Encouraging more open-ended recall in child interviews

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The goal of child forensic interviewers is to obtain as much information as possible through open-ended recall. Unfortunately, typically interviewers quickly switch to focused questions. This article suggests a way of eliciting more open-ended recall by using the narrative elaboration (NE) procedure, which includes four initial prompts about event participants, context, actions, conversations, and thoughts. The procedure uses line drawings on cards as prompts and requires pre-training; although it substantially increases open-ended recall, in practice it is too time-consuming for regular use. The original NE procedure is compared with two streamlined versions with 3- to 7-year-olds: using NE cards with no pre-training and simply providing parallel NE verbal prompts without using the cards. The children in the streamlined NE interview with verbal prompts were found to provide as much additional information as those in the full NE interview, and considerably more than those in the control interview. Therefore, incorporating NE verbal prompts near the beginning of child interviews is an easy way to increase the amount of information that children provide in open-ended recall.

Keywords: child interviews; narrative elaboration procedure; NICHD interviews; open-ended recall; forensic interviews; child memory.

Introduction

With young children increasingly involved in the forensic and social services systems as eye-witnesses, considerable attention has been focused on the optimal way to interview them (Lamb, Malloy, Hershkowitz, & La Rooy, 2015). In the title of their study, Brown and Lamb (2015) cogently ask and answer a vital question: ‘Can children be useful witnesses? It depends on how they are questioned’. Interview protocols have been developed that describe best practices and provide structural guidance, such as the National Institute of Child Health and Human Development (NICHD) Protocol. Research has shown that using the NICHD Protocol improves the quality of child interviews as well as the amount of

information provided (Benia, Hauck-Filho, Dillenburg, & Stein, 2015; Lamb, Orbach, Hershkowitz, Esplin, & Horowitz, 2007). The NICHD Protocol has been locally adapted and widely used in multiple countries (La Rooy et al., 2015).

A cardinal tenet of these child interview protocols is that interviewers should maximize the amount of information obtained via open-ended questions, defined as prompts designed to elicit multi-word responses (La Rooy et al., 2015). Children provide more information when responding to open-ended prompts compared to focused questions (Sternberg, Lamb, Davies, & Westcott, 2001); this is even true for preschoolers who are forensically interviewed about sexual abuse (Gagnon & Cyr,

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2017). Furthermore, when responding to open-ended questions as opposed to closed questions with yes/no answers, forced-choice answers, or recognition memory prompts, the information is more likely to be accurate and less likely to be influenced by interviewer suggestion (Brown et al., 2013; Lamb et al., 2003; Orbach & Pipe, 2011).

Although best-practice recommendations are clear about the importance and value of open-ended questions, interviewers often turn to direct questions very early in the interview (Benson & Powell, 2015). This tendency has been found in research conducted in multiple countries, including New Zealand (Wolfman, Brown, & Jose, 2016), Canada (Luther, Snook, Barron, & Lamb, 2014), the United Kingdom (UK; Sternberg et al., 2001), the United States (US; Sternberg et al., 2001), and Australia (Powell & Hughes-Scholes, 2009), regardless of child age. For example, Wolfman et al. (2016) found that interviewers typically provide only four open-ended prompts before resorting to direct questions.

Unfortunately, younger children (especially preschoolers and kindergartners) provide relatively little information in response to the few open-ended questions they are asked, as compared to older children (e.g., 8 years and over; Lamb et al., 2003). One of the reasons that young children's responses are so limited is a common property of their reports; they typically provide information in piecemeal fashion – that is, they provide only a small amount of information in response to a question, and then stop (Brubacher, Peterson, La Rooy, Dickinson, & Poole, 2019). Interviewers often assume that children have finished at this point; however, in reality they may still have a lot more to say but are waiting for additional prompts to continue (for examples, see Brubacher et al., 2019). The result of interviewers' often erroneous assumptions about when children have exhausted the information they are willing and able to provide in response to open-ended prompts, coupled with

the early switch to more direct questions, is a paucity of information.

One possible way of ameliorating this tendency of interviewers to move on to direct questions is to provide a larger variety of open-ended prompts in the initial pre-substantive or practice interview phase, as well as at the beginning of the substantive phase. Such a battery is provided in the narrative elaboration (NE) procedure proposed and developed by Saywitz and colleagues (Saywitz & Camparo, 2014; Saywitz & Snyder, 1996; Saywitz, Snyder, & Lamphear, 1996). In this procedure, children are taught to use four cards consisting of line drawings during an initial training process, such as after a storybook is read. The cards depict a stick figure of a person, a house and a tree, a broken window pane, and a face with a speech balloon. These cards are then used during subsequent interviews about target events. The cards deal with general, albeit important, properties of an event – participants, setting, actions, and conversations and affective states – and children are asked to recall any relevant information that the cards remind them about.

A number of studies have shown the use of these cards after initial training to be effective in eliciting considerably more information from children during interviews. In each study, the children in the NE condition received a prior card training and practice session, and then the children in all conditions were given the same interview with one exception: near the beginning of their interviews, the children in the NE condition were reshown the cards and asked about card-relevant information. A substantial increase in the information obtained from children by using the NE procedure has been achieved in both staged laboratory and classroom analog events with elementary-school-aged children (Brown & Pipe, 2003a, 2003b; Camparo, Wagner, & Saywitz, 2001; Nathanson, Crank, Saywitz, & Ruegg, 2007; Saywitz et al., 1996; Saywitz & Snyder, 1996) and preschoolers (Bowen & Howie, 2002; Dorado & Saywitz, 2001).

In the majority of these studies, a classroom activity was interrupted by a planned disagreement between the invigilator of the activity and another confederate. The NE procedure was also used for assessing 3- to 7-year-olds' recall of an ecologically relevant real-life event, specifically an injury serious enough to require hospital emergency room treatment (Peterson, Warren, & Hayes, 2013). All of these studies found that the use of the NE cards is effective in increasing children's open-ended recall. One strength of these studies is that the events about which the children were interviewed were known; therefore, the investigators could document that this substantial increase in information is not associated with an increased proportion of errors.

Importantly, the use of the NE cards after initial free recall offers additional opportunities for the child to provide open-ended recall prior to being given more focused prompts. It also fosters more opportunities later on for interviewers to use focused probes that follow up on prior information provided by the child; follow-up questions based on the child's own prior information (also called cued invitations) are recommended by the NICHD Protocol. However, using the NE cards is time-consuming and cumbersome, since it involves not only pre-training the child in the use of the cards but also taking the additional time to either read or tell a story and then have the child practice card use in this initial task. Because of the additional time and effort involved, such NE training is unlikely to be carried out in practice. Therefore, it is important to evaluate the effectiveness of alternative procedures that offer short-cuts – i.e., that elicit the same extended open-ended recall as the full NE procedure but without needing extended pre-training in card use. One such short-cut is simply giving children the verbal prompts associated with each NE card. This option has seldom been explored, although in one study it was found to be effective for 7- to 8-year-olds. Brown and Pipe (2003a) either provided children with a pre-interview NE

training session or alternatively – for the children in the verbal-prompt-only condition – spent an equal amount of time providing a rapport-building session prior to the interview. However, it is not known if this prior session of rapport-building is necessary; if verbal prompts by themselves – without increases in time through separate rapport-building sessions – are shown to increase child open-ended recall substantially then they can be readily incorporated into standard interviewing protocols such as the NICHD Protocol.

The current study

The current study builds on the strengths of the NE procedure for interviewing children by exploring two potential alternatives to the full NE procedure that do not require pre-training through practice with and modeling the use of the NE cards. One alternative is to present the cards during the initial portion of the interview with no prior training in their use. When the cards are presented, they are preceded by an introduction: 'A good way to tell about things that happen to you is to use these reminder cards. I have four cards that might help you remember more'. When each card is individually presented, it is labeled identically to how it would have been labeled during pre-training. For example: 'This is the Places Card. It reminds you to tell where it [the event] was and how the place looked. Does this card remind you to tell me anything else?' (A description of each card is provided below.) The second alternative is simply to give the verbal prompts associated with each card without the cards being presented. For example: 'Tell me more about where it [the event] was and how the place looked.' (Each verbal prompt is described below.) For comparison, the full NE technique with training was also carried out with a third group of children, and a fourth group only experienced standard initial free-recall prompts (the control condition). Children were quasi-randomly assigned to one of the four conditions.

Preschool-age and primary-school-age (kindergarten and grade one) children experienced a group event in their preschool or school and were subsequently interviewed individually. All interviews began with free recall and ended with a standardized interview that has been used in considerable prior research (Peterson, 2012). The interview was based on knowledge of the event and thus was extensive and detailed in relation to determining exactly what the children recalled. Because the purpose of this study is to explore how much of what the children recalled was produced during open-ended recall, the subsequent detailed interview did not parallel the NICHD interview, which of course is not based on prior knowledge of event specifics. Furthermore, to assess the effectiveness of the interview itself rather than rapport procedures, minimal rapport-building was undertaken prior to child interviews.

Method

Participants

Preschool (3- to 5-year-olds) and primary school (5- to 7-year-olds, kindergarten and grade one) children were recruited from six childcare centres and three schools in a city in Eastern Canada. According to Statistics Canada (n.d.), 97.7% of the population of Newfoundland (from which the sample was selected) is white. Children with consent forms signed by their parent or guardian were included. A total of 59 preschool children ($M = 4.27$ years of age, $SD = 0.63$ years, 17 male) and 74 primary school children ($M = 6.37$ years of age, $SD = 0.55$ years, 41 male) were interviewed. Of these, 33 preschool children ($M = 3.74$ years of age, $SD = 0.59$ years, 17 male) and 2 primary school children ($M = 5.82$ years of age, $SD = 0.73$ years, 2 male) were excluded for shyness, failing to complete the interview, or preferring to talk about other events despite redirection.

Materials

Saywitz and Snyder's (1996) NE cards were used for the full NE interview and the streamlined NE interview with cards (Figure 1). The People Card was renamed the People and Animals Card because of the nature of the staged activity. Training for the full NE interview was carried out using a short storybook about a puppy. The storybook was written and illustrated for the purposes of this study in order to guarantee that no child would be familiar with it prior to training.

Procedure

The children experienced a staged activity in their school or preschool. They were then quasi-randomly assigned to one of four conditions: (a) the full NE interview (which includes pre-training); (b) the streamlined NE interview with cards (where the cards are presented after free recall but with no pre-training); (c) the streamlined NE interview with verbal prompts (where verbal prompts are given without the use of the NE cards); or (d) the control interview.

Staged activity

A staged activity was presented that lasted approximately six minutes and involved a presentation and a puppet show. The presentation began when a presenter entered the room with a live bunny in a cage. The presenter introduced Neil the bunny to the children and placed him on her lap. She showed the children pictures of two different types of bunnies and taught them about how to take care of a bunny. While the presenter was feeding a carrot to Neil, an angry confederate interrupted the presentation, insisting that Neil have his nap. The presenter and interrupter apologized to each other, and the interrupter left with the bunny. The children were then shown a puppet show written about Neil and his friend Sara. The puppet show involved the two bunnies trying to find carrots to make a carrot cake. After discovering that Neil's garden had been

Figure 1. Narrative elaboration (NE) cards (Saywitz & Snyder, 1996).

destroyed by a storm, they walked to Sara's house but were chased by a fox and got lost in the forest. They then found a farm owned by a friend, who gave them carrots and helped them get home. They all then made carrot cake. The full script, as well as pictures of the puppet show characters and scenes, are available upon request.

The staged activity was designed to be entertaining but also include many kinds of

information, including both positive and negative events, causal attribution, and temporal sequences. Prior to participant recruitment, the staged activity was presented to directors of a large multi-age childcare centre, who agreed that the activity is entertaining and age-appropriate. All presentations were video recorded to help determine the accuracy of the children's recall of uncontrollable events such as the bunny's behaviour.

Training

All the children in the full NE interview condition received an individual training session prior to the interview about the staged activity. The mean delay between the training session and the interview is 1.45 days (range = 1–5). During the training session, the children were introduced to the NE cards as a ‘good way to remember things’. Each card was introduced as follows:

- This is the People and Animals Card. It reminds you to tell who was there and how the people and animals looked.
- This is the Places Card. It reminds you to tell where it was and how the place looked.
- This is the What Happened Card. It reminds you to tell everything about what happened and what the people and animals did.
- This is the Talking Feeling Card. It reminds you to tell about what the people and animals said and how they felt.

The children practiced using the cards to recall information about a short storybook. If a child did not respond or provided only a short response, the interviewer helped to ensure that they understood the use of the NE cards prior to their interview. The children were given positive feedback and were told at the end of the training session that they had remembered a lot about the story. The interview about the staged activity was conducted on a separate day by the same interviewer.

No rapport-building session was undertaken with the children in the other three conditions; the children in the full NE interview condition were the only ones who interacted with their interviewer before the interview about the staged activity. This ensured that the effectiveness of the streamlined NE interviews would not rely on familiarity with the interviewer.

Interviews

The children were interviewed two weeks after the staged activity ($M = 14.08$ days, $SD = 1.90$, range = 11–20) by one of five trained female interviewers. All interviewers conducted interviews in all four conditions and with children in both age groups; any potential differences between interviewers are therefore spread across all conditions and age groups. All children gave oral assent prior to their interview and were able to stop at any time. At the beginning of every interview, the interviewer ensured that the child remembered the staged activity (‘I heard that a little while ago a bunny came to visit and that there was a puppet show’) then explained that they had not seen the activity and therefore did not know what had happened. Rapport-building across the study was minimal and consisted only of the interviewer talking to the child on the way to the interview room.

The interviews began with free recall, followed by NE recall (except in the control condition). This was repeated, as the children were asked about the presentation and the puppet show separately, in counterbalanced order. All interviews ended with specific questions, which are listed in [Appendix A](#). Between interview sections, and between NE cards or verbal prompts, the children were always asked if there was anything else that they remembered. Overall, the interviews were identical in all conditions except for the insertion of the NE questions into the three relevant conditions.

The NE-related questions in each condition were integrated as follows:

- Full NE interview: Each of the cards was presented again individually, and the children were asked if each card reminded them to tell anything else.
- Streamlined NE interview with cards: ‘A good way to tell about things that happen to you is to use these reminder cards. I have four cards that might help you to remember more.’ (The

cards were then introduced individually, and the children were asked if each card reminded them to tell anything else.)

- Streamlined NE interview with verbal prompts: ‘Now I have some more questions for you that might help you to tell some more of what you remember. Tell me more about all of the people and animals who were there and how the people and animals looked. Tell me more about where it was and how the place looked. Tell me more about what happened and what all of the people and animals did. Tell me more about what all of the people and animals said and how they felt.’
- Control interview: No NE-related questions were asked.

Coding

Audio recordings of the interviews were transcribed and coded for unique units of information (UIIs) about people, objects, locations, activities, attributes, times, emotions, and cognitions (Peterson et al., 2013). Animals were coded as objects. For example, the utterance ‘Neil’s carrots were ruined so they went to Sara’s house’ was coded as one object (carrots), one location (house), one activity (went), and three attributes (Neil’s, ruined, and Sara’s) for a total of six UIIs. The UIIs were coded for accuracy by interview section. If a child provided the same information in more than one section of the interview, it was only coded the first time so that the total number of UIIs provided in later sections corresponds to the amount of additional information provided in those sections. The UIIs were summed to determine the total number of correct and incorrect UIIs provided in each section of the interview. Two trained coders were used. Inter-rater reliability was based on 30 double-coded interviews, equally split between the interview conditions and age groups. The coders agreed in identifying 87.4% of the

UIIs. Of the UIIs that were identified by both coders, agreement on the interview section and accuracy were 99.08% and 94.80%, respectively. Disagreements were resolved through discussion.

Results

The UII data were analyzed using a series of univariate analyses of variance (ANOVAs). Two (age group) by four (interview condition) univariate ANOVAs were used to test the effects of age group and interview condition on the total number of correct and incorrect UIIs provided. The data were analyzed for each interview section – free recall, open-ended recall (a combination of free and NE recall), and specific questions – and for the interview as a whole. The NE recall section was analyzed in combination with the free recall section because the control interview does not include NE recall. When compared to the control interview, the open-ended recall in the NE interviews provides an indication of the open-ended recall gained by including an NE recall section. Preliminary analyses found no effect of gender.

Correct UIIs

A summary of the data for the correct UIIs is presented in Table 1. For free recall, there is an effect of age, $F(1, 125) = 39.78, p < .001, \eta_p^2 = .241$, with more correct UIIs provided by the primary school children ($M = 26.84, SD = 16.06$) than by the preschool children ($M = 11.31, SD = 10.86$), but no effect of interview condition and no interaction. For open-ended recall, the interaction between age group and interview condition is significant, $F(3, 125) = 3.04, p = .032, \eta_p^2 = .068$, therefore the two age groups were analyzed separately. There is no effect of interview condition in the preschool group, $F(3, 55) = 1.09, p = .361$, but there is, however, an effect of interview condition in the primary school group, $F(3, 70) = 7.78, p < .001, \eta_p^2 = .250$. The use of Games–Howell post hoc tests revealed

Table 1. Mean numbers of correct UIIs by interview section, age group, and interview condition.

Section	Age	Condition			
		Full NE <i>M (SD)</i>	NE Cards <i>M (SD)</i>	NE Verbal <i>M (SD)</i>	Control <i>M (SD)</i>
Free	Pres	10.08 (13.96)	10.69 (9.37)	10.33 (10.22)	14.00 (10.61)
	Prim	26.11 (18.12)	22.63 (11.50)	27.37 (15.29)	31.16 (18.62)
Open-ended	Pres	18.08 (18.34)	18.00 (12.43)	24.20 (19.80)	14.00 (10.61)
	Prim	63.06 (30.59)	49.05 (22.56)	71.84 (35.79)	31.16 (18.62)
Specific	Pres	20.39 (11.16)	20.63 (12.13)	23.27 (11.46)	27.13 (19.88)
	Prim	35.88 (15.89)	36.53 (15.04)	38.58 (18.99)	43.32 (18.23)
Total	Pres	38.46 (27.27)	38.63 (21.67)	47.47 (29.21)	41.13 (26.90)
	Prim	98.94 (39.65)	85.58 (33.69)	110.42 (49.44)	74.47 (33.27)

Note: Open-ended recall is the sum of free recall and responses to NE prompts.

that for the primary school children, the full NE interview ($M=63.06$, $SD=30.59$) and the streamlined NE interview with verbal prompts ($M=71.84$, $SD=35.79$) were more effective than the control interview ($M=31.16$, $SD=18.62$). The full NE interview and the streamlined NE interview with verbal prompts do not differ significantly from each other, and the streamlined NE interview with cards ($M=49.05$, $SD=22.56$) is not significantly different from any other condition.

For the specific questions section, there is an effect of age, $F(1, 125) = 31.91$, $p < .001$, $\eta_p^2 = .203$, with more correct UIIs provided by the primary school children ($M=38.65$, $SD=17.05$) than by the preschool children ($M=22.89$, $SD=14.09$), but there is no effect of interview condition and no interaction. The same pattern of results was found when considering the interview as a whole; there is an effect of age, $F(1, 125) = 71.84$, $p < .001$, $\eta_p^2 = .365$, with more correct UIIs provided by the primary school children ($M=92.18$, $SD=41.11$) than by the preschool children ($M=41.48$, $SD=25.88$), but no effect of interview condition and no interaction.

Incorrect UIIs

A summary of the data for the incorrect UIIs can be found in Table 2. For the free recall section, all the children reported similar

amounts of incorrect UIIs ($M=2.96$, $SD=3.86$). There is no effect of age group, $F(1, 125) = 0.42$, $p = .518$, or interview condition, $F(3, 125) = 0.43$, $p = .730$, and no interaction, $F(3, 125) = 0.49$, $p = .690$. In open-ended recall, there is an effect of interview condition, $F(3, 125) = 5.09$, $p = .002$, $\eta_p^2 = .109$, but no effect of age group, $F(1, 125) = 0.09$, $p = .770$, and no interaction, $F(3, 125) = 0.61$, $p = .612$. The use of Tukey post hoc tests shows that more incorrect UIIs were elicited in the full NE interview ($M=11.50$, $SD=12.32$) than in the control interview ($M=3.32$, $SD=4.68$), whereas the streamlined NE interview with cards ($M=8.29$, $SD=7.36$) and the streamlined NE interview with verbal prompts ($M=6.76$, $SD=7.36$) do not differ significantly from each other or from the other conditions in this regard.

In response to specific questions, all the children reported similar amounts of incorrect UIIs ($M=11.71$, $SD=10.29$). There is no effect of age group, $F(1, 125) = 0.76$, $p = .385$, or interview condition, $F(3, 125) = 0.56$, $p = .643$, and no interaction, $F(3, 125) = 0.44$, $p = .727$. The same is true for the interview as a whole ($M=18.98$, $SD=17.28$), with no effect of age group, $F(1, 125) = 0.15$, $p = .702$, or interview condition, $F(3, 125) = 2.50$, $p = .062$, and no interaction, $F(3, 125) = 0.59$, $p = .623$.

Table 2. Mean numbers of incorrect UIIs by interview section, age group, and interview condition.

Section	Age	Condition			
		Full NE <i>M (SD)</i>	NE Cards <i>M (SD)</i>	NE Verbal <i>M (SD)</i>	Control <i>M (SD)</i>
Free	Pres	2.54 (3.33)	2.94 (5.48)	2.27 (3.26)	3.13 (3.93)
	Prim	4.18 (2.90)	2.21 (2.64)	2.79 (3.31)	3.47 (5.31)
Open-ended	Pres	12.38 (16.07)	6.88 (9.89)	6.20 (6.29)	3.13 (3.93)
	Prim	10.82 (8.96)	6.11 (7.32)	7.15 (7.86)	3.47 (5.31)
Specific	Pres	15.85 (12.38)	12.88 (13.11)	11.60 (10.87)	10.27 (6.88)
	Prim	11.18 (10.85)	10.53 (11.00)	12.53 (9.87)	10.00 (7.58)
Total	Pres	28.23 (27.66)	19.75 (22.08)	17.80 (15.88)	13.40 (10.15)
	Prim	22.00 (17.74)	16.63 (13.91)	19.68 (16.62)	13.47 (9.89)

Note: Open-ended recall is the sum of free recall and responses to NE prompts.

Overall percentage accuracy

Another way of looking at the accuracy of the children's reports is to assess the overall percentage accuracy – i.e., what percentage of the information that the children provided is correct? A univariate ANOVA was conducted to test the effects of age group and interview condition on the percentage of the children's total number of UIIs (i.e., summing over both correct and incorrect UIIs) that was accurate. The preschool children ($M = 69.59\%$, $SD = 17.68\%$) were less accurate than the primary school children ($M = 84.08\%$, $SD = 8.85\%$), $F(1, 125) = 39.98$, $p < .001$, $\eta_p^2 = .242$, but there is no effect of interview condition, $F(3, 125) = 2.22$, $p = .089$, and no interaction, $F(3, 125) = 1.07$, $p = .364$.

Percentage of information provided in open-ended recall

A univariate ANOVA was conducted to test the effects of age group and interview condition on the percentage of total correct UIIs provided during open-ended recall. A greater percentage of correct UIIs provided in open-ended recall would be beneficial in real-world settings, as this would provide interviewers with more information on which to base their follow-up questions. The interaction between age group and interview condition is significant, $F(3, 125) = 3.33$, $p = .022$, $\eta_p^2 = .074$,

therefore the two age groups were analyzed separately. In the preschool group ($M = 41.12\%$, $SD = 16.56\%$) there is no effect of interview condition, $F(3, 55) = 0.83$, $p = .485$. There is, however, an effect of interview condition in the primary school group, $F(3, 70) = 16.14$, $p < .001$, $\eta_p^2 = .409$. The application of Tukey honestly significant difference (HSD) post hoc tests shows that, prior to the use of specific questions, a greater percentage of correct UIIs was provided by the children in the full NE interview ($M = 61.04\%$, $SD = 16.02\%$), the streamlined NE interview with cards ($M = 55.95\%$, $SD = 9.90\%$), and the streamlined NE interview with verbal prompts ($M = 64.87\%$, $SD = 9.04\%$) than by the children in the control interview ($M = 39.09\%$, $SD = 13.35\%$).

Discussion

The purpose of this study is to determine whether or not the NE approach can be streamlined for use with 3- to 7-year-olds. Unlike past attempts to streamline the NE approach, the present study involved completely omitting the training session without substituting a rapport-building session in the streamlined NE interview and control interview conditions.

The most important experimental condition to consider is the streamlined NE

interview with verbal prompts, because this condition potentially models questions that can be readily incorporated into interviews about a wide variety of events. The findings are very encouraging, at least for primary-school-aged children, as this age group provided as many correct UIs in open-ended recall as the children in the full NE interview condition, who received extensive pre-training in the use of visual card prompts to assist with their recall. Importantly, the children in the streamlined NE interview with verbal prompts condition also provided considerably more correct UIs in open-ended recall than the children in the control interview condition (72 versus 31 information details). Overall, approximately 65% of the total amount of correct UIs given by the children in the streamlined NE interview with verbal prompts condition was provided in open-ended recall, as compared to only 39% by the children in the control interview condition. This increase in correct information was not accompanied by an increase in erroneous information, since the children in the streamlined NE interview with verbal prompts condition did not differ from those in the control interview condition in the number of incorrect UIs provided, nor in the percentage accuracy of the entire interview. The accuracy rates for the primary-school-aged children across all conditions averages 84%.

These findings suggest that the effectiveness of the NE verbal prompts is not contingent on either prior training or the physical presence of cue cards; rather, these verbal prompts can stand alone as additional open-ended prompts that may be included in the early phases of interviews. In fact, it is appropriate for them to be used when engaged in the ‘practice memory’ that the NICHD Protocol recommends interviewers carry out as a preceding step before beginning questions about the target event, as well as during the forensic interview component itself.

Whereas differences between interview conditions were found for the kindergarten

and grade one age group, no such differences are present for the preschoolers. Even the preschoolers in the full NE interview condition (with pre-training in card use) did not differ from those in the other conditions, including the control interview condition – yet preschool-aged children in other studies have been found to improve their open-ended recall when the NE procedure is used (Bowen & Howie, 2002; Dorado & Saywitz, 2001; Peterson et al., 2013). Why are the findings here so different? A potential explanation is the lack of rapport-building with the children prior to questioning. This was a deliberate decision which was made in order to maximize the ability of the current study to assess the impact of NE procedure variants. However, rapport has been found to be an important variable that enhances outcomes in interviews (Hershkowitz, 2011; Hershkowitz, Lamb, Katz, & Malloy, 2013; Saywitz, Larson, Hobbs, & Wells, 2015). It has also been found that a more supportive interviewing style during the course of the interview is associated with obtaining both more information (Blasbalg, Hershkowitz, Lamb, Karni-Visel, & Ahern, 2019) and greater accuracy (Saywitz, Wells, Larson, & Hobbs, 2016). The fact that so many preschool-aged children were very shy and/or did not want to finish the interview supports this possible explanation for the present findings in regard to age group differences in interview condition efficacy.

Conclusion

The results of this study demonstrate that the NE procedure can be streamlined for 5- to 7-year-olds by omitting the training session and replacing the NE cards with corresponding verbal prompts, without decreasing the effectiveness of the technique or increasing incorrect recall. In real-world settings, the use of rapport-building activities would undoubtedly further enhance the amount of information obtained in open-ended recall. In

addition to eliminating the need for training and for interviewers to use the NE cards, the streamlined NE interview with verbal prompts removes any possible distraction that can be caused by the cards and any chance of children misinterpreting their purpose. Anecdotally, it was found that some of the children in this study were distracted by the NE cards (e.g., playing with the cards), which would not have occurred if only verbal prompts had been provided. The streamlined NE interview with verbal prompts can easily be incorporated into any forensic interview procedure, following free recall. These four simple questions will allow interviewers to gain more information from children in open-ended recall, without needing any special materials or training. The additional information provided in open-ended recall will further provide interviewers with more information on which to base specific follow-up questions, which can increase both the volume and the accuracy of information obtained from child eyewitnesses.

Ethical standards

Declaration of conflicts of interest

Heather Canning has declared no conflicts of interest.

Carole Peterson has declared no conflicts of interest.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee (TCPS-2) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

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Appendix A: Specific questions for all interviews

Questions about the bunny's visit

- What was the real bunny's name?
- Who was with the bunny?
- Was it a boy or a girl?
- What did he/she look like?

- What did the person teach you about bunnies?
- Did he/she show you any pictures?
 - *If say yes*: What were the pictures of?
- Did the bunny stay the whole time?
 - *If say stayed*: Did someone else come looking for the bunny? Why?
- Did someone take the bunny away? Why?
- Why did the bunny have to leave?
- Was the person who took the bunny away a boy or a girl?
- What did he/she look like?
- How did the person feel?
 - *If not answered*: Was the person angry or happy or sad?
- Did the person who taught you about bunnies leave too?

Questions about the puppet show

- Was anyone else there for the puppet show?
 - *If say no*: What about the people who did the puppet show?
 - *If say multiple people*: Were there any boys? How many? What did they look like?
 - Were there any girls? How many? What did they look like?
 - *If say one person*: Was it a boy or a girl? What did he/she look like?
- What was the puppet show about?
- Who were the animals in the puppet show?
- What were their names?
 - *If do not know, ask which puppet was which*: Who was ____? Who was ____?
- What did the bunnies want carrots for?
- Where did the bunnies go to find carrots?
 - *If say Sara's*: Did they go somewhere else first?
 - *If say garden*: Did they get the carrots there?
 - ☐ *If no*: Why not?
 - ☐ *If yes*: Did they go anywhere else to get more carrots? Where?

- *If say nothing:* So they didn't go anywhere to find carrots? Did they go to a garden?
- Where did the bunnies go for carrots when they found out the garden was destroyed?
- Did anything happen on their way to Sara's?
 - *If nothing:* Did they get lost?
- How did the bunnies get lost?
- How did they find their way home?
 - *If do not mention farmer:* Did someone help them? Who?

- *If mention farmer:* What was the farmer's name? What kind of animal was the farmer?
- Did the bunnies ever get carrots to make their carrot cake?
- Where did they get the carrots?

Note: Questions were adjusted to fit the recall of the children such that if a child provided the information related to a specific question in an earlier part of the interview, that specific question was not asked.