments investigating disclosure of transgressions (e.g., playing with a forbidden toy) demonstrate that children are often reluctant to disclose an adult's wrongdoing in this context as well (Pipe & Goodman, 1991). For example, Bottoms, Goodman, Schwartz-Kenney, and Thomas (2002) forbade 3- to 6-year-old children from playing with a specific set of toys. However, half of the children were instructed by their mothers to play with the forbidden toys and also to keep this forbidden act a secret otherwise they would get in trouble. During the play session, mothers "accidentally"

broke one of the toys, and children were interviewed about what occurred during the play session. Older children (5- to 6-year-olds) who were instructed to keep the wrongdoing a secret omitted more details than older children who were not instructed to keep the secret. In fact, older children in the secret condition provided three times less information about critical activities (i.e., activities that children were sworn to secrecy about by their mothers) than older children in the control condition. No differences emerged among the 3- to 4-year-olds, regardless of whether they were in the secret condition. Older children may have been more likely to recognize and fear the negative consequences mentioned by their mothers (i.e., getting in trouble).

Given the impact of sociomotivational factors on children's memory reports, a key question is whether interviewer behavior can reduce the influence of such sociomotivational factors. Research suggests that it can. For instance, Lyon, Malloy, Quas, and Talwar (2008) found beneficial effects of a developmentally appropriate version of the oath. Maltreated children (ages 4 to 7 years) had been coached to falsely allege or falsely deny playing with a forbidden toy with a confederate. Instead of interviewers administering the oath typically used with adults (i.e., "Do you swear to tell the whole truth and nothing but the truth …?"), children were told, "It's very important that you tell me the truth. Can you promise that you will tell me the truth? Will you tell me any lies?" When questioned about their play with the forbidden toy, the oath was effective in increasing true disclosures, while also reducing false reports.

There is a relatively common misconception that supportive interviewer behavior (generally, when interviewers behave in a warm and friendly manner) is inherently suggestive. However, when interviewers use a supportive style, children's suggestibility may actually decrease (Carter, Bottoms, & Levine, 1996; Davis & Bottoms, 2002; Goodman et al., 1991; Quas, Bauer, & Boyce, 2004). For example, Almerigogna, Ost, Akehurst, and Fluck (2008) varied interview styles when questioning 8- and 10-year-olds about an educational presentation the children had viewed the previous week. Interviewers either adopted a supportive style (e.g., smiling, nodding, making eye contact) or a nonsupportive style (e.g., frequent fidgeting, appearing bored or strict). Children in both supportive and nonsupportive interview conditions answered nonsuggestive questions with comparable accuracy levels; however, children who were interviewed in a supportive manner answered suggestive questions more accurately than children who were administered the nonsupportive interview. Furthermore, children who received supportive interviews were more likely to respond with "I don't know" to both suggestive and nonsuggestive questions than were children who received nonsupportive interviews. Of particular forensic interest, a small proportion of children (9%) who received nonsupportive interviews acquiesced to the interviewer's suggestions that an adult had touched them during the educational presentation, whereas none of the children who received a supportive

interview made this type of false claim. A supportive style may establish a more relaxed environment wherein children feel comfortable reporting details as remembered and indicating when they do not know the answer.

It is more problematic, however, when interviewers provide support that is contingent upon children responding in a certain way. This is evident in studies and real-world cases. For example, in Garven, Wood, Malpass, and Shaw's (1998) study, half of the children were positively reinforced with praise for making allegations against a classroom visitor or provided with negative feedback (e.g., expressing disappointment and repeating the questions) when they failed to make allegations about him. Children who were positively reinforced (i.e., received praise for making allegations) were much more likely to make false allegations compared to children who were not exposed to such reinforcement, even though all children experienced suggestive questions.

In sum, interviewers should be aware that children may enter the interview room unmotivated to talk about experienced events due to several sociomotivational factors—some of which occur outside the interview context (e.g., closeness of the victim–perpetrator relationship) and some of which occur during the interview (e.g., interviewer behavior). It is important to take sufficient time to build rapport and to be generally supportive throughout interviews; however, it is equally important not to make support-iveness contingent on children's responses.

SUGGESTIBILITY

Suggestibility encompasses both cognitive and socio-motivational influences and can be defined as "the extent to which individuals come to accept and subsequently incorporate post-event information into their memory recollections" (Gudjonsson, 1986, p. 195).

Age is the factor most consistently linked to children's suggestibility. In both classic and more recent studies, research reveals a clear developmental pattern with suggestibility effects generally tapering with age and the most dramatic improvements occurring after preschool (e.g., Goodman, et al. 1997; but see Brainerd, Reyna, & Ceci, 2010). This does not mean that adults are immune to suggestive influences (see Loftus, 2005, for a review). However, when it comes to event memory, young children are, on average, more suggestible than adults. That said, there are important individual differences with some young children being quite resistant to false suggestion (e.g., Rudy & Goodman, 1991).

In one classic study on children's suggestibility, Leichtman and Ceci (1995) had a confederate, "Sam Stone," visit a daycare of 3- to 6-year-old children who were then interviewed weekly for 5 weeks to assess the effects of suggested stereotypes and suggestive interviews on children's reports.

Stereotypes refer to negative statements about the confederate Sam Stone (e.g., "That Sam Stone is always getting into accidents and breaking things!"). Children were assigned to one of four conditions: a neutral or control condition, stereotype only condition, suggestive interview only condition, or stereotype and suggestive interview condition. As expected, the younger children (age 3 to 4 years) were more susceptible to suggestion than were the older children (age 5 to 6 years). Also, some children who received suggestive interviews incorporated the false suggested details into their subsequent memory reports. When children received suggestive interviews coupled with the negative stereotypes, their claims were at increased risk of being consistent with the false stereotypes provided (e.g., Sam was messy and soiled a teddy bear).

Goodman et al. (1997) examined suggestibility when children were questioned about personally salient and stressful experiences. The researchers examined children's memories and suggestibility for a stressful medical procedure involving genital touch (voiding cystourethrogram). Three- to 10-year-old children were interviewed about this invasive medical procedure with free recall, direct, and suggestive questions. As is commonly the case, young children (3- and 4-year-olds) were more suggestible than older children. However, 6- to 7-year-olds did not differ significantly from 9- to 10-year-olds.

Although age is the factor most consistently linked to suggestibility, it is important to note that there is considerable variability within age groups in terms of who is more or less susceptible to suggestive interviewing. Many researchers have examined potential individual differences in children's suggestibility, and relatively few consistent predictors have emerged (see Bruck & Melnyk, 2004, for review). Certainly, it is important to make strides toward understanding individual differences in children's suggestibility. However, one lesson learned from the lack of consistent predictors of suggestibility is that trying to identify children who will be suggestible across all contexts and scenarios is likely an unrealistic task. Of relevance to forensic interviewers is the notion that children will enter the interview room with a variety of characteristics, abilities, limitations, and experiences. Interviewers must recognize the wide variation in children, even children of the same age, and the resultant critical need to adhere to best practice with all children.

Although our discussion of cognitive and sociomotivational factors is not exhaustive, it is clear that there are many factors that affect what (and how much) children say about past events. However, preschool-aged children are capable of providing coherent event reports if they are interviewed appropriately, as discussed in the next section. Investigators should not expect children (even children of the same age) to provide the same amount of detail or all children to be equally forthcoming. Rather, they should be sensitive, realistic, and flexible in their expectations of child witnesses.

INVESTIGATIVE INTERVIEWS

Perhaps the most crucial determinant of children's performance in forensic situations that has been the subject of scientific study is the interview itself—the question type and interview context, as discussed further below. The responsibility thus falls on social service and legal professionals to ensure that children's statements are gathered carefully and with adherence to best-practice interviewing guidelines (American Professional Society on the Abuse of Children, 2002; Home Office, 1992, 2007; Lamb, Hershkowitz, Orbach, & Esplin, 2008; Poole & Lamb, 1998; Sattler, 1998; Saywitz, Goodman, & Lyon, 2002). Such guidelines were written in light of the research discussed above and with interested academics and practitioners often working together with relevant government or professional organizations.

Question Type

One well-established research finding is that interviewer question type exerts a powerful influence on children's memory and event reports (but see Gilstrap & Ceci, 2005). The names of various question types and their definitions may differ across studies. Here, we will discuss invitation (also called *open-ended*), direct (also called *specific* or *focused*), option posing, and suggestive (also called *leading* or *misleading*) questions. These question types differ in the amount of interviewer-provided input that they contain and thus the risk that they pose to children's accuracy.

Consistently across studies, children are more accurate and less suggestible when they are posed invitation prompts (for reviews, see Lamb et al., 2008; Saywitz et al., 2002). Best-practice guidelines recommend that all interviews begin with a free-recall session in which interviewers pose invitation prompts, defined as those that include no or minimal input from interviewers and simply invite children to narrate about an event (e.g., "Tell me what happened from the beginning to the end as best as you can"). Follow-up prompts (e.g., "Then what happened?") can be used to encourage the reporting of additional free recall details. Another type of invitation—a cued invitation—may then be asked. Cued invitations (e.g., "Earlier you mentioned a [person/object/action]. Tell me everything about that") prompt children to elaborate on previously reported information. These also help prevent the contamination of children's reports because the cues provided have been mentioned previously by the child and thus do not represent interviewer-provided input (Lamb et al., 2008).

If free recall prompts pose less risk than other types of prompts, then should all interviews be simply free recall sessions involving invitations and cued invitations? Although free recall narratives tend to be more accurate than responses to more focused questions, children, especially preschoolers, tend to provide relatively meagre free recall accounts (Fivush, Gray, &

Fromhoff, 1987; Quas & Schaaf, 2002). They may leave out critically important information that investigators need to proceed with an investigation. With age, children's verbal ability improves, and they learn, via interactions with others, how to narrate about past events (see Nelson & Fivush, 2004). In a sense, children become more adept at "story telling" and are thus able to provide more complex, coherent, accurate, and rich event narratives. Nonetheless, because children of all ages are capable of providing information during free recall, it is imperative that interview sessions begin with interviewers posing invitations as this strategy is the most defensible in forensic contexts.

Interviewers may need to follow up with at least some direct questions about children's experiences. This may be the case especially with young children who often need more prompting to report additional information (Hamond & Fivush, 1991; Lamb et al., 2003). Direct questions (sometimes called *specific* or *focused*) request further detail about aspects of events that children have already mentioned. For example, if a child reports being touched, then interviewers may ask a direct question about where the child was touched. Some protocols suggest that interviewers should move on to such questions if the opportunity to glean new information from free recall has been exhausted. Direct questions are more controversial than invitation prompts because the risk of interviewer contamination increases. Such questions can be considered "leading" in legal circles, depending upon the information already provided by the child. Furthermore, children's accuracy tends to decrease when answering such questions (e.g., Eisen et al., 2007; Quas & Schaaf, 2002; Scullin, Kanaya, & Ceci, 2002), at least in comparison to their free recall reports. However, children's performance varies considerably depending on how direct questions are worded. Confusing, complex, and lengthy questions should be avoided. Research indicates that questions should be phrased as simply as possible, and legal jargon and terminology should be avoided (Saywitz, Jaenicke, & Camparo, 1990). Many direct questions begin with or incorporate wh-words (who, where, what, when, why, and how) (e.g., "What was the lady wearing?"; Scullin et al., 2002). Such questions may involve little interviewer contamination, especially when they follow up on aspects that children have already mentioned (e.g., "What color was the car?" when the child has already mentioned a car).

According to some protocols, option posing questions should be asked only if critical details are still missing and have not yet been addressed by the child. These questions are dubbed "option posing" because they provide children with a limited number of options from which to choose when responding. These questions are often formatted as yes/no questions or forced choice questions that contain the word "or" (e.g., "Was the touch over or under your clothes?"). Requesting that children respond while limiting their response set can be problematic for several reasons. First, the accurate option (e.g., the clothes were on the floor) may not be included as one of

the choices, and so children may not provide the correct answer. Second, as discussed above, children too rarely say "don't know" or "don't remember" and may try to answer questions regardless of whether they know the correct answer. Option posing questions are more easily answered even if children do not understand them because they can simply choose one of the options provided by interviewers.

Suggestive (also sometimes called *leading* or *misleading*) questions are the most controversial. Suggestive questions can be defined as those that put pressure on children to respond in a particular way by, for example, including an ending that suggests a particular response (e.g., "He was wearing a magic cape, wasn't he?"; Quas et al., 2007), include embedded assumptions, or inquire about aspects of events that children have not yet mentioned. For example, the question "Where did he touch you?" is suggestive if the child has not mentioned being touched. Many laboratory studies have demonstrated that children's accuracy decreases, at times dramatically, when suggestive questions are asked (see Ceci & Bruck, 1993).

Interview Context

Irrespective of question type, interview context can have a strong effect on children's memory and event reports. Although children's free-recall reports tend to be more accurate than their responses to more focused or direct questions, free recall reports are not necessarily error-free (Bruck & Ceci, 2004; Goodman & Aman, 1990; Poole & Lindsay, 2001; Quas et al., 2007; Tobey & Goodman, 1992). For example, when the interview context is highly biased, inaccuracies, or even false reports, may emerge during free recall. Also, if children are talking about a different event than the one the interviewer asked about, but the children fail to indicate such, the free recall responses will be problematic.

A highly biased or suggestive interview context can adversely affect the accuracy of children's reports. Many suggestive techniques (e.g., rewards for disclosure, references to the high status of interviewers, repeating questions within an interview while not taking "no" for an answer) have been tested in the laboratory and are associated with poor eyewitness performance by children. For instance, Ceci and colleagues have shown that repeatedly asking children to imagine that an event occurred and providing children with stereotypes and suggestions may lead some children to make false reports and elaborate about events that never occurred (Ceci, Loftus, et al., 1994; Leichtman & Ceci, 1995). Also, Garven and colleagues (1998, 2000) tested several suggestive techniques (e.g., peer pressure, references to interviewer status) in the laboratory. The researchers found that, although the same questions were asked in all interviews, children who experienced a combination of multiple suggestive techniques made significantly more false reports about a male classroom visitor than children who experienced only

one suggestive technique. These false reports included acts of wrongdoing supposedly committed by the visitor such as saying a bad word, throwing a crayon, and tearing a book. Although many of the studies used suggestive techniques across multiple interviews, it is worth noting that, even when used only in one interview session, such suggestive techniques can strongly impact what children say during interviews (e.g., Garven et al., 1998; Quas et al., 1999; Schaaf, Alexander, & Goodman, 2008; Thompson, Clarke-Stewart, & Lepore, 1997).

Investigative Interview Protocols

Awareness of the internal (cognitive and socio-motivational factors) and external (question type and interview context) influences on children's event reports has led policy makers to implement best-practice guidelines and researchers, in collaboration with practitioners, to develop empirically based interview protocols to improve adherence to best practice. Investigative interview protocols were designed to improve the manner in which children are questioned and, in turn, the reliability of their reports. We will discuss two approaches that have received considerable research attention—the National Institute of Child Health and Human Development (NICHD) Investigative Interview Protocol (Lamb et al., 2008) and the Cognitive Interview (CI; Fisher, Milne, & Bull, 2011).

The NICHD Investigative Interview Protocol has been extensively validated in the field in several countries. It is a fully structured interview protocol covering all aspects of the investigative interview and involves two main parts: presubstantive and substantive. The presubstantive part includes several key phases. The interviewer begins with an "introductory phase" that describes children's role in the interview and informs children that, when applicable, they can and should say "I don't know" or "I don't understand." These instructions are intended to encourage children to express needs for clarification, as children are not used to being questioned by adults who are less knowledgeable than themselves (e.g., Lamb, Sternberg, Orbach, Hershkowitz, & Esplin, 1999; Saywitz et al., 1999; Sternberg et al., 1997; Waterman et al., 2004). To satisfy legal requirements in many jurisdictions, children are also asked, in a developmentally appropriate manner, to indicate whether they understand the difference between true and false statements (e.g., "If I said that my shoes were black, would that be true or not true?"). Children have difficulty describing abstract concepts (e.g., "What does it mean to tell the truth?") but can demonstrate truth-lie understanding when they are as young as 4-years-old when developmentally appropriate tasks are used (Lyon, Carrick, & Quas, 2010).

As mentioned above, children perform better in eyewitness contexts when interviewers are warm and supportive. In the second presubstantive phase of the NICHD Protocol (rapport building), interviewers attempt to establish trust and build rapport with children by asking them questions

about what they like to do. Then, children are asked to recount a neutral event (e.g., a holiday, yesterday) in detail. The purpose of this practice is twofold: (a) interviewers continue to build rapport with children by getting to know them more, and (b) both children and interviewers receive critical practice before moving on to the substantive phase. Children practice providing detailed event narratives in response to invitations and become comfortable in the role of the "expert," and interviewers practice asking invitations and following up with cued invitations.

Target events are identified during a "transitional phase" which begins with a series of invitation prompts (e.g., "Tell me why you are here today") and moves on to more focused prompts if necessary (e.g., "I heard that you talked to a [doctor/teacher/social worker]. Tell me what you talked about"). Then in the substantive phase, interviews progress in the manner described in the "Question Type" section above. Briefly, when free recall via invitations and cued invitations has been exhausted, then interviewers ask direct questions and a limited number of option-posing questions if necessary. Suggestive questions are avoided.

It has now been over a decade since the first field study validated the usefulness of the NICHD Protocol (Orbach et al., 2000). Several field studies conducted in multiple countries revealed marked improvements in the quality of investigative interviews after its implementation (Cyr & Lamb, 2009; Lamb et al., 2008; Orbach et al., 2000; Sternberg, Lamb, Orbach, Esplin, & Mitchell, 2001), with *quality* defined as interviewer reliance on open-ended prompts which access children's free recall memory and limit the amount of interviewer input on children's reports. For example, interviewers use three times more invitations and typically halve the number of option posing and suggestive questions while also delaying the use of such prompts until later on in interviews, all of which reduce the risk of interviewer contamination. In the above field studies, approximately 50% of the details provided by children and over 80% of the initial disclosures of abuse were provided in response to invitations.

Improving forensic interviews has several additional benefits. For example, Hershkowitz, Fisher, Lamb, and Horowitz (2007) examined child sexual abuse cases that had been deemed plausible or implausible based on external evidence such as eyewitness statements and medical findings. The researchers found that forensic evaluators were more accurate when judging the credibility of abuse allegations (i.e., accurately rating the plausible vs. implausible cases) when examining NICHD Protocol interviews than when evaluating unstructured forensic interviews. Also, Pipe, Orbach, and Lamb (2008) found that when interviewers used the NICHD Protocol, proportionally more cases were referred for prosecution and more were resolved by conviction.

Although the NICHD protocol has been extensively studied in the field, few extant laboratory studies have tested the NICHD Protocol. Such

analogue-type studies using the NICHD Protocol (or modified versions of it that include suggestive questions; e.g., Roberts, Lamb, & Sternberg, 1999) demonstrate that even children with intellectual disabilities can be quite accurate, but accuracy diminishes when interviewers shift away from using open-ended invitations (Brown, Lewis, Lamb, & Stephens, 2012). Further research is needed to determine if the NICHD Protocol results in particularly accurate information from child victims.

The CI (Fisher et al., 2011; Geiselman, Fisher, MacKinnon, & Holland, 1985) involves several components or memory mnemonics to assist witnesses with retrieving information: (a) "context reinstatement" requiring that witnesses try to place themselves (physically and mentally) back at the event, (b) "report all" requesting that interviewees report all details even if they do not think that they would be important to investigators, (c) "change perspective" asking interviewees to recount the events from the perspective of other individuals, and (d) "change order" requesting that they report the events backwards. These instructions are based on theory and experimental evidence concerning how memory works. The current version of the CI includes the above components and also places importance on building rapport between interviewers and interviewees and transferring control from interviewers to interviewees (e.g., by reminding interviewees that they are the experts about the event) (Fisher & Geiselman, 1992). Interviewers also focus on asking neutral questions throughout interviews attempting to elicit as much information as possible via prompts that are free of interviewer input.

Although the CI was originally designed for use with adults, researchers have shown that it can enhance children's reports as well. In several studies, children reported more correct details with the CI than with a standard interview (Geiselman & Padilla, 1988; Granhag & Spjut, 2001; Holliday, 2003; McCauley & Fisher, 1995; Saywitz, Geiselman, & Bornstein, 1992). For example, Holliday (2003) examined children's performance with a modified CI versus an interview conducted according to the Memorandum of Good Practice (MOGP; Home Office, 1992), which is described in more detail below. Results revealed beneficial effects of the CI: Children recalled over a quarter (27%) more correct information when interviewed with the modified CI than with the MOGP interview. Other studies have shown that use of the CI assists children with resisting misinformation and misleading questions (Memon, Cronin, Eaves, & Bull, 1996; Milne & Bull, 2003). Of importance, although studies reveal increases in the reporting of correct information with the CI relative to standard comparison interviews conducted without the CI, there is also often an increase in incorrect details among both adults and children (see Köhnken, Milne, Memon, & Bull, 1999; Memon, Meissner, & Fraser, 2010). However, other researchers have found that the CI improves performance without the concurrent increase in incorrect details (e.g., Akehurst, Milne, & Köhnken, 2003; Geiselman & Padilla, 1988).

Some of the CI mnemonics are more effective than others with children. For example, Holliday and Albon (2004) found that the combination of the report all and context reinstatement techniques was helpful in reducing the effects of misinformation. Children may struggle with using the "change perspective" and "change order" aspects of the CI (Geiselman & Padilla, 1988; Saywitz et al., 1992), and these instructions may be especially difficult for individuals, including adults, with intellectual disabilities or developmental disorders such as Autistic Spectrum Disorder (Maras & Bowler, 2010). Some researchers have suggested modifying the CI to make it more developmentally appropriate. For example, regarding the "change order" mnemonic, Geiselman and Padilla (1988) recommended using this instruction: "Tell me about it as if it was a movie played backward from the end."

The CI has proven useful in enhancing adults' reports in the field (e.g., Fisher, Geiselman, & Amador, 1989). However, studies on the CI's effectiveness with children have been laboratory based. Thus, children's performance with the CI in field settings remains unknown, and further research is needed.

INTERVIEWER TRAINING

Good forensic interviews lead to more detailed and higher quality information, which is crucial for prosecuting child maltreatment and protecting children from abusive environments. Interviewer training in best-practice methods is imperative for successful investigative interviews. Several studies point to the critical nature of extensive interviewer training.

First, the NICHD Protocol was developed because several studies demonstrated poor adherence to empirically based best-practice interview guidelines. For example, Sternberg, Lamb, Davies, and Westcott (2001) evaluated the quality of forensic interviews conducted by police officers or social workers following the introduction of the MOGP in the United Kingdom. The MOGP constituted comprehensive guidelines on interviewing alleged child abuse victims and was adopted in the United Kingdom and influential in the United States and elsewhere. The MOGP highlighted the importance of free recall and the benefits of open-ended prompts; yet results showed that very high proportions of interview questions were direct or option posing. Only 6% of interviewer questions were classified as invitations. In turn, much (40%) of the information provided by children was provided in response to option posing or suggestive prompts. These studies served as a wakeup call to many who thought that instituting best-practice guidelines would necessarily lead to large scale change.

As the studies discussed above clearly indicate, interviewers can improve the ways that they question children. However, initial training and improvement is not the whole story: Long-term training and evaluation is

crucial for maintaining best practices. In one study, Lamb and colleagues (2002) revealed that training involving peer review and expert feedback was successful in improving the quality of investigative interviews conducted by experienced forensic investigators in the United States. However, by 6 months after the feedback ended, interview quality had drifted back to the pre-training status. Certainly, interview practice can be improved substantially, but for long-term maintenance, it is essential that interviewers are afforded the time and opportunity to review their work and receive regular peer and expert feedback which highlights their strengths and weaknesses. With increasingly busy schedules, heavy caseloads, and limited funding, it may seem impossible to create opportunities for training or reflecting on past performance. However, maintaining high standards in accordance with best practice is vital to interview quality and case progress. Also, interviewers will be better able to defend their practices if called into court and challenged.

Interviewing children about negative or potentially traumatic events is very demanding cognitively, emotionally, and in terms of the time invested. Thus, it is imperative to recognize the difficulties associated with these tasks and their importance by giving interviewers the time and opportunities to develop and maintain their skills.

CONCLUSIONS

Investigating child maltreatment is challenging, and professionals who do so are faced with a complex and important task that may have critical implications for the lives of children, families, and suspects. They must interview children about potentially traumatic events in a way that considers many cognitive and socio-motivational influences on the reliability of children's reports, some of which we have reviewed in this article. Decades of research have revealed that a key influence on children's reports is the manner in which they are questioned, including the specific question types and the general interview context. Fortunately, researchers have used knowledge about child development and children's memory and suggestibility to design appropriate investigative interview protocols that consider children's various capacities and limitations. Although many of the laboratory studies discussed in this review can be criticized for lacking ecological validity, it would be unethical to expose children to traumatic events for the sake of research. Nevertheless, researchers have devised creative paradigms to enhance ecological validity (e.g., forbidden or broken toy paradigms, memory for stressful medical procedures involving genital touch). Field studies are subject to their own set of criticisms such as the difficulty in objectively verifying event details to examine the accuracy of memory reports. What is critical is that laboratory studies and field studies have converged to highlight the factors

influencing children's event reports and to lead to the best-practice interviewing methods described in this review.

When interviewers receive adequate training, such empirically based methods help ensure adherence to developmentally-appropriate techniques. This allows legal and social service professionals to base critical decisions on information obtained with the most scientifically tested and reliable techniques available. In brief, "best-practice methods" recommend that interviewers do the following when questioning children about past events:

- Inform children that they themselves are the "experts" about the event.
- Remind children that they can and should say "I don't know" or "I don't remember" if applicable and that they should not guess, practice them answering a few questions where the right answer is "I don't know," and others where practice "I don't know" is not the correct response.
- Establish whether children understand the concepts of "truth" and "lie" and that they are obligated to tell the truth.
- Build rapport.
- Provide support that is not contingent upon children responding in a certain way.
- Ask open-ended invitations to encourage free recall.
- Delay use of direct or option posing questions until free recall has been exhausted and only ask such questions if information is missing from children's reports.
- Avoid suggestive questions and techniques.
- Use simple language and avoid legal jargon or complex ambiguous questions.

REFERENCES

Akehurst, L., Milne, R., & Köhnken, G. (2003). The effects of children's age and delay on recall in a cognitive or structured interview. *Psychology, Crime & Law, 9*, 97–107. doi:10.1080/10683160308140

Almerigogna, J., Ost, J., Akehurst, L., & Fluck, M. (2008). How interviewers' nonverbal behaviors can affect children's perceptions and suggestibility. *Journal of Experimental Child Psychology, 100*, 17–39. doi:2008-05134-00210.1016/j.jecp.2008.01.006

American Professional Society on the Abuse of Children. (2002). *Practice guidelines: Investigative interviewing in cases of alleged child abuse.* Thousand Oaks, CA: Sage.

Baird, G., Dworzynski, K., Slonims, V., & Simonoff, E. (2010). Memory impairment in children with language impairment. *Developmental Medicine & Child Neurology, 52*, 535–540. doi:10.1111/j.1469-8749.2009.03494.x

Bauer, P. J., Damon, W., Lerner, R. M., Kuhn, D. & Siegler R. (2006). Event memory. *Handbook of child psychology: Vol. 2. Cognition, perception, and language*, 6th ed. Hoboken, NJ: John Wiley & Sons, Inc.

Bauer, P. J., Burch, M. M., Scholin, S. E., & Güler, O. E. (2007). Using cue words to investigate the distribution of autobiographical memories in childhood. *Psychological Science*, *18*, 910–916. doi:2007-14630-01110.1111/j.1467-9280.2007.01999.x

Bottoms, B. L., Goodman, G. S., Schwartz-Kenney, B. M., & Thomas, S. N. (2002). Understanding children's use of secrecy in the context of eyewitness reports. *Law & Human Behavior*, *26*, 285–314. doi:2002-01752-00210.1023/A:1015324304975

Bottoms, B. L., Shaver, P. R., & Goodman, G. S. (1996). An analysis of ritualistic and religion-related abuse allegations. *Law & Human Behavior*, *20*, 1–34.

Brainerd, C. J., Reyna, V. F., & Ceci, S. J. (2010). Developmental reversals in false memory: A review of data and theory. *Psychological Bulletin*, *134*, 343–382. doi:10.1037/0033-2909.134.3.343

Brennan, M., & Brennan, R. E. (1988). *Strange language: Child victims under cross examination* (3rd ed.). Wagga Wagga, Australia: Riverina Literacy Centre.

Brown, D. A., Lewis, C. N., Lamb, M. E., & Stephens, E. (2012). The influences of delay and severity of intellectual disability on event memory in children. *Journal of Consulting and Clinical Psychology*, *80*, 829–841. doi: 10.1037/a0029388.

Bruck, M. (2009). Human figure drawings and children's recall of touching. *Journal of Experimental Psychology: Applied*, *15*, 361–374. doi:2002542110.1037/a00171202009-24359-007

Bruck, M., & Ceci, S. J. (2004). Forensic developmental psychology: Unveiling four scientific misconceptions. *Current Directions in Psychology*, *13*, 229–232. doi:10.1111/j.0963-7214.2004.00314.x

Bruck, M., Ceci, S. J., & Helmbrooke, H. (2002). The nature of children's true and false narratives. *Developmental Review*, *22*, 520–554. doi:2002-06600-00610.1016/S0273-2297(02)00006-0

Bruck, M., & Melnyk, L. (2004). Individual differences in children's suggestibility: a review and synthesis. *Applied Cognitive Psychology*, *18*, 947–996. doi:10.1002/acp.1070

Carter, C. A., Bottoms, B. L., & Levine, M. (1996). Linguistic and socio-emotional influences on the accuracy of children's reports. *Law & Human Behavior*, *20*, 335–358. doi:1996-05508-007

Ceci, S. J., & Bruck, M. (1993). Suggestibility of the child witness: A historical review and synthesis. *Psychological Bulletin*, *113*, 403–439. doi:10.1037/0033-2909.113.3.403

Ceci, S. J., & Bruck, M. (1995). *Jeopardy in the courtroom: A scientific analysis of children's testimony*. Washington, DC: American Psychological Association. doi:10.1037/10180-000

Ceci, S. J., Huffman, M. L. C., Smith, E., & Loftus, E. F. (1994). Repeatedly thinking about a non-event: Source misattributions among preschoolers. *Consciousness and Cognition*, *3*, 388–407. doi:10.1006/ccog.1994.1022

Ceci, S. J., Loftus, E. F., Leichtman, M., & Bruck, M. (1994). The possible role of source misattributions in the creation of false beliefs among preschoolers. *International Journal of Clinical & Experimental Hypnosis*, *42*, 304–320. doi: 1995-12940-001

Conway, M. A., Pleydell-Pearce, C. W., Whitecross, S. E., & Sharpe, H. (2003). Neurophysiological correlates of memory for experienced and imagined events.

Neuropsychologia, *41*, 334–340. doi:2002-11534-01310.1016/S0028-3932(02)00165-3

Cyr, M., & Lamb, M. E. (2009). Assessing the effectiveness of the NICHD investigative interview Protocol when interviewing French-speaking alleged victims of child sexual abuse in Quebec. *Child Abuse & Neglect*, *33*, 257–268. doi:2009-0875200110.1016/j.chiabu.2008.04.002

Davis, L., & Bottoms, B. L. (2002). Effects of social support on children's eyewitness reports: A test of the underlying mechanism. *Law & Human Behavior*, *26*, 185–215. doi:10.1023/A:1014692009941

Eisen, M. L., Goodman, G. S., Quin, J., Davis, S., & Crayton, J. (2007). Maltreated children's memory: Accuracy, suggestibility, and psychopathology. *Development Psychology*, *43*, 1275–1294. doi:10.1037/0012-1649.43.6.1275

Eisen, M. L., Quas, J. A., & Goodman, G. S. (Eds.). (2002). *Memory and suggestibility in the forensic interview.* Mahwah, NJ: Erlbaum.

Fisher, R. P., & Geiselman, R. E. (1992). *Memory-enhancing techniques for investigative interviewing: The Cognitive Interview.* Springfield, IL: Charles C. Thomas.

Fisher, R. P., Geiselman, R. E., & 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. doi:1990-04403-00110.1037//0021-9010.74.5.722

Fisher, R. P., Milne, R., & Bull, R. (2011). Interviewing cooperative witnesses. *Current Directions in Psychological Science*, *20*, 16–19. doi:10.1177/0963721410396826

Fivush, R., Gray, J. T., & Fromhoff, F. A. (1987). Two-year-olds talk about the past. *Cognitive Development*, *2*, 393–409. doi:10.1016/S0885-2014(87)80015-1

Fivush, R., Sales, J. M., Goldberg, A., Bahrick, L., & Parker, J. (2004). Weathering the storm: Children's long-term recall of hurricane andrew. *Memory*, *12*, 104–118. doi:10.1080/09658210244000397

Friedman, W. J. (2000). The development of children's knowledge of the times of future events. *Child Development*, *71*, 913–932. doi:2000-02736-01210.1111/1467-8624.00199

Friedman, W. J. (2007). The development of temporal metamemory. *Child Development*, *78*, 1472–1491. doi:2007-14288-00510.1111/j.1467-8624.2007.01078.x

Friedman, W. J., & Lyon, T. D. (2005). Development of temporal-reconstructive abilities, *Child Development*, *76*, 1202–1216. doi:2005-14583-00610.1111/j.1467-8624.2005.00845.x

Garven, S., Wood, J. M., & Malpass, R. S. (2000). Allegations of wrongdoing: The effects of reinforcement on children's mundane and fantastic claims. *Journal of Applied Psychology*, *1*, 38–49. doi:10.1037//0021-9010.85.1.38

Garven, S., Wood, J. M., Malpass, R., & Shaw, J. S. (1998). More than suggestion: Consequences of the interviewing techniques from the McMartin preschool case. *Journal of Applied Psychology*, *83*, 347–359. doi:1998-02893-00110.1037//0021-9010.83.3.347

Geiselman, R. E., Fisher, R. P., MacKinnon, D. P., & Holland, H. L. (1985). Eyewitness memory enhancement in the police interview: Cognitive retrieval mnemonics versus hypnosis. *Journal of Applied Psychology*, *70*, 401–412. doi:1985-22506-00110.1037//0021-9010.70.2.401

Geiselman, R. E., & Padilla, J. (1988). Cognitive interviewing with child witnesses. *Journal of Police Science and Administration*, *16*, 236–242. doi:1990-19437-001

Gilstrap, L., & Ceci, S. J. (2005). Reconceptualizing children's suggestibility: Bidirectional and temporal properties. *Child Development*, *76*, 40–53. doi:10.1111/j.1467-8624.2005.00828.x

Goodman, G. S. (2006). Children's eyewitness memory: A modern history and contemporary commentary. *Journal of Social Issues*, *62*, 811–832. doi:10.1111/j.1540-4560.2006.00488.x

Goodman, G. S., & Aman, C. (1990). Children's use of anatomically detailed dolls to recount an event. *Child Development*, *61*, 1859–1871. doi:10.2307/1130842

Goodman, G. S., Bottoms, B. L., Schwartz-Kenney, B. M., & Rudy, L. (1991). Children's testimony about a stressful event: Improving children's reports. *Journal of Narrative and Life History*, *1*, 69–99. doi:1994-05058-001

Goodman, G. S., Quas, J. A., Batterman-Faunce, J. M., Riddlesberger, M. M., & Kuhn, J. (1997). Children's reactions to and memory for a stressful event: Influences of age, anatomical dolls, knowledge, and parental attachment. *Applied Developmental Science*, *1*, 54–75. doi:1999-00886-001

Goodman-Brown, T. B., Edelstein, R. S., Goodman, G. S., Jones, D. P. H., & Gordon, D. S. (2003). Why children tell: A model of children's disclosure of sexual abuse. *Child Abuse & Neglect*, *27*, 525–540. doi:2003-00663-00710.1016/S0145-2134(03)00037-1

Granhag, P. A., & Spjut, E. (2001). Children's recall of the unfortunate fakir: A further test of the enhanced cognitive interview. In R. Roesch, R. R. Corrado, & R. Dempster (Eds.), *Psychology in the courts* (pp. 209–222). London: Routledge.

Gudjonsson, G. (1986). The relationship between interrogative suggestibility and acquiescence: Empirical findings and theoretical implications. *Personality and Individual Differences*, *7*, 195–199.

Hamond, N. R., & Fivush, R. (1991). Memories of Mickey Mouse: Young children recount their trip to Disney World. *Cognitive Development*, *6*, 433–448. doi:1992-26794-001

Hershkowitz, I., Fisher, S., Lamb, M. E., & Horowitz, D. (2007). Improving credibility assessment in child sexual abuse allegations: The role of the NICHD Investigative Interview Protocol. *Child Abuse & Neglect*, *31*, 99–110. doi:2007-03747-005 10.1016/j.chiabu.2006.09.005

Holliday, R. E. (2003). The effect of a prior cognitive interview on children's acceptance of misinformation. *Applied Cognitive Psychology*, *17*, 443–457. doi:10.1002/acp.879

Holliday, R. E., & Albon, A. J. (2004). Minimising misinformation effects in young children with cognitive interview mnemonics. *Applied Cognitive Psychology*, *18*, 263–281. doi:10.1002/acp.973

Home Office. (1992). *Memorandum of good practice on video recorded interviews with child witnesses for criminal proceedings.* London, UK: Home Office and Department of Health.

Home Office. (2007). *Achieving best evidence in criminal proceedings: Guidance on interviewing victims and witnesses, and using special measures.* London, UK: Author.

Howe, M. L. (2011). *The nature of early memory.* New York, NY: Oxford University Press.

Howe, M. L., & Courage, M. L. (1997). The emergence and early development of autobiographical memory. *Psychology Review*, *104*, 499–523. doi:1997-04806-003 10.1037/0033-295X.104.3.499

Jack, F., Simcock, G., & Hayne, H. (2011). Magic memories: Young children's verbal recall after a 6-year delay. *Child Development*, *83*, 159–172. doi:10.1111/j.1467-8624.2011.01699.x

Köhnken, G., Milne, R., Memon, A., & Bull, R. (1999). The cognitive interview: A meta-analysis. *Psychology, Crime & Law*, *5*, 3–27. doi:10.1080/10683169908414991

Kulkofsky, S. (2010). The effects of verbal labels and vocabulary skill on memory and suggestibility. *Journal of Applied Developmental Psychology*, *31*, 460–466. doi:10.1016/j.appdev.2010.09.002

Kulkofsky, S., & Klemfuss, J. Z. (2008). What the stories children tell can tell about their memory: Narrative skill and young children's suggestibility. *Developmental Psychology*, *44*, 1442–1457. doi:10.1037/a0012849

Lamb, M. E., Hershkowitz, I., Orbach, Y., & Esplin, P. W. (2008). *Tell me what happened: Structured investigative interviews of child victims and witnesses*. Hoboken, NJ: Wiley. doi:2008-13062-00010.1002 /9780470773291

Lamb, M. E., Sternberg, K. J., Orbach, Y., Esplin, P. W., & Mitchell, S. (2002). Is ongoing feedback necessary to maintain the quality of investigative interviews with allegedly abused children? *Applied Developmental Science*, *6*, 35–41. doi:10.1207/S1532480XADS0601_04

Lamb, M. E., Sternberg, K. J., Orbach, Y., Esplin, P. W., Stewart, H., & Mitchell, S. (2003). Age differences in young children's responses to open-ended invitations in the course of forensic interviews. *Journal of Consulting and Clinical Psychology*, *71*, 926–934. doi:2003-07816-01010.1037/0022-006X.71.5.926

Lamb, M. E., Sternberg, K. J., Orbach, Y., Hershkowitz, I., & Esplin, P. W. (1999). Forensic interviews of children. In A. Memon & R. A. Bull (Eds.), *Handbook of the psychology of interviewing* (pp. 253–277). New York, NY: Wiley.

Leichtman, M. D., & Ceci, S. J. (1995). The effects of stereotypes and suggestions on preschoolers' reports: Correction. *Developmental Psychology*, *31*, 568–578. doi:758.1996-00923-00110.1037/0012-1649.31.5.758

Lloyd, M. E., Doydum, A. D., & Newcombe, N. S. (2009). Memory binding in early childhood: Evidence for a retrieval deficit. *Child Development*, *80*, 1321–1328. doi:2009-16643-002

Loftus, E. F. (2005). Planting misinformation in the human mind. *Learning and Memory*, *12*, 361–366. doi:2005-09197-00110.1101/lm.94705

London, K., Bruck, M., Wright, D. B., & Ceci, S. J. (2008). Review of the contemporary literature on how children report sexual abuse to others: Findings, methodological issues, and implications for forensic interviewers. *Memory*, *16*, 29–47. doi:2008-00196-00510.1080 /09658210701725732

Lyon, T. D., Ahern, E. C., Quas, J. A., & Malloy, L. C. (2010). Children's reasoning about adult transgression secrecy: Effects of adult identity, child age, and maltreatment. *Child Development*, *81*, 1714–1728. doi:2010-24075-00810.1111/j.1467-8624.2010.01505.x

Lyon, T. D., Carrick, N., & Quas, J. A. (2010). Young children's competency to take the oath: Effects of task, maltreatment, and age. *Law & Human Behavior*, *34*, 141–149. doi:10.1007/s10979-009-9177-9

Lyon, T. D., Malloy, L. C., Quas, J. A., & Talwar, V. (2008). Coaching, truth induction, and young maltreated children's false allegations and false denials. *Child Development*, *79*, 914–929. doi:2008-9673-00810.1111/j.1467-8624.2008.01167.x

Malloy, L. C., Brubacher, S. P., & Lamb, M. E. (2011). Expected consequences of disclosure revealed in investigative interviews with suspected victims of child sexual abuse. *Applied Developmental Science*, *15*, 8–19. doi:10.1080/10888691.2011.538616

Maras, K. L., & Bowler, D. M. (2010). The cognitive interview for eyewitnesses with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *40*, 1350–1360. doi:10.1007/s10803-010-0997-8

McCauley, M. R., & Fisher, R. P. (1995). Facilitating children's eyewitness recall with the revised cognitive interview. *Journal of Applied Psychology*, *80*, 510–516. doi:10.1037/0021-9010.80.4.510

Memon, A., Cronin, O., Eaves, R., & Bull, R. (1996). An empirical test of the mnemonic components of the Cognitive Interview. In G. Davies, S. Lloyd-Bostock, M. McMurran, & C. Wilson (Eds.), *Psychology, law, and criminal justice: International developments in research and practice* (pp. 135–145). Berlin, Germany: Walter de Gruyter.

Memon, A., Meissner, C. A., & Fraser, J. (2010). The cognitive interview: A meta-analytic review and study space analysis of the past 25 years. *Psychology, Public Policy, & Law*, *16*, 340–372. doi:10.1037/a0020518

Milne, R., & Bull, R. (2003). Does the cognitive interview help children to resist the effects of suggestive questioning? *Legal and Criminological Psychology*, *8*, 21–38. doi:10.1348/135532503762871219

Nelson, K., & Fivush, R. (2004). The emergence of autobiographical memory: A social cultural developmental theory. *Psychological Review*, *111*, 486–511. doi:10.1037/0033-295X.111.2.486

Newcombe, N. S., Lloyd, M. E., & Ratliff, K. R. (2007). Development of episodic and autobiographical memory: A cognitive neuroscience perspective. In R. V. Kail (Ed.), *Advances in child development and behavior* (vol 35. pp. 37–85). San Diego, CA: Elsevier Academic Press.

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. doi:10.1016/S0145-2134(00)00137-X

Orbach, Y., & Lamb, M. E. (2007). Young children's references to temporal attributes of allegedly experienced events in the course of forensic interviews. *Child Development*, *78*, 1100–1120. doi:2007-11790-00510.1111/j.1467-8624.2007.01055.x

Ornstein, P. A., Baker-Ward, L., Gordon, B. N., & Merritt, K. A. (1997). Children's memory for medical experiences: Implications for testimony. *Applied Cognitive Psychology*, *11*, S87–S104. doi:10.1002/(SICI)1099-0720(199712)11:7<S87::AID-ACP556>3.0.CO;2-Z

Perry, N. W., McAuliff, B. D., Tam, P., Claycomb, L., Dostal, C., & Flanagan, C. (1995). When lawyers question children: Is justice served? *Law & Human Behavior*, *19*, 609–629. doi:10.1007/BF01499377

Peterson, C., & Bell, M. (1996). Children's memory for traumatic injury. *Child Development*, *67*, 3045–3070. doi:10.2307/1131766

Pezdek, K., & Hodge, D. (1999). Planting false childhood memories in children: The role of event plausibility. *Child Development*, *70*, 887–895. doi:10.1111/1467-8624.00064

Pillemer, D. B., & White, S. H. (1989). Childhood events recalled by children and adults. In H.W. Reese (Ed.), *Advances in child development and behavior* (vol. 21, pp. 297–340). Orlando, FL: Academic Press.

Pipe, M., & Goodman, G. S. (1991). Elements of secrecy: Implications for children's testimony. *Behavioral Sciences & the Law*, *9*, 33–41. doi:1991-27272-00110.1002/bsl.2370090105

Pipe, M. E., Orbach, Y., & Lamb, M. E. (2008). The effect of the NICHD Interview Protocol on the outcomes of child sexual abuse investigations. In M. E. Lamb, *How does the quality of interviews with alleged victims of child abuse affect investigation and intervention?* Symposium presented at the annual meeting of the American Psychology Law Society, Jacksonville, FL.

Poole, D. A., & Lamb, M. E. (1998). *Investigative interviews of children: A guide for helping professionals*. Washington, DC, US: American Psychological Association. doi:10.1037/10301-000

Poole, D. A., & Lindsay, D. S. (2001). Children's eyewitness reports after exposure to misinformation from parents. *Journal of Experimental Psychology: Applied*, *7*, 27–50. doi:2001-00202-00310.1037//1076-898X.7.1.27

Quas, J. A., Bauer, A., & Boyce, W. T. (2004). Physiological reactivity, social support, and memory in early childhood. *Child Development*, *75*, 797–814. doi:2004-14412-00710.1111/j.1467-8624.2004.00707.x

Quas, J. A., Goodman, G. S., Bidrose, B. L., Pipe, M.-E., Craw, S., & Ablin, D. (1999). Emotion and memory: Children's long-term remembering, forgetting, and suggestibility. *Journal of Experimental Child Psychology*, *72*, 235–270. doi:1007438010.1006/jecp.1999.24911999-13015-001

Quas, J. A., Malloy, L. C., Melinder, A., Goodman, G. S., D'Mello, M., & Schaaf, J. (2007). Developmental differences in the effects of repeated interviews and interviewer bias on young children's event memory and false reports. *Developmental Psychology*, *43*, 823–837. doi:176055172007-09251-002

Quas, J. A., & Schaaf, J. M. (2002). Children's memories of experienced and nonexperienced events following repeated interviews. *Journal of Experimental Child Psychology*, *83*, 304–338. doi:2002-11653-00510.1016/S0022-0965(02)00150-9

Roberts, K. P., Lamb, M. E., & Sternberg, K. J. (1999). Effects of the timing of postevent information on preschoolers' memories of an event. *Applied Cognitive Psychology*, *13*, 541–559. doi:10.1002/(SICI)1099-0720(199912)13:6<541::AID-ACP618>3.0.CO;2-5

Roebers, C. M., & Schneider, W. (2005). Individual differences in young children suggestibility: Relations to event memory, language abilities, working memory, and executive functioning. *Cognitive Development*, *20*, 427–447. doi:10.1016/j.cogdev.2005.05.0062005-10369-007

Rudy, L., & Goodman, G. S. (1991). Effects of participation on children's reports: Implications for children's testimony. *Developmental Psychology*, *27*, 527–538. doi:10.1037/0012-1649.27.4.527

Sattler, J. (1998). *Clinical and forensic interviewing of children and families: Guidelines for the mental health, education, pediatric, and child maltreatment fields*. San Diego, CA: Author.

Saywitz, K. J., Geiselman, R. E., & Bornstein, G. K. (1992). Effects of cognitive interviewing and practice on children's recall performance. *Journal of Applied Psychology*, *77*, 744–756. doi:1993-05127-00110.1037//0021-9010.77.5.744

Saywitz, K. J., Goodman, G. S., & Lyon, T. D. (2002). Interviewing children in and out of court: Current research and practice implications. In J. Myers, L. Berliner, J. Briere, C. T. Hendrix, C. Jenny, & T. Reid (Eds.), *The APSAC Handbook on Child Maltreatment* (2nd ed., pp. 349–377). Thousand Oaks, CA: Sage.

Saywitz, K., Jaenicke, C., & Camparo, L. (1990). Children's knowledge of legal terminology. *Law & Human Behavior*, *14*, 523–535. doi:10.1007/BF01044879

Saywitz, K. J., Snyder, L., Nathanson, R. (1999). Facilitating the communicative competence of the child witness. *Applied Developmental Science*, *3*5868. doi:10.1207/s1532480xads0301_7

Schaaf, J. M., Alexander, K. W., & Goodman, G. S. (2008). Children's false memory and true disclosure in the face of repeated questions. *Journal of Experimental Child Psychology*, *100*, 157–185. doi:10.1016/j.jecp.2007.09.002

Schreiber, N., Bellah, L. D., Martinez, Y., McLaurin, K. A., Strok, R., Garven, S., & Wood, J. M. (2006). Suggestive interviewing in the McMartin Preschool and Kelly Michaels daycare abuse cases: A case study. *Social Influence*, *1*, 16–47. doi:10.1080/15534510500361739

Scullin, M. H., Kanaya, T., & Ceci, S. J. (2002). Measurement of individual differences in children's suggestibility across situations. *Journal of Experimental Psychology: Applied*, *8*, 233–246. doi:10.1037/1076-898X.8.4.233

Sternberg, K. J., Lamb, M. E., Davies, G. M., & Westcott, H. L. (2001). The memorandum of good practice: Theory versus application. *Child Abuse & Neglect*, *25*, 669–681. doi:10.1016/S0145-2134(01)00232-0

Sternberg, K. J., Lamb, M. E., Hershkowitz, I., Yudilevitch, L., Orbach, Y., Esplin, P. W., & Hovav, M. (1997). Effects of introductory style on children's abilities to describe experiences of sexual abuse. *Child Abuse & Neglect*, *21*, 1133–1146. doi:1997-38669-00810.1016/S0145-2134(97)00071-9

Sternberg, K. J., Lamb, M. E., Orbach, Y., Esplin, P. W., & Mitchell, S. (2001). Use of a structured investigative protocol enhances young children's responses to free-recall prompts in the course of forensic interviews. *Journal of Applied Psychology*, *86*, 997–1005. doi:2001-18662-01710.1037/0021-9010.86.5.997

Terr, L. (1988). What happens to early memories of trauma? A study of twenty children under age five at the time of documented traumatic events. *Journal of the American Academy of Child & Adolescent Psychiatry*, *27*, 96–104. doi:10.1097/00004583-198801000-00015

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 & Human Behavior*, *21*, 405–426. doi:1997-43130-005

Tobey, A. E., & Goodman, G. S. (1992). Children's eyewitness memory: Effects of participation and forensic context. *Child Abuse & Neglect*, *16*, 779–796. doi:10.1016/0145-2134(92)90081-2

Tye, M. C., Amato, S. L., Honts, C. R., Devitt, M. K., & Peters, D. (1999). The willingness of children to lie and the assessment of credibility in an ecologically relevant laboratory setting. *Applied Developmental Science*, *3*, 92–109. doi:10.1207/s1532480xads0302_4

Usher, J., & Neisser, U. (1993). Childhood amnesia and the beginnings of memory for four early life events. *Journal of Experimental Psychology: General*, *122*, 155–165.

Wandrey, L., Lyon, T. D., Quas, J. A., & Friedman, W. (2012). Maltreated children's ability to estimate temporal location and numerosity of placement changes and court visits. *Psychology*, *Public Policy*, *& Law*, *18*, 79–102. doi:10.1037/a0024812

Walker, A. G. (1993). Questioning young children in court: A linguistic case study. *Law & Human Behavior*, *17*, 59–81. doi:10.1007/BF01044537

Walker, A. G. (1999). *Handbook on questioning children: A linguistic perspective* (2nd ed.). Washington, DC: ABA Center on Children and the Law.

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. doi:2004-17433-00210.1348 /0261510041552710