Repeated Interviewing: A critical evaluation of the risks and potential benefits

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For several years, forensic interviewers have been counseled not to interview alleged victims of child sexual abuse repeatedly, not only because it may be distressing each time painful memories are revisited, but also because repeated interviewing is believed both to increase the amount of inaccurate information suggestively introduced by interviewers and to foster the incorporation of inaccurate information into children's memories. As a result, at the same time that most professional guidelines acknowledge that multiple interviews may sometimes be necessary, many investigative agencies strive to ensure that alleged victims are formally interviewed only once. This goal has been facilitated by recommendations that forensic interviews be electronically recorded (Ceci & Bruck, 2000; Home Office, 2002; Scottish Executive, 2007), negating the need for repeating interviews simply because other investigators want to hear the allegations for themselves. Nonetheless, the popularity of the 'one interview' rule is somewhat surprising in light of the fact that the risks have not been well evaluated and that the potential benefits of having multiple opportunities to recall an event have not been fully examined.

Despite the universal preference for single forensic interviews, furthermore, children are rarely questioned about abuse only once. Outside of the legal setting, children are typically questioned many times by parents, relatives, friends and social workers. Within legal settings, too, repeated interviews occur for a variety of reasons. In many jurisdictions, including the UK and the US, informal 'interviews' often precede the formal interview that is designated the 'first' or 'only' interview. In addition, the results of medical examinations often need clarification, interviewers may need to cross-check information provided by other witnesses and suspects, or cases may need further

investigation. Additional interviews may also be needed when abuse is not disclosed in the first interview but there is good reason to suspect that it occurred. Interviewers can build trust across multiple interviews when victims are reluctant to disclose, perhaps because they have been threatened or told to keep the abuse a secret (Carnes, Nelson-Gardell, Wilson, & Orgassa, 2001; Carnes, Wilson, & Nelson-Gardell, 1999; Pipe, Lamb, Orbach & Cederborg, 2007). These circumstances increase the need for a comprehensive assessment of the possible risks and benefits associated with repeatedly interviewing young children. In addition, in the only systematic field study involving repeated interviews, Hershkowitz and Terner (2007) reported that children provided many new details in a second interview (about a quarter of the total number reported), suggesting that repeated interviewing might be of considerable value. Because this was a field study, of course, it was not possible to assess the accuracy of the information reported. Accuracy can only be ascertained when the to-be-remembered events have been staged, and thus this review focuses on experiments of this sort.

Concerns about repeated interviewing are reinforced by the fact that children often provide different information about the same event across different interviews (e.g., Steward et al., 1996). The resulting 'inconsistency' may detract from the perceived credibility of witnesses and raise doubts about the accuracy of the information they provide (Brock, Fisher, & Cutler, 1999; Cassel & Bjorklund, 1995; Poole & Lamb, 1998, Poole & White, 1995). Doubts about credibility can take the form of natural skepticism (e.g., "If that's true, why didn't she report it when first questioned?"), or more serious concerns that, over successive interviews, children can be deliberately or unwittingly influenced to report false information (Ceci & Bruck, 1993; Loftus, 2005).

Although repeated interviewing has been the subject of previous reviews (Fivush & Schwarzmueller, 1995; Poole & White, 1995), the current review includes many studies that have been undertaken in the last decade. In particular, the additional experiments reviewed here cast light on issues that could not be addressed adequately, if at all, in earlier reviews. The decision to conduct a narrative review of all experiments in which children were repeatedly interviewed about a personal experience or event allows the presentation and evaluation of a large amount of evidence examining widely held beliefs about the effects of repeated interviewing. Equally important, this strategy identified forensically relevant questions to which there are as yet no empirically validated answers.

The studies in this review involved children ranging in age from 2 to 13 years, with a small number of studies also including adult comparison groups. The "experiences" that children were asked to recall ranged from short video clips to medical emergencies, with retention intervals ranging from a few minutes to many years. In every study, however, researchers interviewed the children more than once about an experience.

Although this review is focused on the effects of *repeated interviewing* - over and above the effects of a single interview - it makes clear how difficult it is to distinguish the effects of repeated interviewing from the many other factors that have been studied. As will become apparent, it is particularly difficult to distinguish the effects of repeated *suggestive* interviewing from the effects of *repeated* interviewing, although the implications of the distinction are substantial.

This chapter focuses on three basic issues: First is the most basic question, what happens to the amount and accuracy of information reported in response to free recall and open-ended questioning across repeated interviews? Stated differently, when children are

interviewed in a manner that is consistent with best practice and are not influenced suggestively outside the interview context, do repeated interviews have beneficial or detrimental effects on children's accounts? Second, how should information that is consistently reported across repeated interviews, and that which is newly reported in repeated interviews, each be characterized? In particular, is it possible to generalize about the likely accuracy of each of these types of information? Third, what is the relationship between repeated interviewing and suggestibility? Does repeated interviewing necessarily increase suggestibility, as many commentators seem to believe (e.g., Leichtman & Ceci, 1995)? These basic issues are framed within a developmental context.

Memory concepts

Some basic memory concepts provide a framework within which the effects of repeated interviewing can best be understood. By definition, multiple interviews involve varying delays since the target experience. Delayed interviews have obvious and important effects on the retrieval of information from memory. Research studies with humans and animals clearly document that *forgetting* occurs most rapidly soon after information is encoded, with the rate of forgetting slowing and eventually becoming negligible as time passes (Chapter x, Ceci et al; Ebbinghaus, 1885/1964; see Wixted, 2004 for review of models of forgetting). Developmental differences in forgetting are also apparent. Highly controlled laboratory research with children shows that, when the level of initial encoding of the to-be-remembered information is held constant, there are differences in the rate of forgetting; younger children forget information more rapidly than older children (Brainerd, Reyna, Howe, & Kingma, 1990).

A less familiar concept, *reminiscence*, is also helpful when attempting to understand what happens across repeated memory retrieval attempts, as is the case in repeated interviewing. Reminiscence is a term used to describe 'new' information recalled in later but not earlier memory tests; in other words, it involves remembering things that have previously been forgotten or have not been reported (Ballard, 1913; Bartlett, 1932). When fewer items are recalled on subsequent tests than on earlier tests, we often speak only of forgetting, but to the extent that there is any newly remembered information (reminiscence), the degree of forgetting is necessarily underestimated (Erdelyi, 1996; Payne, 1987).

The co-occurrence of forgetting and reminiscence can also result in the appearance of "no change" in the amount of information that children report across repeated interviews when, in fact, exactly what is recalled and reported has changed. That is, it can appear that no forgetting has taken place because the total amount of information reported remains constant. In the eyewitness-memory literature this effect is often attributed to the hypothesized process of memory *consolidation*, with the associated assumption that repeated attempts at recalling information strengthens the memory of that information. However, if the number of items of information newly remembered (reminiscence) is the same as the number of items forgotten, the same amount of information would be recalled across trials, but it would be incorrect to claim that there had been consolidation and no forgetting. In the context of forensic interviewing, examination of exactly what is recalled, and not just how much, is particularly important, and the processes of forgetting and reminiscence are germane to any consideration of the effects of repeated interviewing.

Repeated interviewing may also lead to increases in the amount of information reported, sometimes referred to as *hypermnesia* – the opposite of forgetting. Hypermnesia occurs when more information is remembered than is forgotten across repeated interviews; that is, reminiscence exceeds forgetting (Erdelyi, 1996; Payne, 1987). Laboratory studies indicate that increases in the reporting of information as a result of repeated interviewing (hypermnesia) are more likely when there are short delays between memory tests/interviews (Erdelyi, 1996; Payne, 1987), and that the magnitude of hypermnesia decreases with longer delays between the event and the repeated memory tests (Howe, Kelland, Bryant-Brown, & Clark, 1992; see also Brainerd, Reyna, Howe, & Kingma, 1990, for theoretical discussion).

Because memories are (re)constructed, they are also vulnerable to distortion. As Bartlett (1932) showed 75 years ago, for example, reconstructive errors may reflect biases that affect the way a story (the information to be remembered in his study) is rationalized, elaborated, and made more concise. Bartlett also found that, as the delay between exposure to the story and its recall became longer, the (re)constructive errors made became more pronounced. Since then, many researchers have exploited the reconstructive nature of memory to demonstrate *false memories,* including complex autobiographical memories of events that did not happen (see Loftus, 2005; Pezdek & Lam, 2007, for reviews). False memories are often quite plausible, believed by those who have them, and generally indistinguishable from real memories (see Ceci et al. chapter, this volume).

Many researchers have reported developmental differences in the effects of suggestive questions on children's memory. Studies of event memory clearly demonstrate

that younger children are more suggestible than older children and adults (see Ceci & Bruck, 1993; Ceci et al., this volume). By contrast, when false memory is measured by the incorporation of false gist-related information using the Deese-Roediger-McDermott (DRM) word-list paradigm, the opposite is observed: Older children are more vulnerable to the creation of false memories than younger children (Brainerd, Reyna & Forrest, 2002). This occurs because the understanding of gist increases with age, and as a result, this kind of false memory increases with age, too.

It is also important to distinguish false memories from *acquiescence* errors although the two are generally considered facets of *suggestibility.* Unlike false memories, acquiescence errors do not necessarily imply changes in memory. Acquiescence errors reflect the tendency for people, especially children, to agree with others. When misleading yes/no questions are asked, for example, social pressure can increase the chance that a child will give an incorrect 'yes' response (e.g., Greenstock & Pipe, 1997; Pipe & Wilson, 1994). Acquiescence also increases when a power imbalance exists between the person asking the questions and the person answering them (Ceci, Ross, & Toglia, 1987). For this reason, it is not surprising that younger children are more likely to make acquiescence errors than are older children.

How well do these basic phenomena, identified in laboratory-based research, predict what happens in repeated interviews with children about experienced events? To address this question, research on forgetting, reminiscence and suggestibility across repeated interviews with young children are examined in the next sections. The focus is on studies that are most likely to elucidate performance in forensic interviews because they involved events (rather than word lists) remembered and forgotten over days,

months and years rather than milliseconds, minutes and hours, and measured via verbal recall reports. Studies in which open-ended cues were used to prompt recall as opposed to those in which suggestive techniques were used are considered separately.

Information Reported in Response to Free Recall and Open-Ended Questioning Across Repeated Interviews

This section reviews experiments examining changes in the amount and the accuracy of information children report about experienced or witnessed events, across repeated interviews, in response to free- and open-ended prompts for information (some studies also included suggestion and those results are reported later in the review). Of the 50 experiments listed in Table 1, 45 used repeated measures analyses, that is, the effects of repeated interviewing were examined by comparing information reported by the same children across successive interviews. The results of these analyses are reported in the last three columns of Table 1 in terms of whether there were increases (+), decreases (-) or no change (0) in correct recall, errors, and accuracy. The experiments are categorized by the type of event experienced, whether stressful or distressing, and whether naturally-occurring or staged for the study, to highlight any differences possibly due to the nature of the event.

Insert Table 1 about here

Based on the repeated measures analyses of the repeated interviews, it is clear that forgetting across repeated interviews is typical; in 20 of the experiments listed in Table 1, children reported decreasing amounts of correct information across repeated interviews; in 13 experiments, the numbers of errors increased across repeated interviews and in

seven experiments, the *accuracy* of recall (assessed as the amount of correct information reported divided by the amount of correct and incorrect information) decreased. Overall, 31 (about two thirds) of the 45 experiments listed in Table 1 documented at least one of these changes in the information children reported.

Interestingly, the 14 experiments on the effects of stressful events that used a repeated measures analysis (Table 1) reported the most inconsistent results with only seven showing changes in memory associated with forgetting. At face value, this could indicate that stressful events are sometimes better remembered than other types of events. Because events such as experiencing a hurricane (Fivush et al., 2004) or physical injuries (e.g., Peterson & Whalen, 2001) are so salient, however, children may have encountered physical reminders of these events and/or had more conversations about the events between the interviews. Such reminders of salient personally significant events may have kept memories 'alive' and slowed the rate of forgetting (Cordon, Pipe, Sayfan, Melinder, & Goodman, 2004; Pipe, Lamb, Orbach, & Esplin, 2004).

Whether or not repeated interviews cause changes in memory across time can really only be determined by examining the experiments that have included the control conditions needed to disentangle the effects of delay and repeated interviewing. Table 1 shows a mixed pattern of results from the 16 experiments that included a delayed control condition and the effects are not always consistent across age groups or delays. In seven studies there was evidence that repeated interviews facilitated recall by increasing the amount of correct information recalled and/or by increasing the accuracy of recalled information relative to the delayed control condition. This facilitation was seen following both relatively short delays between interviews (Memon, Wark, Bull & Koehnken, 1997),

and delays of months or years between repeated interviews (Pipe, Gee, Wilson, & Egerton, 1999; Pipe, Sutherland, Webster, Jones & La Rooy, 2004). It does not appear that the type of event experienced provides an indication of why some studies showed evidence of facilitation in recall and others did not.

'Attenuation' of forgetting by repeated interviewing has sometimes been characterized as memory consolidation (Brainerd & Ornstein, 1991), memory inoculation (Gee & Pipe, 1995), or "a booster shot" (Warren & Lane, 1995). Although attenuation of forgetting may indeed reflect the consolidation of information across successive interviews, it may also occur because equal amounts of new information replace forgotten information. Consistency of recall may be a particularly desirable outcome in forensic contexts, but in actuality, children's recall may become more inconsistent across successive interviews (Baker-Ward, Gordon, Ornstein, Larus & Clubb, 1993; Gee & Pipe, 1995; Powell & Thomson, 1997) because new information is likely to be included in later reports of an event (e.g., La Rooy, Pipe & Murray, 2005, 2007).

An examination of changes across interviews, rather than comparisons with control groups, revealed no evidence of forgetting-that is, no change in the amount or accuracy of the information reported -in several studies (e.g., Fivush & Hamond, 1989). This effect was not always consistent across age groups and/or delays within studies. Further, eight studies in Table 1 showed *increases* in the total amount of information correctly recalled across repeated interviews or hypermnesia. Although hypermnesia in both children and adults has been extensively demonstrated in studies involving pictures and words (Erdelyi, 1996; Payne, 1987), it has seldom been considered in studies of event memory which are, of course, most directly relevant to the forensic context.

However, three studies demonstrated hypermnesia when interviews occurred soon after the event and were separated by relatively short delays (Bruck, Ceci & Hembrooke, 2002;Dent & Stephenson, 1979; La Rooy et al., 2005). By contrast, Pipe et al. (2004) found hypermnesia only when there was both a long delay between the event and the initial interview and long delays between interviews. In all these studies, recall was elicited using free recall and open-ended recall prompts.

Some instances of increased recall across repeated interviews in the experiments listed in Table 1 may not involve hypermnesia. When the delays between interviews were very long, developmental changes and intervening experiences, rather than repeated interviewing, may have accounted for increases in the amount of information reported. Over delays of more than a year, for example, Fivush (1994) and Fivush and Hamond (1990) found that improvements in very young children's verbal abilities may well have accounted for increases in the amount of information they reported. Similarly, increases in the amount of information remembered about Hurricane Andrew over a 6-year delay may have been fueled by multiple anniversaries, television shows, and conversations in which new information was acquired (Fivush, McDermott Sales, Goldberg, Bahrick, & Parker, 2004). Changes in general knowledge may also lead to increased recall over time, particularly for scripted events such as visiting a pirate (e.g., Pipe et. al., 2004) or medical visits (e.g., Ornstein, Gordon, & Larus, 1992).

Repeated interviews that occur closer to the target event rather than after a long delay may affect memory differently. Unfortunately, the effects of the timing of repeated interviews are not well understood because the timing of repeated interviews was only manipulated within experiments two times (Pipe et al., 2004; Powell & Thomson, 1997)

but the results were inconsistent. Specifically, Pipe et al. (2004) reported that children interviewed after a 1-year delay retrieved more information when the previous interview occurred after 6-months as opposed to children who were previously interviewed immediately after the event or not at all (Pipe et al., 2004). A delay of 3 months, with earlier interviews either occurring at 1-week or 6 weeks, did not yield comparable effects in the study by Powell and Thomson (1997). Further research may be warranted regarding the relationship between the timing of repeated interviews and recall because it may provide practical insight for scheduling interviews to maximize recall and for evaluating information obtained in multiple interviews conducted as part of an investigation.

Researchers have examined the effects of age, and the absence of delayed control conditions in some of these experiments does not invalidate conclusions concerning developmental differences in memory reports across repeated interviews because differences in recall across repeated interviews between different age groups can still be observed. As discussed earlier, rigorously controlled experiments in which to-be-remembered wordlists are learned show that younger children forget more quickly than older children (Brainerd et al., 1990; Howe & Brainerd, 1989; Howe, et al., 1992). Such rigorous experimental control is important for isolating memory processes that contribute to developmental effects but is neither possible nor necessary in the studies of event memory that are the focus of the present review. Developmental changes in the amount of information recalled across repeated interviews were examined in 22 of the experiments using repeated measures analysis reported in Table 1. In only nine of these

experiments were developmental differences observed, and the findings were far from uniform.

Closer inspection of studies in Table 1 that included multiple age groups reveals only one experiment in which the amount of correct information reported across repeated interviews decreased more rapidly on the part of younger children compared to older children (Ornstein, Gordon & Larus, 1992). One study also showed a developmental difference when children's recall was compared to adults' recall but there was no difference between the two age groups of children studied (Flin, Boon, Knox, & Bull, 1992). By contrast, 2 experiments showed a different pattern, with the greatest decrease in correct recall occurring among older children (Pipe et al., 1999; Salmon & Pipe, 1997). In one experiment, recall decreased across repeated interviews for 5-year-old children but not for 3- and 7-year-olds (Gordon & Follmer, 1994). In two experiments, accuracy decreased more rapidly for younger than for older children (Baker-Ward et. al., 1993; Peterson & Whalen, 2001), but the reverse occurred in another experiment (Peterson, 1999). In three experiments, accuracy did not vary across repeated interviews as a function of age (Gordon & Follmer, 1994; Pipe et al., 1999; Salmon & Pipe, 1997). Developmental differences in the number of recall errors were found in three experiments. In two experiments, the number of errors was greater for younger than for older children (Peterson, Pardy, Tizzard-Drover & Warren, 2005; Pipe et al., 1999), but the opposite was found in one study (Flin et al., 1992).

Only two experiments comparing repeated interviews with a delay control condition showed developmental differences. After a 1-year delay, Tizzard-Drover and Peterson (2004) reported that 3 and 4-year-old children recalled more when they had an

initial and 6-month interview than did children of the same age who were interviewed for the first time after 1 year, but this difference was not evident for the other age groups. By contrast, Gee and Pipe (1995) found that 9-year-old children benefited from a repeated interview whereas 6-year old children did not. The differing results may in part be accounted for by the fact that the 6-year-old children studied by Gee and Pipe (1995) reported very little information when they were interviewed for the first time; the initial retrieval may thus have been too limited to facilitate later recall.

The mixed and inconsistent developmental effects are not easily explained by reference to the type of event, the number of interviews, or the length of the recall delay. Floor effects, however, may explain findings that run counter to prediction in some studies discussed above. Children of different ages were exposed to the same to-be-remembered events for the same amounts of time in these experiments, but younger children may have encoded less information about the event than older children, and so have had less to forget (see Brainerd et al., 1990). For example, Gee and Pipe (1995) thus concluded that 9-year-old children might appear to forget, while 6-year-olds do not, because the 6-year-olds did not encode as much as the 9-year-olds. In general, the mixed findings seem to reflect the interaction of variables such as age, the nature of the event, and children's knowledge about the event rather than, or in addition to, any differential effects of repeated interviewing on children's memory reports. The lack of developmental differences is, however, consistent with laboratory research by Howe et al. (1992) showing that, although repeated memory tests facilitate recall, they do not affect children of diverse ages differently.

The studies reviewed in this section examined remembering and forgetting of salient experienced events, across multiple interviews, over forensically relevant periods of time.

- Some studies suggest that repeated interviews may yield increases in the total amount of information recalled whereas other studies clearly show forgetting.
- Facilitative effects of repeated interviewing appear to be influenced by delay.
- The advantages of repeated interviewing are greater after short rather than long delays, either between the event and interview, or between the interviews themselves.
- Long delays between interviews typically reduce or eliminate the advantages of repeated interviewing.

Consistent and New Information

The consistency of recall can influence the perceived credibility of a child witness, with inconsistent recall being viewed with skepticism within the legal system. Unfortunately, this perception is incompatible with one of the basic goals of re-interviewing- obtaining new (or additional) information from witnesses. How likely is it that new information obtained in subsequent interviews is accurate? If the reliability of new information differs from consistently-reported information, then being attentive to these different types of information during interviews may constitute a practical way of determining which information is most likely to be trustworthy. This section reviews

experiments in which researchers determined whether individual pieces of information were reported consistently across interviews or were newly-reported (reminisced). The relative accuracy of information that was either new or consistent across multiple interviews was then ascertained by dividing the number of items of correct information reported by the number of correct and incorrect items of information, as described earlier.

Researchers have directly compared the accuracy of new and consistent information across interviews in seven experiments (La Rooy et al., 2007; Peterson, Moores & White, 2001, Pipe, Gee, Wilson & Egerton, 1999, Experiments 1 & 2; Salmon & Pipe, 1997, 2000; Steward et al., 1996). All studies found that information consistently reported across interviews was more accurate (ranging across studies from 86% to 100%) than new information (ranging across studies from 37% to 79%). In these studies, however, there were long delays between repeated interviews.

One set of experiments showed that the delay between interviews may affect the accuracy of new information (La Rooy et al., 2005). When there were short delays between repeated interviews, and when the repeated interviews occurred within 24 hours of the event, the accuracy of new information was 92%. When two interviews were conducted 24 hours apart, 6 months after the event, the accuracy fell to 72%. Accuracy was 56% when there was a 6-month delay between interviews.

When the accuracy of new information was tracked in third and subsequent interviews, the accuracy of new information tended to decrease progressively across successive interviews (Bruck et al., 2002; Peterson et al., 2001; Pipe et al., 1999, Experiments 1 & 2). By contrast, information that was consistent across successive interviews was accurate (Bruck et al., 2002; Peterson et al., 2001, Pipe et al., 1999,

Experiments 1 & 2; Steward et al., 1996). Few researchers have examined developmental differences in relation to the accuracy of new information. In one experiment the accuracy of new information decreased across repeated interviews more rapidly for older than for younger children (Peterson et al., 2001), but this interaction was not evident in the other experiments (Pipe et al., 1999, Experiments 1 & 2; Salmon & Pipe, 1997). Overall, then, measures of the accuracy of new and consistent information have different trajectories across repeated interviews; consistent information is generally accurate across interviews, whereas information that is not consistent across interviews tends to be inaccurate. Little is known about developmental differences in the accuracy of new and consistent information across repeated interviews.

Other researchers have examined the consistency of children's recall without directly calculating the accuracy of the consistent information reported. Gordon and Follmer (1994) reported that, across delays of up to 6 weeks, 3-year-old children were more inconsistent in their recall (and reported more new information) than 5- and 7-year old children. Baker-Ward et al. (1993) found that, when children were interviewed immediately after an event and then again 1, 3, or 6 weeks later, recall was less consistent after 3 weeks than after both 1 and 6 weeks. Why consistency is initially high, decreases, and then increases after longer delays is unclear. A different pattern of results was reported by Powell and Thomson (1997), who found that children initially interviewed after 1 week were more likely to recall information accurately and consistently after 6 weeks than after a delay of 3 months, suggesting that consistency does not improve with delay. In another condition, Powell and Thomson (1997) found that a delayed first interview (6 weeks as opposed to 1 week) led children to repeat more errors at 3 months,

perhaps because there was less time for errors to be forgotten when the initial interview was at 6 weeks rather than 1 week. Bruck et al. (2002) and Huffman, Crossman and Ceci (1997) also showed that the consistency of recall decreased across repeated interviews when children were questioned about events that did not occur rather than real events. Stress may also affect the consistency of recall; Fivush et al. (2004) found that both high and low levels of stress were associated with greater consistency across repeated interviews spanning 6 years than was moderate stress. Similarly, Peterson et al. (2001) found greater consistency of recall of an injury (presumably stressful) than of the subsequent hospital treatment (presumably less stressful) across repeated interviews over a 2-year period.

Fivush and her colleagues have examined the quality, rather than the accuracy, of new and consistent information elicited in non-suggestive, open-ended interviews. Fivush, Haden and Adam (1995) found that the use of temporal and descriptive markers increased across repeated interviews. They also found that prepositions linking ideas together also became more common across multiple retellings, and this may improve the overall coherence of what is reported in later interviews. Such information, locating an experience in time, space and detail, can, of course, be important to forensic interviewers as well. In an interview conducted 15 months after an initial interview, for example, Fivush and Hamond (1990) showed that approximately 75% of the information reported by 30-month-old children was new. Earlier interviews contained more ‘typical’ schema-related details, whereas later interviews contained more ‘distinctive’ or specific details that may prove to be valuable in forensic contexts. Fivush, Hamond, Harsch, Singer and Wolf (1991) also found that more new information was reported by young children when

events were discussed a second time with a different person rather than the same person. Some of these effects, included those involving the use of temporal and descriptive markers may, of course, reflect developmental changes, given the relatively long delays between interviews.

- Laboratory studies suggest that although new information reported across successive interviews is generally more inaccurate than information that is consistently recalled**,** accuracy may vary depending on the delay between interviews or between the event and interviews.
- The generalizability of these conclusions to forensic contexts may be limited, however, because repeated investigative interviews would not likely be comprised of exactly the same questions, as was the case in these experiments.
- Instead, forensic interviewers may deliberately probe for new information, ask new questions shaped by information already provided by children, ask about entirely different aspects of the case, and/or repeat questions from previous interviews.
- Furthermore, it is possible that *interviewer* and *interview* consistency are as important as *interviewee* consistency.

Repeated Interviews and Suggestibility

A review of the literature revealed 30 experiments in which both repeated interviews and suggestive techniques were studied (see Table 2). In 16 studies, repeated suggestive interviewing appeared to increase errors, with children becoming increasingly likely to agree with interviewer suggestions and/or incorporate misinformation into their

later recall. These experiments differed in important respects from the 13 in which errors did not increase. Most strikingly, 10 of the 16 studies reporting increasing evidence of suggestibility across interviews that involved multiple suggestive techniques; in addition to asking misleading questions, these studies also involved peer pressure, social pressure (for example, showing surprise when children did not acquiesce to false details), requests that children imagine false events, misleading physical prop items, praise and encouragement for incorrect answers, interviewer-provided misinformation, appeals to 'help' the interviewer, and negative reinforcement when children did not acquiesce to the suggested version of events. In five of the six remaining studies (i.e., those without multiple highly misleading techniques) errors increased across lengthy delays between interviews (Burgwyn-Bailes, Baker-Ward, Gordon, & Ornstein, 2001; Goodman, Hirschman, Hepps, & Rudy, 1991, Experiment 4; Pipe & Wilson, 1994), or were directly attributable (because there was a control condition) to delay rather than the repeated interview (Baker-Ward et al., 1993; Ornstein et al., 1992).

Insert Table 2 about here

Although the use of multiple suggestive strategies in repeated interviews clearly degrades the quality of recall, we do not yet know exactly how many suggestive strategies, or which ones, are required before the effects of suggestibility increase. That is because nine of the 10 experiments in Table 2 that did report an effect of suggestibility across repeated interviews involved more than a single suggestive technique as well as different combinations of suggestive techniques in the various interviews. In one study by Bruck, Ceci and Hembrooke (2002), for example, children were asked to imagine a false event before answering misleading questions. They were then praised for providing

incorrect answers and, to further increase the suggestive nature of the interview, they were told that their classmates had already disclosed the 'false event.' In another interview, a puppet was used to ask the leading questions. In another study, Leichtman and Ceci (1995) asked children in one condition two to four suggestive questions about the activities of a daycare visitor called Sam Stone in their first interview. The number of suggestive questions increased to 6 in the third interview and 8 in the fourth interview. In the same study, the first two interviews involved false props (a ripped book and soiled teddy bear) being shown to children as evidence that the false event had taken place; the props were not used in the remaining interviews. Because these techniques were not systematically compared, it is not possible to determine which suggestive technique or combination of suggestive techniques is most risky when there are multiple interviews. The purpose of these early studies was to examine the effects of highly suggestive techniques, so rigorous control of factors such as the type and number of suggestive strategies may not have seemed important. Further carefully controlled research is needed to illuminate the effects of each of the suggestive strategies, including less egregious examples of repeated suggestive interviewing.

Lack of delayed control conditions may also limit our understanding of the effects of repeated suggestive interviewing. Of the experiments reported in Table 2, only five included control conditions designed to disentangle the effects of interview delay and suggestibility. These experiments showed that both repeated suggestive interviewing and interview delay were independently associated with increased suggestibility (Baker-Ward et al., 1993; Melnyk & Bruck, 2004, Experiments 2; Ornstein et al., 1992; Warren & Lane, 1995; Quas, Molloy, Melinder, Goodman, D'Mello, & Schaaf, 2007). It is difficult

to assess the independent contributions of delay and repeated interviewing in the remaining experiments because the necessary experimental controls were missing.

However, lack of experimental control over delay does not limit the interpretation of findings obtained in five studies in which children were questioned about events that did not happen (Bruck et al., 2002; Ceci, Huffman, Smith & Loftus, 1994; Ceci, Loftus, Leichtman, & Bruck, 1994; Erdmann, Volbert, & Bohm, 2004; Powell, Jones, & Campbell, 2003). These studies showed that, across multiple questioning sessions, more and more children assented to interviewer suggestions about false events. Such studies clearly demonstrate that repeated suggestive questioning about things that did not happen can have negative effects on accuracy of reported recollection, although these results may not generalize to situations in which children are interviewed about non-events following best practice guidelines.

Setting aside these limitations, however, developmental differences were clearer in these studies of suggestibility than in the studies discussed in earlier sections. Ten of the studies listed in Table 2 examined suggestibility across repeated interviews using more than a single age group, and of these ten studies, eight reported developmental differences in performance across repeated interviews. With the exception of a single study (Ceci, Huffman et al., 1994) they otherwise show that repeated interviews exacerbate the suggestibility errors of younger children more than older children. Taken together with research showing that younger children are more vulnerable to suggestion than older children and adults, the findings here reinforce concerns about the use of suggestive techniques especially when employed with young children across multiple interviews.

Twelve of the experiments listed in Table 2 show that misleading yes/no questions tapping recognition memory did not increase error risk from repeated interviews in the absence of other suggestive techniques. This finding is important because forensic interviewers seldom know whether they are asking about events that did (i.e., leading questions) or did not (i.e., misleading questions) occur. However, it would be a mistake to conclude that later recall cannot be affected by asking misleading yes/no questions because, at least in wordlist studies, merely testing recognition memory yields increased numbers of gist-related errors on subsequent memory tests (Brainerd & Reyna, 1996).

Studies involving word lists and event memory may have yielded different findings because eyewitness memory researchers have generally not measured whether children incorporate false information contained in suggestive recognition prompts (such as misleading yes/no questions) into free recall accounts in subsequent interviews. Mere memory testing may affect accuracy, and this form of 'suggestion' has only been explored directly in two experiments. Warren and Lane (1995) found that children suggestively questioned about a video they had watched tended to report the suggested details in free recall 1 week later, whereas Peterson, Parsons and Dean (2004) found that misleading information was not incorporated into children's accounts about an experienced injury a year later. Although there are numerous differences between these studies, the delay between the repeated interviews may be a factor: Errors tend to be forgotten when there are long delays between interviews and remembered when the delays are short (La Rooy et al., 2007).

- Most studies reporting that repeated interviewing leads to increased suggestibility used highly suggestive techniques, multiple suggestive techniques, more frequent suggestive interviews, and knowingly interviewing children about events that did not happen.
- Deliberately suggestive practices are inappropriate in forensic contexts. Because rigorous experimental controls for the confounding effects of delay have not been employed in many of these studies, however, it is difficult to know whether a similarly long delay and a single suggestive interview might have produced the same result.
- While existing studies of suggestibility and repeated interviewing provide "boundary conditions," further systematic studies are clearly needed before conclusive practical lessons can be drawn.

Conclusions

This review has identified key factors that affect the amount and quality of information elicited from children across repeated interviews and has highlighted several gaps in current understanding. Most importantly, it is clear that outright skepticism about repeated interviewing is unjustified because there were some conditions in which repeated interviews seemed advantageous. The amount and accuracy of information in free and open-ended recall was partly determined by both the length of the delay between the event and the repeated interviews and the delay(s) between the interviews themselves. As the delay between repeated interviews increases, the amount and accuracy of information recalled decreases. The amount of forgetting between an experience and later recall may be attenuated by intervening interviews, however, suggesting that repeated

interviewing can be advantageous. The potential advantages of repeated interviewing deserve further exploration.

Of course, in forensic contexts, *what* is recalled is much more important than the amount of information recalled. Valuable insights have been obtained from experiments that have painstakingly examined the actual information reported in repeated interviews, so that it can be categorized as either new or consistent with respect to information obtained in preceding interviews. New information is almost always reported in repeated interviews. When repeated interviews occur soon after an event, little forgetting takes place, and reminiscence of new information is more likely. Newly reported information obtained in interviews conducted soon after an event may be very accurate and the later interview may even yield more details than earlier interviews (hypermnesia). Reminiscence and hypermnesia may help ensure lengthier and more detailed reports and it is thus surprising that they have not been the focus of more research. However, when there have been lengthy delays between interviews or lengthy delays between the event and the interviews, more forgetting occurs and the accuracy of new information decreases. This suggests that the accuracy of new information reported in interviews might be gauged by knowing how long ago the events in question took place, but until we understand more about factors affecting the accuracy of new information, the consistent-equals-accurate and new-equals-erroneous rules should be applied cautiously in forensic contexts. In particular, we do not know whether new information elicited in repeated investigative interviews, involving different questions and therefore different retrieval cues, is likely to be as inaccurate as new information elicited in repeated experimental interviews involving identical repeated questions.

Who conducts repeated interviews may also be important. The identity of the interviewer has so far been manipulated systematically in only 3 of the 26 experiments listed in Table 1 (the identity of the interviewer(s) was not reported in 23 studies). Quas and Schaaf (2002) found that 5-year olds questioned by an unfamiliar interviewer provided more correct details about an event than those interviewed by a familiar interviewer, and that 3-year-olds questioned by an unfamiliar adult responded less accurately to specific questions. Fivush et al. (1991) found that 3-year-olds reported more information when questioned by a stranger than by their mothers, and that children –especially 3-year-olds--were more consistent when talking about events with that same person, whereas they provided more new information when talking about events with a different person. Bjorklund et al. (2000) found no effect of interviewer identity in free recall, whereas better recognition memory was evident when the same rather than a different interviewer was used. However, these studies are best considered preliminary because they leave many questions unanswered. Most relevant to forensic investigations is that researchers have also not yet determined whether the amount of new and previously recalled information reported in repeated interviews with children varies depending on whether the same or different interviewers conduct the interviews. Being questioned by the same interviewer who conducted a previous interview may implicitly invite the interviewee to report new information and to leave out information that has already been reported. By contrast, different interviewers may elicit more consistent accounts, because interviewees attempt to provide complete accounts for listeners who have not heard the story before. These possibilities warrant further investigation and are forensically relevant. Children, especially young children, cannot be expected to

understand why an interviewer (or interviewers) want to question them again about events they have already discussed. Clearly, more research is needed to assess the effects of interviewer identity on non-suggestive interviews, especially when the interviewers are equally (un)familiar to the interviewees.

Interviewer training may also affect the recall of new and consistent information in repeated interviews. In the experiments reviewed here, interviewers have ranged from students with no prior experience to clinical psychologists and highly trained forensic investigators. In only 12 of the experiments did the researchers report levels of interviewer training and experience, suggesting that relatively little attention has been paid to this potentially important issue. It is unknown whether the amount and type of information obtained in repeated interviews varies depending on the skill of interviewers and whether interviewer skill affects the quality of information obtained subsequently. For example, the amount elicited by interviewers in the first interview may directly affect the amount of information that is categorized as new and repeated in subsequent interviews. Highly trained interviewers may elicit more information from children in an initial interview, for example, and this information could then serve as a cue triggering the retrieval of even more new information in a repeated interview (i.e., reminiscence); alternatively, the initial interviewer may elicit all the available information, leaving less to be provided in subsequent interviews. These factors require further research study. The former possibility suggests that repeated interviewing by a highly skilled interviewer might be advantageous because more new and accurate information is obtained in repeated interviews than would be obtained by untrained interviewers. The latter possibility suggests that fewer pieces of new information will be recalled in the repeated

interview and that the new information retrieved by highly trained interviewers could be inaccurate. Clearly, then, the level of interviewer training also needs to be examined systematically in future research on repeated interviewing.

It is also unclear from the suggestibility literature whether repeated interviewing per se exacerbates suggestibility. When many suggestive techniques are used, suggestibility increases, but we do not know which suggestive technique, or combinations of techniques, are most likely to produce faulty reports. Furthermore, the number of suggestive interviews required to increase suggestibility errors has not always been accounted for, and the effects of repeated suggestive interviews and delay have not been teased apart. Prompted by widely publicized concerns about the adverse affects of suggestibility, however, contemporary interviewers may be employing fewer and less suggestive techniques in the field than in the past and research is needed to examine the impact of the less blatant forms of suggestion across repeated interviews (e.g., asking yes/no questions to which children may acquiesce). Indeed, surprisingly few researchers have asked whether information contained in single yes/no answers is incorporated into free recall in later interviews, although many have involved repeated interviews after suggestive yes/no questions were asked in earlier interviews. Researchers may find, by re-examining their data files, answers to such questions. Coding for the presence of specific information in children's reports should be relatively simple.

It is also important to note that studies of repeated interviewing largely involve repetitions of entire sets of questions whereas in forensic contexts repeated interviews often contain many different questions concerning different aspects of the events (e.g.,

Cederborg, La Rooy & Lamb, 2008). If multiple forensic interviews are not strictly 'repeated' what is the ecological validity of the entire experimental literature to date?

Repeated interviews are the norm rather than the exception, and researchers should continue to examine the factors influencing the accuracy of information produced within and across repeated interviews. Adding extra interviews to existing experimental designs would allow us to determine how factors affecting memory and retrieval in the first interview also influence performance in subsequent interviews. Not only do we need developmentally-appropriate interviewing protocols, but also developmentally-appropriate protocols for repeated interviewing.

- Within the legal system, children are frequently interviewed about their experiences more than once, with different information elicited in different interviews.
- New information provided in repeated interviews is most likely to be accurate when the repeated interviews occur close together and as soon as possible after the event of interest
- Repeated interviews are not inherently suggestive but can maximize the effects of suggestive interviewing.
- Many of the psychology experiments reviewed here asked the same questions in each repeated interview, but in real forensic interviews different questions may be asked.
- Researchers needs to investigate further the potential impact of the interviewers' identity and training, the length of delays before and between the interviews, the age of the child and the suggestiveness of the interviews
- Professionals have yet to publish developmentally appropriate protocols and/or guidelines for repeated interviewing.
- The experimental literature is not yet sufficient to support strong conclusions about the risks or benefits of repeated interviews about possible abuse.

References

Ackil, J., Van Abbema, D., & Bauer, P. (2003). After the storm: Enduring differences in mother-child recollections of traumatic and nontraumatic events. Journal of Experimental Child Psychology, 84, 286-309.

Baker-Ward, L., Gordon, B. N., Ornstein, P. A., Larus, D. M., & Clubb, P. A. (1993). Young children's long-term retention of a pediatric examination. Child Development, 64, 1519-1533.

Baker-Ward, L., Hess, T. M., & Flannagan, D. A. (1990). The effects of involvement on children's memory for events. Cognitive Development, 5, 55-69.

Ballard, P. B. (1913). Oblivescence and reminiscence. British Journal of Psychology, 1, 1-82.

Bartlett, F. C. (1932). Remembering: A Study in Experimental and Social Psychology, Cambridge: Cambridge University Press.

Bjorklund, D. F., Cassel, W. S. Bjorklund, B. R., Douglas Brown, R., Park, C. L., Ernst, K. Owen, F. A. (2000). Social demand characteristics in children's and adults eyewitness memory and suggestibility: The effect of different interviewers on free recall and recognition. Applied Cognitive Psychology, 14, 421-433.

Brainerd, C. J., & Ornstein, P. A. (1991). Children's memory for witnessed events: The developmental backdrop. In The suggestibility of children's recollections: Implications for eyewitness testimony, Doris J (Ed.) American Psychological Association: Washington, 10-23.

Brainerd, C. J., Reyna, V. F., & Forrest, T. J. (2002). Are young children susceptible to the false memory illusion? Child Development, 73, 1363–1377.

Brainerd, C. J., Reyna, V. F., Howe, M. L., & Kingma, J. (1990). The development of forgetting and reminiscence. Monographs of the Society for Research in Child Development, 55, (Serial No. 222).

Brock, P., Fisher, R. P., & Cutler, B. C. (1999). Examining the cognitive interview in a double test paradigm. Psychology, Crime & Law, 5, 29-45.

Bruck, M., Ceci, S. J., & Hembrooke, H. (2002). The nature of children's true and false narratives. Developmental Review, 22, 520-554.

Burgwyn-Bailes, E., Baker-Ward, L., Gordon, B. N., & Ornstein, P. A. (2001). Children's memory for emergency medical treatment after one year: The impact of individual difference variables on recall and suggestibility. Applied Cognitive Psychology, 15, S25-S48.

Carnes, C.N., Wilson, C., & Nelson-Gardell, D.(1999). Extended Forensic Evaluation When Sexual Abuse is Suspected: A Model and Preliminary Data. Child Maltreatment, 4, 242 - 254.

Carnes, C.N., Nelson-Gardell, D., Wilson, C., & Orgassa, U.C. (2001). Extended Forensic Evaluation When Sexual Abuse is Suspected: A Multisite Field Study. Child Maltreatment, 6, 230 - 242.

Cassel, W. S., & Bjorklund, D. F. (1995). Developmental patterns of eyewitness memory and suggestibility: An ecologically based short-term longitudinal study. Law and Human Behavior, 19, 507-532.

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

Ceci, S. J., & Bruck, M. (2000). Why judges must insist on electronically preserved recordings of child interviews. Court Review, 37, 10-12.

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

Ceci, S. J., Loftus, E. F., Leichtman, M. D., & 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.

Ceci, S. J., Ross, D. F., & Toglia, M. P. (1987). Suggestibility of children's memory: Psycholegal implications. Journal of Experimental Psychology: General, 116, 38-49.

Cederborg, A-C., La Rooy, D., & Lamb, M. (2008). Repeated interviews with children who have intellectual disabilities. Journal of Applied Research in Intellectual Disabilities, 21, 103-113.

Cordon, I.M., Pipe, M-E., Sayfan, L., Melinder, A., & Goodman, G.S. (2004). Memory for traumatic experiences in early childhood. Developmental Review, 24, 101-132.

Dent, H. R., & Stephenson, G. M. (1979). An experimental study of the effectiveness of different techniques of questioning child witnesses. British Journal of Social and Clinical Psychology, 18, 41-51.

Ebbinghaus, H. (1964/1885). Memory: A Contribution to Experimental Psychology. New York: Dover.

Erdelyi, M. H. (1996). The Recovery of Unconscious Memories: Hypermnesia and Reminiscence. Chicago: University of Chicago Press.

Erdmann, K., Volbert, R., & Bohm, C. (2004). Children report suggested events even when interviewed in a non-suggestive manner: What are the implications for credibility assessment? Applied Cognitive Psychology, 18, 589-611.

Fivush, R. (1994). Young children's event recall: Are memories constructed through discourse? Consciousness and Cognition, 3, 356-373.

Fivush, R., Haden, C., & Adam, S. (1995). Structure and coherence of preschoolers' personal narratives over time: Implications for childhood amnesia. Journal of Experimental Child Psychology, 60, 32-56.

Fivush, R., & Hamond, N. R. (1989). Time and again: The effect of repetition interval on 2 year olds' event recall. Journal of Experimental Child Psychology, 47, 259-273.

Fivush, R., & Hamond, N. R. (1990). Autobiographical memory across the preschool years: Toward reconceptualizing childhood amnesia. In R. Fivush & J. A. Hudson (Eds.), Knowing and Remembering in Young Children (pp. 223-248). New York: Cambridge University Press.

Fivush, R., Hamond, N. R., Harsch, N., Singer, N., & Wolf, A. (1991). Content and consistency in young children's autobiographical recall. Discourse Processes, 14, 373-388.

Fivush, R., McDermott Sales, J., Goldberg, A., Bahrick, L., & Parker, J. (2004). Weathering the storm: Children's long-term recall of Hurricane Andrew. Memory, 12, 104-118.

Fivush, R., & Schwarzmueller, A. (1995). Say it once again: Effects of repeated questions on children's event recall. Journal of Traumatic Stress, 8, 555-580.

Flin, R., Boon, J., Knox, A., & Bull, R. (1992). The effect of a five-month delay on children's and adults eyewitness memory. British Journal of Psychology, 83, 323-336.

Follmer Greenhoot, A., Ornstein, P. A., Gordon, B. N., & Baker-Ward, L. (1999). Acting out the details of a pediatric check-up: The impact of interview condition and behavioral style on children's memory reports. Child Development, 70, 363-380.

Gee, S., & Pipe, M-E. (1995). Helping children to remember: The influence of object cues on children's accounts of a real event. Developmental Psychology, 31, 746-758.

Gobbo, C. (2000). Assessing the effects of misinformation on children's recall: How and when makes a difference. Applied Cognitive Psychology, 14, 163-182.

Goodman, G. S., Hirschman, J. E., Hepps, D., & Rudy, L. (1991). Children's memory for stressful events. Merrill-Palmer Quarterly, 37, 109-158.

Gordon, B. & Follmer, A. (1994). Developmental issues in judging the credibility of children's testimony. Journal of Clinical Child Psychology, 23, 283-294.

Greenstock, J. & Pipe M-E. (1997) Are two heads better that one? Peer support and children's eyewitness reports. Applied Cognitive Psychology, 11, 461-483.

Herskowitz, I., Orbach, Y., Lamb, M. E., Sternberg, K. J., Horowitz, D., & Hovav, M. (1998). Visiting the scene of the crime: Effects on children's recall of alleged abuse. Legal and Criminological Psychology, 3, 195-207.

Hershkowitz, I., & Terner, A. (2007). The effects of repeated interviewing on children's forensic statements of sexual abuse. Applied Cognitive Psychology, 21, 1131-1143.

Home Office. (2002). Achieving the Best Evidence in Criminal Proceedings: Guidance for Vulnerable or Intimidated Witnesses, Including Children. London: Author. Available from http://www.homeoffice.gov.uk

Howe, M. L., & Brainerd, C. J. (1989). Development of children's long-term retention. Developmental Review, 9, 301-340.

Howe, M. L., Kelland, A., Bryant-Brown, L., & Clark, S. L. (1992). Measuring the development of children's amnesia and hypermnesia. In M. L. Howe, C. J. Brainerd and V. F. Reyna (Eds), Development of Long-Term Retention (pp. 56-102). New York: Springer-Verlag.

Huffman, M. L., Crossman, A. M., & Ceci, S. J. (1997). "Are false memories permanent?": An investigation of the long-term effects of source misattributions. Consciousness and Cognition, 6, 482-490.

La Rooy, D., Pipe, M.-E., & Murray, J. E. (2005). Reminiscence and hypermnesia in children's eyewitness memory. Journal of Experimental Child Psychology, 90, 235-254.

La Rooy, D., Pipe, M.-E., & Murray, J. E. (2007). Enhancing children's event recall after long delays. Applied Cognitive Psychology, 21, 1-17.

Leichtman, M. D., & Ceci, S. J. (1995). The effects of stereotypes and suggestions on preschoolers' reports. Developmental Psychology, 31, 568-578.

Lindberg, M. C., Jones, S., McComas Collard, L., & Thomas, S. W. (2001). Similarities and differences in eyewitness testimonies of children who directly versus vicariously experience stress. The Journal of Genetic Psychology, 162, 314-333.

Loftus, E. F. (2005). Planting misinformation in the human mind: A 30-year investigation of the malleability of memory. Learning & Memory, 12, 361-366.

Melnyk, L., & Bruck, M. (2004). Timing Moderates the effects of repeated suggestive interviewing on children's eyewitness memory. Applied Cognitive Psychology, 18, 613-631.

Memon, A., Wark, L., Bull, R., & Koehnken, G. (1997). Isolating the effects of the cognitive interview techniques. British Journal of Psychology, 88, 179-197.

Merritt, K. A., Ornstein, P. A., & Spicker, B. (1994). Children's memory for a salient medical procedure: Implications for testimony. Pediatrics, 94, 12-23.

Murachver, T., Pipe, M-E., Gordon, R., Owens., J. L., & Fivush, R. (1996). Do, show, and tell: Children's event memories acquired through direct experience, observation, and stories. Child Development, 67. 3029-3044.

Ornstein, P. A., Baker-Ward, L., Gordon, B. N., Pelphrey, K. A. Staneck Tyler, C., & Gramzow, E. (2006). The influence of prior knowledge and repeated questioning on children's long-term retention of the details of a paediatric examination. Developmental Psychology, 42, 332-344.

Ornstein, P. A., Gordon, B., & Larus, D. M. (1992). Children's memory for a personally experienced event: Implications for testimony. Applied Cognitive Psychology, 6, 49-60.

Payne, D. G. (1987). Hypermnesia and reminiscence in recall: A historical and empirical review. Psychological Bulletin, 101, 5-27.

Peterson, C. (1996). The preschool child witness: Errors in accounts of traumatic injury. Canadian Journal of Behavioural Science, 28, 36-42.

Peterson, C. (1999). Children's memory for medical emergencies: 2 years later. Developmental Psychology, 35, 1493-1506.

Peterson, C., & Bell, M. (1996). Children's memory for traumatic injury. Child Development, 67, 3045-3070.

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.

Peterson, C., Pardy, L., Tizzard-Drover, T., & Warren, K. L. (2005). When initial interviews are delayed a year: Effect on children's 2-year recall. Law and Human Behavior, 29, 527-541.

Peterson, C., Parsons, T., & Dean, M. (2004). Providing misleading and reinstatement information a year after it happened: Effects on long-term memory. Memory, 12, 1-13.

Peterson, C., & Whalen, N. (2001). Five years later: Children's memory for medical emergencies. Applied Cognitive Psychology, 15, S7-S24.

Pezdek, K., & Lam, S. (2007). What research paradigms have cognitive psychologists used to study "False memory," and what are the implications of these choices? Consciousness and Cognition, 16, 2-17.

Pipe, M.-E., Gee, S., Wilson, J. C., & Egerton, J. M. (1999). Children's recall 1 or 2 years after an event. Developmental Psychology, 35, 781-789.

Pipe, M-E., Lamb, M.E., Orbach, Y., & Cederborg, A-C. (2007). Child sexual abuse: Disclosure, delay and denial. Mahwah NJ: Lawrence Erlbaum.

Pipe, M-E., Lamb, M.E., Orbach, Y., & Esplin, P.W. (2004). Recent research on children's testimony about experienced and witnessed events. Developmental Review, 24, 440–468.

Pipe, M.-E., Sutherland, R., Webster, N., Jones, C. H., & La Rooy, D. (2004). Do early interviews affect children's long-term recall? Applied Cognitive Psychology, 18, 1-17.

Pipe, M.-E., & Wilson, J. C. (1994). Cues and secrets: Influences on children's event reports. Developmental Psychology, 30, 515-525.

Poole, D. A., & Lamb, M. E. (1998). Investigative interviews of children: A guide for helping professionals. Washington, DC: American Psychological Association.

Poole, D., & White, L. T. (1995). Tell me again and again: Stability and change in the repeated testimonies of children and adults. In M. S. Zaragoza & J. R. Graham & G. C. N. Hall & R. Hirschman & Y. S. Ben-Porath (Eds.), Memory and Testimony in the Child Witness (pp. 24-43). CA: Sage: Thousand Oaks.

Powell, M. B., Jones, C. H., & Campbell, C. (2003). A comparison of preschoolers' recall of experienced versus non-experienced events across multiple interviews. Applied Cognitive Psychology, 17, 935-952.

Powell, M. B., & Thomson, D. M. (1997). The effect of an intervening interview on children's ability to remember one occurrence of a repeated event. Legal and Criminological Psychology, 2, 247-262.

Principe, G. F., & Ceci, S. J. (2002). "I saw it with my own ears": The effects of peer conversations on preschoolers reports of nonexperienced events. Journal of Experimental Child Psychology, 83, 1-25.

Quas,J. A., Malloy, L. C. Melinder, A., Goodman, G. S., D'Mello, M., & Schaaf. (2007). Developmental Differences in the Effects of Repeated Interviews and Interviewer Bias onYoung Children's Event Memory and False Reports. Developmental Psychology, 43, 823-837.

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.

Scottish Executive. (2007). On the record: Evaluating the visual recording of joint investigative interviews with children. Edinburgh: Author. Available from http://www.scotland.gov.uk

Salmon, K., & Pipe, M.-E. (1997). Props and children's event reports: The impact of a 1-year delay. Journal of Experimental Child Psychology, 65, 261-292.

Salmon, K., & Pipe, M.-E. (2000). Recalling an event one year later: The impact of props, drawing and a prior interview. Applied Cognitive Psychology, 14, 99-120.

Steward, M. S., Steward, D. S., Farquhar L., Myers, J. E. B., Reinhart, M., Welker J., Joyce, N., Driskill, J., Morgan, J. (1996). Interviewing young children about body

touch and handling. Monographs of the Society for Research in Child Development, 57, (Serial No. 248).

Tizzard-Drover, T., & Peterson, C. (2004). The influence of an early interview on long-term recall: A comparative analysis. Applied Cognitive Psychology, 18 , 727-743.

Tucker, A., Mertin, P., & Luszcz, M. (1990). The effect of a repeated interview on young children's eyewitness memory. Australian & New Zealand Journal of Criminology, 23,117-124.

Wade, K. A., Sharman, S. J., Garry, M., Memon, A., Mazzoni, G., Merckelbachm, H. & Loftus, E. F. (2007). False claims about false memory research. Consciousness and Cognition, 16, 18-28.

Warren, A., & Lane, P. (1995). Effects of timing and type of questioning on eyewitness accuracy and suggestibility. In M. S. Zaragoza & J. R. Graham & G. C. N. Hall & R. Hirschman & Y. S. Ben-Porath (Eds.), Memory and Testimony in the Child Witness (pp. 44-60). CA: Sage: Thousand Oaks.

Wilson, J. C., & Pipe, M.-E. (1989). The effects of cues on young children's recall of real events. New Zealand Journal of Psychology, 18, 65-70.

Wixted, J. T. (2004). The psychology and neuroscience of forgetting. Annual Review of Psychology, 55, 235-269.

Table 1. Studies of repeated interviews. (The columns labeled Correct, Errors, and Accuracy report the results of repeated measures analysis of repeated interviews; “0” denotes no statistically significant change in recall across repeated interviews, “-“ denotes a significant decrease across repeated interviews, “+” denotes a significant increase across repeated interviews, and “n/a” identifies dependent variables that were not measured. Where developmental effects were explored the results are listed separately for each age group. The column labeled Delayed Control reports the studies that also used a between subject analysis to compare the effect of a repeated interview with a single interview delayed control condition and those marked "*" found a significant effect compared to control)

Stressful events							
Researcher(s)	Number of interviews	Last Interview	Delayed Control	Age groups	Correct	Errors	Accuracy
Ackil, Van Abbema, & Bauer (2003)	2	40 wks	no	3, 6, 9	0	n/a	n/a
Burgwyn-Bailes, Baker-Ward, Gordon, & Ornstein (2001)	3	1 yr	no	2-7	0	n/a	n/a
Fivush, McDermott Sales, Goldberg, Bahrick & Parker (2004)	2	6 yrs	no	3-4	+	n/a	n/a
Goodman, Hirschman, Hepps, & Rudy (1991) Exp. 4	2	1 yr	no	3-4, 5-6	-	0	n/a
Hershkowitz, et al, (1998)	2	7 wks	no	4-8, 9-11, 12-13	0	n/a	n/a

Table 1 cont.

Lindberg, Jones, McComas Collard & Thomas (2001)	3	4 wks	no	5	0	n/a	n/a
Merritt, Ornstein, & Spicker (1994)	2	6 weeks	no	5	0	n/a	n/a
Peterson (1996)	2	24 wks	no	2, 3, 4, 5, 9	-	n/a	n/a
Peterson (1999)	4	2 yrs	no	2, 3-4, 5-6, 12-13 8-9	0 -	n/a n/a	n/a n/a
Peterson & Bell (1996)	2	24 wks	no	2, 3, 4, 5, 9, 12-13	-	n/a	n/a
Peterson, Pardy, Tizzard-Drover & Warren (2005)	4	2 yrs	yes *	3-4 5-7, 8-9	+ +	+ -	n/a n/a
Peterson & Whalen (2001)	5	5 yrs	no	2, 3-4, 5-6, 8-9, 12-13	- (greatest decrease) -	n/a n/a	n/a n/a
Steward et al (1996)	3	6 mo	no	3-6	n/a	n/a	-
Tizzard-Drover & Peterson (2004)	3	1 yr	yes *	3-4, 5-6, 8-9	n/a n/a	n/a n/a	n/a n/a
Tucker, Mertin & Luszcz (1990)	1 or 2	1 wk	yes	5-6	-	n/a	n/a

Table 1 cont.

Well child medical examinations							
Baker-Ward, Gordon, Ornstein, Larus & Clubb (1993)	2	6 wks	yes	3 5,7	n/a n/a	n/a n/a	- 0
Follmer Greenhoot, Ornstein, Gordon & Baker-Ward (1999)	2	6 weeks	no	3, 5	0	n/a	0
Gordon & Follmer, (1994)	2	6 wks	no	3, 7 5	0 -	n/a n/a	0 0
Ornstein, Baker-Ward, Gordon, Pelphrey, Staneck Tyler & Gramzow (2006)	3	6 mo	no	4, 5, 6, 7	-	n/a	n/a
Ornstein, Gordon & Larus (1992)	2	3 wks	no	3 6	- 0	n/a n/a	n/a n/a
Salmon & Pipe (2000)	2	1 yr	yes	5-6	-	+	0
Staged interactive							
Baker-Ward, Hess & Flannagan (1990)	2 or 4	3 wks	yes	6, 10	n/a	n/a	-
Bruck, Ceci & Hembrooke (2002)	10	10 wks	no	3-5	+	+	n/a
Fivush & Hamond (1989)	2	12 wks	yes *	2	0	0	n/a
Gee & Pipe (1995)	2	10 wks	yes *	6, 9	n/a	n/a	n/a

Table 1 cont.

La Rooy, Pipe & Murray (2005) Exp. 1	2	1 day	no	5-6	+	+	n/a
La Rooy, Pipe & Murray (2005) Exp. 2	3	24 wks	no	5-6	0	0	n/a
La Rooy, Pipe & Murray (2005) Exp. 3	3	24 wks	no	5-6	-	+	n/a
La Rooy, Pipe & Murray (2007)	3	24 wks	no	5-6	-	+	n/a
Pipe, Gee, Wilson, Egerton (1999) Exp. 1	3	2 yrs	no	5-6, 9-10	-	0	-
Pipe Gee, Wilson, Egerton (1999) Exp. 2	3	1 yr	yes	6-7, 8-11	0 -	+ -	- -
Pipe, Sutherland, Webster, Jones & La Rooy (2004)	3	2 yrs	yes *	6 yrs	+	+	n/a
Pipe & Wilson (1994)	2	10 wks	no	6, 10	-	0	-
Powell & Thomson (1997)	2	12 wks	yes	4-5, 6-8	n/a	n/a	n/a
Quas, Molloy, Melinder, Goodman, D'Mello, & Schaaf (2007)	3	3 wks	yes	3, 5	n/a	n/a	n/a
Quas & Schaaf (2002)	3	3 weeks	no	3, 5	0	0	n/a
Salmon & Pipe (1997)	2	1 yr	no	4-5 6-7	- - (greatest decrease)	0 0	- -
Wilson & Pipe (1989)	2	10 wks	no	5	-	0	n/a

Table 1 cont.

Staged witnessed							
Flin, Boon, Knox & Bull (1992)	2	20 wks	yes *	5-6 9-10 Adult	- - 0	0 + 0	n/a n/a n/a
Melnyk & Bruck (2004) Exp. 2	4	27 wks	yes	4-6	0	+	n/a
Melnyk & Bruck (2004) Exp. 1	4	27 wks	yes	5-6	0	+	n/a
Memon, Wark, Bull & Koehnken (1997)	2	12 days	yes *	8-9	n/a	n/a	n/a
Powell, Jones & Campbell, (2003)	3	8 days	no	4-5	-	0	n/a
Real-life novel experience							
Fivush (1994)	16	2 yrs 6 mo	no	40 mo	+	n/a	n/a
Fivush & Hamond (1990)	3	1 yr 3 mo	no	30 mo	+	n/a	n/a
Fivush, Hamond, Harsch, Singer & Wolf (1991)	2	6 wks	no	30-35 mo	0	n/a	n/a
Film & video							
Bjorklund et al. (2000)	2	2-7	no	5, 7, Adult	0	+	n/a
Cassel & Bjorklund (1995)	2	4 wks	no	6, 8, Adult	-	n/a	n/a
Dent & Stephenson (1979) Exp. 1	6	8 wks	no	10-11	+	+	n/a
Dent & Stephenson (1979) Exp. 2	5	8 wks	no	10-11	+	0	n/a

Table 2. Experiments examining suggestibility effects across repeated interviews. Where there were developmental effects in the repeated measures analysis, the results are listed separately for each age group.

Researcher(s)	Suggestive Strategy(s)	Number of Interviews	Last interview	Delayed Control	Same interview protocol	Age	Do repeated interviews increase suggestibility?
Stressful events							
Burgwyn-Bailes, Baker-Ward, Gordon, & Ornstein (2001)	1. Misleading questions	3	1 year	no	yes	2-7	yes
Goodman, Hirschman, Hepps, & Rudy (1991) Exp. 4	1. Misleading questions	2	1 yr	no	yes	3-4 5-6	yes (greatest increase) yes
Lindberg, Jones, McComas Collard & Thomas (2001)	1. Misleading questions	3	30 days	no	no	5	no
Merritt, Ornstein, & Spicker (1994)	1. Misleading questions	2	6 wks	no	yes	5	no
Peterson, Parsons & Dean (2005)	1. Misleading questions	3	2 yrs	yes	yes	3-4, 5-6, 8-13	no
Tucker, Mertin & Luszcz (1990)	1. Misleading questions	2	7 days	yes	yes	5-6	no
Well child medical examinations							
Baker-Ward, Gordon, Ornstein, Larus & Clubb (1993)	1. Misleading questions	2	6 wks	yes	yes	3 5 7	no yes no
Gordon & Follmer, (1994)	1. Misleading questions	2	6 wks	no	yes	3, 5, 7	no
Ornstein, Gordon & Larus (1992)	1. Misleading questions	2	3 wks	yes	yes	3 6	yes (greatest increase) yes

Table 2 cont.

Staged interactive							
Bruck, Ceci & Hembrooke (2002)	1. Misleading information 2. Misleading questions 3. Peer pressure 4. Imagine (false) event 5. Encouragement 6. Praise 7. Event creation	10	12 wks	no	no	3-5	yes
Gee & Pipe (1995)	1. Misleading questions	2	10 wks	yes	yes	6, 9	no
Gobbo (2000) Exp. 1	1. Misleading questions	2	1 wk	no	yes	4-5, 7-8	no
Gobbo (2000) Exp. 2	1. Misleading questions 2. Misleading information	3	30 days	no	yes	4-5 7-8	yes (greatest increase) yes
Pipe, Gee, Wilson, & Egerton (1999) Exp. 2	1. Misleading questions	3	1 yr	no	yes	6-7, 8-11	no
Pipe, Sutherland, Webster, Jones & La Rooy (2004)	1. Misleading questions	3	2 yrs	yes	yes	6 yrs	no
Pipe & Wilson (1994)	1. Misleading questions	2	10 wks	no	yes	6 10	yes no
Principe & Ceci (2002)	1. Misleading questions 2. Social pressure	4	4 wks	no	no	3-5	yes
Quas, Molloy, Melinder, Goodman, D'Mello, & Schaaf (2007)	1. Misleading information 2. Misleading questions	3	3wks	yes	no	3,5	no
Quas & Schaaf (2002)	1. Misleading questions 2. Misleading information	3	3 wks	no	no	3, 5	yes

Table 2 cont.

Staged witnesses							
Flin, Boon, Knox & Bull (1992)	1. Misleading questions	2	20 wks	yes	no	5-6, 9-10, Adults	no
Leichtman & Ceci (1995)	1. Misleading information 2. Misleading questions 3. Misleading props	5	10 wks	no	no	3-4, 5-6	yes
Melnyk & Bruck (2004) Exp. 2	1. Misleading questions 2. Social pressure 3. Suggestion repetition	2	37 days	yes	no	4-6	yes
Powell, Jones & Campbell, (2003)	1. Peer pressure 2. Negative reinforcement 3. Social pressure 4. Misleading questions 5.Event creation	3	8 days	no	no	4-5	yes
Real-life novel experience							
Ceci, Huffman, Smith & Loftus (1994)	1. Misleading information 2. Imagination 3. Social pressure 4. Event creation	10	10 wks	no	no	3-4 5-6	no yes
Ceci, Lotfus, Leichtman, & Bruck (1994)	1. Imagination 2. Misleading information 3. Event creation	12	12 wks	no	no	3-4 5-6	yes (greatest increase) yes
Erdmann, Volbert, Bohm (2004)	1. Imagination 2. Guessing 3. Misleading information 4. Social pressure 5. Event creation	6	14 wks	no	no	6-8	yes
Huffman, Crossman & Ceci, (1997) follow up	1. Misleading questions 2. Imagination 3. Social pressure 4. Event creation	11	2 yrs	no	no	3-4, 4-5	no

Table 2 cont.

Film, video or story							
Cassel & Bjorklund (1995)	1. Misleading questions	3	30 days	yes	no	6, 8, Adult	no
Warren, Hulse-Trotter & Tubbs (1991)	1. Misleading questions	2	immediate	no	no	7, 12, Adult	no
Warren & Lane (1995)	1. Misleading questions	3	1 wk	yes	no	9 Adult	yes no