STREAMLINING THE NARRATIVE ELABORATION TECHNIQUE:

HELPING YOUNG CHILDREN BECOME BETTER EYEWITNESSES

by

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A Thesis submitted to the

School of Graduate Studies

in partial fulfillment of the requirements for the degree of

Masters of Science

Psychology Department

Memorial University of Newfoundland

August 2014

St. John's, Newfoundland

Abstract

The Narrative Elaboration Technique (NET) is a forensic interview technique that has been shown to increase the amount of information provided by children in open-ended recall. Efforts have been made to streamline the technique for use in real-world settings. The present study examined the effectiveness of two streamlined NET interviews with three to seven year old children. It is the first study to completely omit the NET training session, without substituting a rapport building session, and to test the effectiveness of NET verbal prompts with children younger than six years old. Although NET was not found to be effective at increasing open-ended recall with the younger children in the sample, the streamlined NET interview with verbal prompts proved to be as effective as the full NET interview with five to seven year old children. These verbal prompts could be readily incorporated into forensic interviews.

Keywords: Narrative Elaboration Technique, young children, event recall, verbal prompting, interviewing

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Streamlining the Narrative Elaboration Technique:

Helping Young Children Become Better Eyewitnesses

It was once thought that children could not provide credible eyewitness testimony as they lacked the ability to differentiate between what was real and what was imaginary (see Brainerd & Reyna, 2012, for a review). As the reports of children could not be trusted, injustices against children went unheard in cases where there were no corroborating adult eyewitnesses or physical evidence. Fortunately, research has shown that our original beliefs about children's memory were wrong. Children have the potential to be good eyewitnesses. They have the capacity to accurately store information about their experiences and, if interviewed properly, they can accurately report this information (Bruck, Ceci, & Hembrooke, 2002; Lamb et al., 2003; Larsson & Lamb, 2009; Peterson, 2002; Saywitz & Snyder, 1996). When interviewing child eyewitnesses, it is critical that interviewers be able to obtain complete and accurate accounts of events, especially in cases where there are no adult eyewitnesses or concrete evidence, as is common with cases of child abuse (Dorado & Saywitz, 2001; Lamb, Malloy, & La Rooy, 2011; Larsson & Lamb, 2009; Saywitz & Snyder, 1996). Inaccurate information obtained from child eyewitnesses can result in false accusations of abuse or failure to convict perpetrators of abuse (Saywitz & Snyder, 1996).

The way that interviews are conducted with children is very important as it can affect the accuracy and amount of information recalled (Larsson & Lamb, 2009). Research with children has demonstrated that the most accurate recall comes in response to open-ended, free recall questions (Bruck et al., 2002; Lamb et al., 2003; Peterson &

Bell, 1996; Saywitz & Snyder, 1996). Unfortunately, young children generally provide

very little information in response to this form of questioning (Bruck, Ceci, & Melnyk,

1997; Lamb et al., 2003) and interviewers, therefore, need to use specific or forced-choice

questions to obtain a more complete account of events (Peterson & Grant, 2001). There

are several problems associated with the use of these types of questions. Children are

prone to suggestion (Bruck et al., 2002; Saywitz & Snyder, 1996). Specific questions are

therefore problematic when they are framed in a suggestive or leading manner. This

problem is greatest with preschool children as they are more suggestible than older

children and generally provide fewer details in open-ended recall, requiring more specific

questions to be asked by the interviewer (Ceci & Bruck, 1995; Saywitz & Snyder, 1996).

Yes-or-no questions are problematic because children prefer not to answer "I don't

know", and have a tendency to answer "yes", wanting to be helpful and agreeable

(Peterson & Grant, 2001; Peterson, Warren, & Hayes, 2013). Research has found that

children will even answer nonsensical yes-or-no questions (e.g. "Is a fork happier than a

knife?") and will provide justification for their responses if asked to do so (Hughes &

Grieve, 1980; Pratt, 1990, p. 170). Another problem with the use of specific or forced-

choice questions is that the beliefs of the interviewer may influence the kinds of questions

that are asked, as well as how the questions are asked. This is referred to as interviewer

bias. Interviewer bias may lead the interviewer to search for information that would

confirm his/her beliefs about the event (Bruck & Ceci, 1999; Bruck et al., 1997).

　　　　The problems associated with specific and forced-choice questions, as well as

with interviewer bias, make it important that as much information as possible be obtained

in the open-ended recall section of an interview, especially when interviewing preschool-

aged children (Lamb et al., 2003). The more information that can be obtained in open-

ended recall, the more information the interviewer has on which to base their follow-up

questions and the fewer specific or forced-choice questions need to be asked for

clarification and elaboration (Camparo, Wagner, & Saywitz, 2001; Saywitz & Snyder,

1996). The question that remains is how interviewers can obtain the information that they

require in open-ended recall, when children do not provide it on their own? One

promising solution to this problem is an interview technique known as the Narrative

Elaboration Technique (NET).

Narrative Elaboration Technique (NET)

The Narrative Elaboration Technique (NET), developed by Saywitz and Snyder

(1996), is a forensic interview technique that has been shown to increase the amount of

information provided by children in open-ended recall. NET involves showing children a

set of four cards with simple line drawings (see Appendix A) designed to prompt recall of

information about people, settings, actions, and conversations and affective states. NET

cards help children organize their thoughts during recall and also help children understand

the kind of information that is relevant to an interviewer, as well as the amount of detail

that they should provide (Saywitz & Snyder, 1996). This is important, as children do not

have the same understanding as adults about what is expected in a forensic interview

(Lamb et al., 2011). Before being interviewed with NET cards, children are given an

opportunity to practice using the cards. This training can be done by reading a story or

showing a film, followed by a practice interview about the content.

The NET interview consists of three sections – free recall, NET recall, and specific questions. During the NET recall section of the interview, the NET cards are presented one at a time and children are asked what each card reminds them to add to the information that they have already reported in free recall (Saywitz & Snyder, 1996). The cards direct children to talk about certain aspects of an event (e.g. the people who were there), allowing them to expand on their free recall before the interviewer begins to ask specific questions. The cards act as external cues that help children organize their recall, which is important because children are still developing their internal retrieval strategies and, therefore, have difficulty retrieving information on their own (Salmon, 2001; Saywitz & Snyder, 1996). NET is a technique with a lot of potential. It has been shown to be very effective in a number of research studies, both by the developers themselves and other researchers.

NET Research

In 1996, Saywitz and Snyder's first NET study was conducted with two groups of children, aged seven to eight and ten to eleven years old. The children were involved in a 30-minute-long interactive activity in their classroom, which included an interruption by an angry confederate (Saywitz & Snyder, 1996). Individual training sessions were conducted two weeks later. During this session, interviewers built rapport with the children and tested the children's vocabulary and free recall. In the NET training session, an analogy was used to explain why it is helpful to use recall strategies. The children were also told, "When you tell what happened to you, tell as much as you can about what really happened, even the little things, without guessing or making anything up" (Saywitz

& Snyder, 1996, p. 1350). The NET cards were then introduced and the children practiced

using the cards to recall about the earlier parts of the training session, as well as about two

short videos that they were shown. Children were given feedback by the interviewer

about additional details that they could have included in their recall (Saywitz & Snyder,

1996). Children in a second, instruction-based, condition received similar instructions in

their training sessions but were not shown the NET cards or given feedback on their recall

(Saywitz & Snyder, 1996).

Two days later, children were interviewed about the interactive activity by the

research assistant who had previously conducted their training session. The interviews

were approximately 15 minutes in duration and consisted of free recall, NET recall, and

28 specific questions (Saywitz & Snyder, 1996). Saywitz and Snyder (1996) found that

children in the NET condition recalled more correct information in open-ended recall than

did children in the instruction-based condition and the control condition. Furthermore,

they found that this increase in correct information was not accompanied by an increase

in incorrect information (Saywitz & Snyder, 1996). The results of this study were very

encouraging, suggesting that NET cards and training (rather than simply instruction-based

training) could help maximize the information obtained in the open-ended recall, without

increasing errors.

Additional studies have since been conducted on NET, all of which have found

results congruent with Saywitz and Snyder's (1996) original study. It has been

demonstrated that NET is an effective interview technique with interviews about both

staged activities (Dorado & Saywitz, 2001; Saywitz, Snyder, & Lamphear, 1996) and

real-life stressful events (Peterson et al., 2013). The children in these studies ranged in

age from three to eight years old (Dorado & Saywitz, 2001; Peterson et al., 2013; Saywitz

et al., 1996). Despite the success of NET in academic settings, NET research has involved

lengthy training sessions in which children practice using the NET cards prior to being

interviewed. These training sessions are time-consuming and limit the usefulness and

application of NET to real-world settings (Brown & Pipe, 2003a; Pipe, Lamb, Orbach, &

Esplin, 2004). With the original version of NET used by Saywitz and Snyder (1996), a

45-minute-long training session was required for each child. In a study conducted by

Dorado and Saywitz (2001), NET training consisted of two training sessions and a third

refresher session, for a total of 40 to 55 minutes spent with each child before the actual

interview. Training sessions such as these are not practical when there are limitations on

time and resources. A streamlined version of NET that does not require any prior training

would be more practical for use in the real world (Brown & Pipe, 2003a).

Streamlining and Improving NET

Bowen and Howie (2002) attempted to streamline NET by shortening the training

session. In their study, the analogy used by Saywitz and Snyder (1996) to illustrate the

usefulness of strategies was removed. Also, instead of practicing recall with an

autobiographical event and two short videos, Bowen and Howie (2002) used only a

storybook. After a delay of approximately one week, kindergarten students (four to six

years old) were interviewed about a staged activity, which involved a clown and an

interruption by an angry confederate. It was found that the children in the NET condition

recalled more correct information in open-ended recall than the children in the control

condition, suggesting that NET was still effective, despite the shortened training session

(Bowen & Howie, 2002). Shortening the training session was an important first step, but

it has yet to be determined whether the training session could be omitted entirely.

Other researchers have attempted to improve NET by examining the effectiveness

of verbal prompts given either in conjunction with or in place of the NET cards. Prior

research has shown that following initial free recall with verbal prompts, such as asking

children to elaborate on what they saw and heard in a video (e.g. "Tell me how everything

looked in the [room]"), is an effective way of increasing the amount of information

provided by children in open-ended recall (Elischberger & Roebers, 2001; Poole &

Lindsay, 1995, p. 135). It is, therefore, reasonable to assume that NET could be improved

by incorporating verbal prompts into the interview.

Brown and Pipe (2003b) examined whether verbal labels could be used to increase

the effectiveness of NET cards in interviews with six to eight year-old children. The cards

were presented twice to each child, once with no labels (e.g. "Does this card help you to

tell something else about [the activity]") and once with labels (e.g. "Does this card help

you to tell something else about who was there and how the people looked") (Brown &

Pipe, 2003b, p. 384). The staged activity in their study was a presentation about first-aid,

which featured an interruption by an angry confederate. Training was done two weeks

after the staged activity and involved using the NET cards to recall about a story and an

autobiographical event (i.e. the child's trip to school the morning of the training session).

When interviewed the following day, children in the NET condition recalled more correct

information than children in the control condition, in which the NET cards were used but

the children received no training in how to use them (Brown & Pipe, 2003b). In both

conditions, when verbal labels were given with the NET cards, children recalled more

information compared to when the NET cards were presented without verbal labels

(Brown & Pipe, 2003b). For children in the control condition, the verbal labels gave

meaning to the cards, making it easier for the children to use the cards as external cues to

aid recall. The results of the study suggest that it might be possible to use NET cards

effectively without training, if the purpose of the cards was explained to children during

the interview.

Brown and Pipe (2003a) conducted a second study to examine the effectiveness of

verbal prompts in place of the NET cards with six to eight year-old children. Their

methodology was very similar to their previous study in terms of the staged activity that

was used, as well as the time delays, training procedure, and control condition. However,

in one condition, the children were given verbal prompts (e.g. "Tell me more about the

people who were there and how they looked") instead of being shown the NET cards

(Brown & Pipe, 2003a, p. 199). Children in the verbal prompt condition recalled as much

correct information as children who received NET training, and both groups performed

better than children in the control condition (Brown & Pipe, 2003a). These findings

suggest that it might be possible to replace the NET cards with verbal prompts without

reducing the effectiveness of the technique.

There are two aspects of NET verbal prompts that remain untested. First, it has not

been determined whether verbal prompts would be effective with children younger than

six years old. Second, it has not been determined whether verbal prompts are effective

without a pre-interview rapport-building session. Prior to the interviews in Brown and

Pipe's (2003a) study, children in the NET condition received NET training, while

children in the verbal prompt condition received a rapport-building session that involved

recalling information about a story without using the NET cards. This form of control

session has been used in previous research (Bowen & Howie, 2002; Brown & Pipe,

2003a, 2003b; Dorado & Saywitz, 2001; Saywitz & Snyder, 1996; Saywitz et al., 1996)

in order to keep the time spent by each child with the interviewer constant across

conditions (Dorado & Saywitz, 2001). These sessions may include activities such as

reading and recalling about a story, and sorting pictures into categories (Brown & Pipe,

2003a).

It is not clear how the rapport-building session may have influenced the results of

Brown and Pipe's (2003a) study. This type of session may be beneficial, as it allows

interviewers to build a rapport with children before interviewing them. Rapport building

is often considered to be an important step before interviewing children (Bull, 1995;

Larsson & Lamb, 2009). However, one study found that, when interviewing children

about suspected sexual abuse, children who had a shorter rapport building session (less

than 8 minutes) actually reported more information than children who had a longer

rapport-building session (Davies, Westcott, & Horan, 2000). Rapport building may

increase the amount of information recalled by children during an interview, but it may

also reduce the amount of information recalled by some children if it causes them to lose

interest in the interview (Davies et al., 2000). As the activities done in these sessions

(such as sorting pictures into categories) would likely not be done in real-world settings,

it is important that NET be tested without them. Ideally, rapport building will occur in

real-world settings, but it is important to determine the effectiveness of NET in less ideal

circumstances.

Present Study

The purpose of the present study was to determine whether NET could be

streamlined by removing the training and/or rapport building session and by replacing the

NET cards with verbal prompts, with a sample of three to seven year old children. The

effectiveness of two streamlined NET interviews was assessed. The streamlined

interviews were designed in such a way as to separate the effects of removing training

and removing the NET cards. In the first streamlined NET interview, the purpose of the

cards was explained to children during the interview as the cards were presented, rather

than in a pre-interview training session. Comparing this condition to the full NET

interview provides an indication of the effect of omitting training. In the second

streamlined interview, verbal prompts were used in place of the NET cards. Comparing

this condition to the two other NET conditions provides an indication of the effect of

removing the NET cards.

Neither of the streamlined interviews included any form of rapport-building

session. Omitting the rapport-building session allowed the researchers to create a worst-

case scenario, determining the effectiveness of NET cards and NET verbal prompts in

isolation from rapport building. The streamlined interviews were compared with a full

NET interview and a control interview that consisted only of free recall and specific

questions. The control interview was shorter than the NET interviews, unlike the control

conditions used in some past NET research (Brown & Pipe, 2003a; Dorado & Saywitz, 2001; Saywitz & Snyder, 1996; Saywitz et al., 1996), but allowed NET to be compared to a standard interview.

There were three goals for this research. The first goal was to determine if a streamlined version of NET without training could be effective at increasing the amount of information recalled by preschool (three to five year-old) and primary school (five to seven year-old) children in open-ended recall. As the only difference was the opportunity to practice using the cards prior to the interview in the full NET condition, we hypothesized that the streamlined NET interview with cards would be as effective as the full NET interview.

The second goal was to determine whether the findings of Brown and Pipe (2003b) could be applied to a younger sample of children and achieved without a rapport-building session. It is possible that the findings of Brown and Pipe (2003b) were contingent upon the rapport-building session and that the verbal prompts would not be as effective without it. We hypothesized that the streamlined NET interview with verbal prompts would be as effective as the full NET interview with the older children in the sample, but would be less effective than the full NET interview with the younger children. We believed that the younger children in the sample would have difficulty with the verbal prompt interview as it provides children with fewer external recall cues. The streamlined NET interview with cards provides two external cues to facilitate recall (i.e. questions to organize recall and visual aids), whereas the interview with verbal prompts provides only one external cue (i.e. questions to organize recall).

The final goal of this study was to compare the effectiveness of two streamlined NET interviews: the NET interview with cards and the streamlined NET interview with verbal prompts. We hypothesized that the streamlined NET interview with cards would be more effective than the streamlined NET interview with verbal prompts as it provides more external cues to facilitate recall.

Method

Participants

Preschool (i.e. three to five years old) and primary school (i.e. five to seven years old, kindergarten and grade one) children were recruited from six childcare centres and three schools in St. John's, Newfoundland. Teachers distributed consent forms to parents. Children with returned consent forms, signed by their parent or legal guardian, were included in the study.

The final sample (after exclusion) included 59 preschool children ($M = 4.27$ years, $SD = 0.63$ years, 17 male) and 74 primary school children ($M = 6.37$ years, $SD = 0.55$ years, 41 male). Descriptive statistics of the sample by age group and condition can be found in Table 1. Thirty-three preschool ($M = 3.74$ years, $SD = 0.59$ years, 17 male) and two primary school children ($M = 5.82$ years, $SD = 0.73$ years, 2 male) were excluded either for shyness, failing to complete the interview, or preferring to talk about other events despite redirection. Although the exclusion rate of preschool children was high, the researchers do not believe that it reflected poorly on NET. The interview locations were not always ideal, as not all childcare centers could provide a room that was free from distractions, and some children were simply not interested in speaking with the interviewer. Bound by ethical guidelines, the interviewers were required to stop the interview if a child asked to return to their classmates.

Table 1

Descriptive statistics of the sample by age group and interview condition

Age[1]	Condition	*n*	% Male	Age (years)		
				Min	*Max*	*M (SD)*
Pre	Full NET	14	43%	3.46	5.48	4.42 (0.60)
	NET Cards	15	27%	3.16	5.23	4.03 (0.65)
	NET Verbal	15	13%	3.09	5.35	4.31 (0.73)
	Control	15	33%	3.43	5.18	4.34 (0.51)
School	Full NET	17	59%	5.47	7.18	6.41 (0.51)
	NET Cards	19	58%	5.64	7.26	6.39 (0.54)
	NET Verbal	19	47%	5.33	7.33	6.40 (0.60)
	Control	19	58%	5.23	7.31	6.28 (0.58)

[1] Pre refers to preschool children. School refers to primary school children.

Materials

Saywitz and Snyder's (1996) NET cards (see Appendix A), were used for the full NET interview and the streamlined NET interview with cards. The People Card was renamed the People and Animals Card because of the nature of the staged activity. NET training for the full NET condition was done with a short storybook about a puppy named Spottie. The storybook was written and illustrated for the purposes of this study to guarantee that no child would be familiar with the story prior to training.

Procedure

Staged activity. A staged activity was presented to children in childcare centres and schools. The staged activity was approximately six minutes in duration and involved a presentation and a puppet show. The presentation began when a presenter entered the room with a live bunny in a covered cage. The presenter introduced Neil the bunny to the children and placed the bunny on her lap. She showed the children pictures of two different types of bunnies and taught the children about what is needed 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 destroyed by a storm, the two bunnies walked to Sara's house. On the way, the bunnies were chased by a fox and got lost in the forest. Happily, they found a farm owned by their dog friend, Farmer Bill, who was able to help them get home and give them carrots. The bunnies then invited the farmer to stay and make carrot cake with them. The full script of the staged activity, as well as pictures of the puppet show characters and scenes, can be found in Appendix C and D, respectively.

The staged activity was designed to be entertaining for the children, but also to include many kinds of information for the children to recall, including both positive and negative events, causal attribution, and temporal sequences. Prior to participant recruitment, the staged activity was presented to the directors of the Memorial University

Childcare Centre, all of whom agreed that the activity would be entertaining and age-appropriate for the children. The actors in the presentations were undergraduate and graduate students at Memorial University. While the actors were not the same for all presentations, the shirt and accessories worn for each role were consistent. All presentations were video recorded to help determine the accuracy of children's recall for uncontrollable events such as the bunny's behavior.

Training. Children in the full NET condition received an individual training session prior to the interview about the staged activity. The mean delay between the training sessions and interviews was 1.45 days (range = 1 – 5 days). During the training session, children were introduced to the NET cards as "a good way to remember things". Each card was introduced (e.g. "This is the People and Animals Card. It reminds you to tell who was there and how the people and animals looked") and the children practiced using the cards to recall information about a short storybook. If a child did not respond or if a child provided only a short response, the interviewer helped them to ensure that every child understood the use of the NET cards prior to being interviewed about the staged activity. 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 who had conducted the training session.

No rapport-building session was done with children in the streamlined NET conditions and the control condition. Children in the full NET condition were the only children who met and interacted with their interviewer before the interview about the

staged activity. This ensured that the effectiveness of the streamlined interview conditions did not rely on familiarity with the interviewer.

Interviews. Children were interviewed two weeks after the staged activity ($M = 14.08$ days, $SD = 1.90$ days, range $11 - 20$ days) by one of five trained female interviewers. The mean delays between presentations and interviews, as well as between NET training and interviews (full NET condition only) can be found in Table 2. All interviewers conducted interviews in all four conditions and four of the five interviewers conducted interviews with children in both age groups. Any potential differences between interviewers would, therefore, have been spread across conditions and age groups.

Interviews (see Appendix E) began with free recall, followed by NET recall (except in the control condition). This was repeated, as the children were asked about the presentation and the puppet show separately, in a counter-balanced order. All interviews ended with specific questions. Individual specific questions were omitted if the interviewer was confident that the child had already answered the question in the free recall or NET recall sections of the interview. This was done because children tend to change their response to a question if they are asked the question more than once, perhaps because they assume that the reason the question is being asked again is because their first answer was incorrect (Bruck et al., 2002; Ceci & Bruck, 1995). Between interview sections, and between NET cards or verbal prompts, children were always asked if there was anything else that they remembered. Prior to the testing phase, interview questions were reviewed and approved by Karen Saywitz, one of the developers of NET.

Table 2

Mean delays between presentations and interviews and between NET training and

interviews by age group and interview condition

Age	Condition	Presentation to Interview Delay (days) *M (SD)*	NET Training to Interview Delay (days) *M (SD)*
Pre	Full NET	14.57 (2.62)	1.64 (1.28)
	NET Cards	14.33 (2.64)	--
	NET Verbal	14.47 (2.36)	--
	Control	14.53 (2.64)	--
School	Full NET	13.65 (0.61)	1.29 (0.77)
	NET Cards	13.32 (1.00)	--
	NET Verbal	14.16 (1.46)	--
	Control	13.95 (1.27)	--

The streamlined NET interview with cards was identical to the full NET

interview, except that the cards were introduced to the children during the first NET recall

section of the interview ("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"). In the

streamlined NET interview with verbal prompts, verbal prompts were substituted for the

NET cards. The wording of the verbal prompts was based on Saywitz and Camparo's

(2014) verbal category cues (e.g. "Tell me more about the people and animals who were there and how the people and animals looked").

All children gave oral assent prior to being interviewed and were able to stop the interview at any time. At the beginning of every interview, interviewers ensured that the children remembered the staged activity ("I heard that a little while ago a bunny came to visit and that there was a puppet show") and 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 interviewers talked to the children only long enough to start conversation and overcome any initial shyness.

Coding

Audio recordings of the interviews were transcribed and coded for Unique Units of Information (UUIs) (as done by Peterson et al., 2013) and completeness. The coding schemes can be found in Appendix F and G, respectively. Two trained coders were used for each coding scheme. Inter-rater reliability for each coding scheme was based on thirty double coded interviews, equally split between the four interview conditions and two age groups.

Information provided in the presentation and puppet show portions of the interview were not coded separately as it was found that children often combined their recall of the two and that it was sometimes ambiguous which portion a piece of information corresponded to (e.g. some elements, such as the people and the puppet show structure, were present throughout the staged activity).

Unique Units of Information (UUIs). The UUI coding scheme involved dividing the information provided by children into the smallest possible units of information, including eight information categories (people, objects, locations, activities, attributes, times, emotions, and cognitions). 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 UUIs.

UUIs were coded by interview section and accuracy. 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 UUIs provided in later sections corresponded to the amount of additional information provided by the child in that section. UUIs were summed to determine the total number of correct and incorrect UUIs provided in each section of the interview, as well as the total number of correct and incorrect UUIs that were classified in each of the information categories.

Reliability was based on 30 double coded interviews, which included a total of 2991 UUIs. The coders agreed in identifying 87.40% of UUIs. Of the UUIs that were identified by both coders, agreement on the interview section, information category and accuracy were 99.08%, 98.43%, and 94.80% respectively. Some difficulties were encountered during coding, which decreased reliability. For example, the coders at times had difficulty determining the meaning and relevance of some information provided by children (i.e. whether or not some information should be coded at all). The coders also had difficulty in determining whether some units of information were unique (i.e. whether

or not some information should be coded because it may have already been coded from earlier in the interview) because of the fact that the staged activity had repeated elements. For example, the word "bunny" could refer to the real bunny, bunnies in general, or either of the puppet bunnies. The word "carrots" could refer to the carrots that the presenter fed the real bunny, the carrots that the bunnies wanted in the puppet show, the ruined carrots in the garden, the carrots that Sara had at her house, or the carrots that the farmer gave to the bunnies. The less elaborative and clear a child was, the more difficulty there was in determining whether or not information provided was relevant and what the child was specifically referring to. Any disagreements were resolved by the coders, with the help of a third party with extensive experience with the UUI coding system.

There are several weaknesses in the UUI coding scheme. First, the UUI coding scheme does not take into consideration the relative importance of units of information. For example, one child described the presenter as having "a green shirt on", while another child described her shirt as "mostly green [...] There was so much green that the full of her shirt was green, no colour else!" Both children provided the colour of the presenter's shirt, but the second child's utterance was coded as more UUIs. A child can have a large number of correct UUIs in their interview, without necessarily providing a large amount of important information about the event. A second problem with the UUI coding scheme is that there is no way to differentiate between small errors (ex. "a *wolf* scared the bunnies away") and obviously fabricated stories (ex. "there was a big big big volcano there and it exploded hot lava […] they climbed down the volcano and they ran home and dumped some cold water on them"). There is also no way to differentiate between a child who

makes many errors throughout their interview, each coded as one or two UUIs, and a child who includes a one-sentence fabricated story that is coded as many UUIs.

Completeness. The completeness coding scheme allowed us to examine the data in a different way. In this coding scheme, only the information that the researchers considered to be important was included, giving a clearer picture of how much important information the children recalled about the staged activity. A list of 117 main details that could be recalled by the children was compiled and divided into six categories of information – people, presentation, puppet show characters, puppet show plot, puppet show sequence of events, and puppet show scenes.

Items were coded by interview section and accuracy. The four NET cards were treated separately, rather than as one section and repeated information was only coded the first time that it was provided. The percentage of correctly and incorrectly recalled main details was determined for each section of the interview, as well as for each of the six categories of information. The coding scheme was also used to determine the percentage of children's NET recall that was provided in response to each of the NET cards.

Reliability was based on 30 double coded interviews. Coders agreed on whether or not a detail was provided by a child for 89.51% of details. Of the details that they agreed were provided, agreement on the interview section and accuracy was 88.99% and 98.52% respectively. The third party who created the coding scheme resolved all disagreements.

Results

Unique Units of Information (UUIs)

UUI data were analyzed using a series of univariate analyses of variance (ANOVAs). Two (age group) by four (condition) univariate ANOVAs were used to test the effects of age group and interview condition on the total number of correct and incorrect UUIs provided. Data were analyzed by interview section – free recall, open-ended recall (i.e. a combination of free and NET recall) and specific questions – as well for the interview as a whole. The NET recall section of the interview was analyzed in combination with the free recall section, as the control condition did not include NET recall. When compared to the control condition, open-ended recall in the NET interview conditions provides an indication of the open-ended recall gained by including a NET recall section. Preliminary analyses found that gender was not a significant factor.

Correct UUIs. A summary of results for correct UUIs can be found in Table 3. For the free recall section, there was an effect of age group, $F(1,125) = 39.78$, $p < .001$, with primary school children providing more correct UUIs $(M = 26.84, SD = 16.06)$ than preschool children $(M = 11.31, SD = 10.86)$. There was no effect of condition, $F(3,125) = 1.08$, $p = .360$, and no interaction, $F(3,125) = 0.26$, $p = .854$. In open-ended recall, the interaction between age group and condition was significant, $F(3,125) = 3.04$, $p = .032$, and the two age groups were, therefore, analyzed separately. The results can be seen in Figure 1. There was no effect of condition in the preschool group, $F(3,55) = 1.09$, $p = .361$. There was, however, an effect of condition in the primary school group, $F(3,70) = 7.78$, $p < .001$. Games-Howell post hoc tests revealed that the full NET

interview ($M = 63.06$, $SD = 30.59$) and the streamlined NET interview with verbal

prompts ($M = 71.84$, $SD = 35.79$) were more effective than the control interview

($M = 31.16$, $SD = 18.62$) with primary school children. These two interviews did not

differ significantly from each other and the streamlined NET interview with cards

($M = 49.05$, $SD = 22.56$) was not significantly different from any of the other conditions.

Table 3

Mean numbers of correct UUIs by interview section, age group and interview condition

Section	Age	Condition				Sig.[1]
		Full NET	NET Cards	NET Verbal	Control	
		M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*p*
Free	Pre	10.08 (13.96)	10.69 (9.37)	10.33 (10.22)	14.00 (10.61)	.360
	Sch	26.11 (18.12)	22.63 (11.50)	27.37 (15.29)	31.16 (18.62)	
Open-Ended	Pre	18.08 (18.34)	18.00 (12.43)	24.20 (19.80)	14.00 (10.61)	.361
	Sch	63.06 (30.59)	49.05 (22.56)	71.84 (35.79)	31.16 (18.62)	< .001
Specific	Pre	20.39 (11.16)	20.63 (12.13)	23.27 (11.46)	27.13 (19.88)	.256
	Sch	35.88 (15.89)	36.53 (15.04)	38.58 (18.99)	43.32 (18.23)	
Total	Pre	38.46 (27.27)	38.63 (21.67)	47.47 (29.21)	41.13 (26.90)	.070
	Sch	98.94 (39.65)	85.58 (33.69)	110.42 (49.44)	74.47 (33.27)	

[1]Separate significance values for the two age groups are only provided in cases where

there was a significant interaction between age group and interview condition.
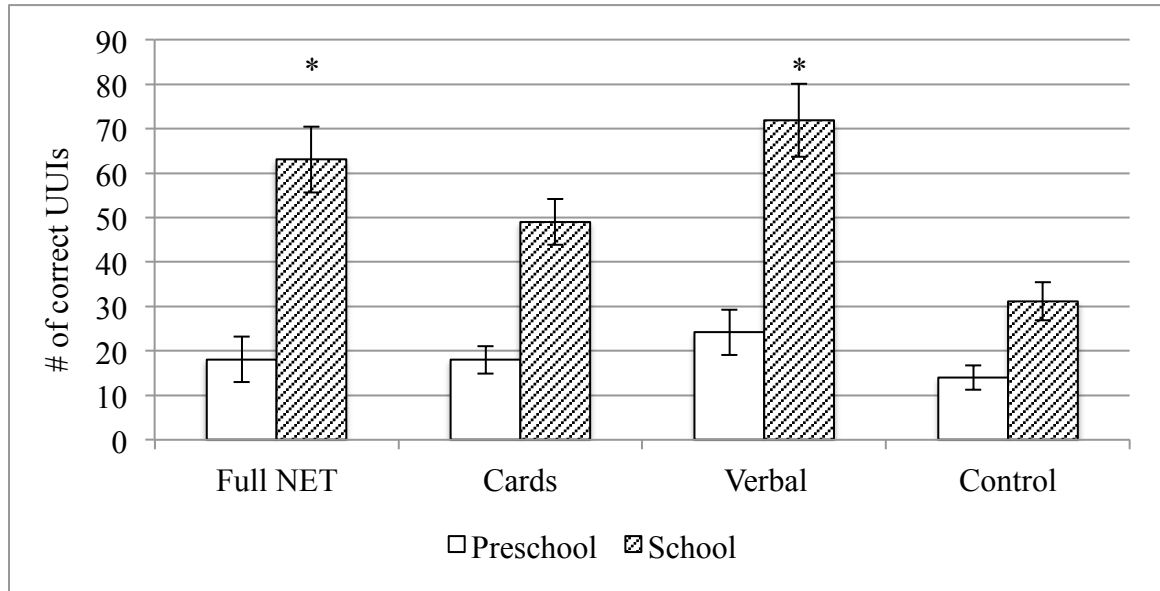
Figure 1. Mean numbers of correct UUIs in open-ended recall by age group and interview condition.

Note: Asterisks denote conditions that differ significantly from the control condition. Errors bars denote ± 1 standard error.

For the specific questions section, there was an effect of age group, $F(1,125) = 31.91$, $p < .001$, with primary school children providing more correct UUIs ($M = 38.65$, $SD = 17.05$) than preschool children ($M = 22.89$, $SD = 14.09$). There was no effect of condition, $F(3,125) = 1.37$, $p = .256$, and no interaction, $F(3,125) = .01$, $p > .999$. The same pattern of results was found when considering the interview as a whole. There was an effect of age group, $F(1,125) = 71.84$, $p < .001$, with primary school children providing more correct UUIs ($M = 92.18$, $SD = 41.11$) than preschool children

(M = 41.48, SD = 25.88), but no effect of condition, $F(3,125)$ = 2.41, p = .070, and no interaction, $F(3,125)$ = 1.30, p = .277.

As there was an effect of condition for open-ended recall, but not for the interview as a whole, an additional univariate ANOVA was conducted to test the effects of age group and condition on the percentage of children's total correct UUIs that was provided in open-ended recall. A greater percentage of correct UUIs provided in open-ended recall would be beneficial in real-world settings as it would provide interviewers would more correct information on which to base their follow-up questions. The interaction between age group and condition was significant, $F(3,125)$ = 3.33, p = .022, and the two age groups were, therefore, analyzed separately. In the preschool group (M = 41.12%, SD = 16.56%), there was no effect of condition, $F(3,55)$ = 0.83, p = .485. There was, however, an effect of condition in the primary school group, $F(3,70)$ = 16.14, p < .001. Tukey HSD post-hoc tests showed that children in the full NET condition (M = 61.04%, SD = 16.02%), the streamlined NET condition with cards (M = 55.95%, SD = 9.90%), and the streamlined NET condition with verbal prompts (M = 64.87%, SD = 9.04%) provided a greater percentage of correct UUIs prior to the use of specific questions than did children in the control condition (M = 39.09%, SD = 13.35%).

Incorrect UUIs. A summary of results for incorrect UUIs can be found in Table 4. For the free recall section, all children reported similar amounts of incorrect UUIs ($M = 2.96$, $SD = 3.86$). There was no effect of age group, $F(1,125) = 0.42$, $p = .518$, or condition, $F(3,125) = 0.43$, $p = .730$, and no interaction, $F(3,125) = 0.49$, $p = .690$. In open-ended recall, there was an effect of condition, $F(3,125) = 5.09$, $p = .002$, but no effect of age group, $F(1,125) = 0.09$, $p = .770$, and no interaction, $F(3,125) = 0.61$, $p = .612$. Tukey post hoc tests showed that the full NET interview ($M = 11.50$, $SD = 12.32$) elicited more incorrect UUIs than the control group ($M = 3.32$, $SD = 4.68$). The streamlined NET interview with cards ($M = 6.46$, $SD = 8.46$) and the streamlined NET interview with verbal prompts ($M = 8.29$, $SD = 7.36$) did not differ significantly from each other or from the other conditions.

In response to specific questions, all children reported similar amounts of incorrect UUIs ($M = 11.71$, $SD = 10.29$). There was no effect of age group, $F(1,125) = 0.76$, $p = .385$, or condition, $F(3,125) = 0.56$, $p = .643$, and no interaction, $F(3,125) = 0.44$, $p = .727$. The same was 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 condition, $F(3,125) = 2.50$, $p = .062$, and no interaction, $F(3,125) = 0.59$, $p = .623$.

Table 4

Mean numbers of incorrect UUIs by interview section, age group and interview condition

Section	Age	Condition				Sig.
		Full NET	NET Cards	NET Verbal	Control	
		M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*p*
Free	Pre	2.54 (3.33)	2.94 (5.48)	2.27 (3.26)	3.13 (3.93)	.730
	Sch	4.18 (2.90)	2.21 (2.64)	2.79 (3.31)	3.47 (5.31)	
Open-Ended	Pre	12.38 (16.07)	6.88 (9.89)	6.20 (6.29)	3.13 (3.93)	.002
	Sch	10.82 (8.96)	6.11 (7.32)	9.95 (7.86)	3.47 (5.31)	
Specific	Pre	15.85 (12.38)	12.88 (13.11)	11.60 (10.87)	10.27 (6.88)	.643
	Sch	11.18 (10.85)	10.53 (11.00)	12.53 (9.87)	10.00 (7.58)	
Total	Pre	28.23 (27.66)	19.75 (22.08)	17.80 (15.88)	13.40 (10.15)	.062
	Sch	22.00 (17.74)	16.63 (13.91)	22.47 (16.62)	13.47 (9.89)	

Information categories. The UUIs provided by children were classified by information categories. The mean numbers of UUIs provided in each information category in open-ended recall, regardless of accuracy, can be found in Table 5. The UUIs provided in response to specific questions were not included in these descriptive statistics. The differences between the three NET conditions and the control condition provide a general understanding of the information gained by including the NET recall section of the interview.

Table 5

Mean numbers of UUIs provided in open-ended recall by information category,

regardless of accuracy

Category	Age	Condition			
		Full NET	NET Cards	NET Verbal	Control
		M (SD)	*M (SD)*	*M (SD)*	*M (SD)*
People	Pre	1.77 (2.45)	1.69 (2.09)	1.40 (2.20)	0.33 (0.49)
	Sch	2.94 (2.22)	2.84 (2.39)	4.53 (4.02)	0.89 (1.10)
Objects	Pre	7.85 (7.89)	6.63 (5.11)	7.93 (7.61)	6.53 (5.21)
	Sch	16.35 (7.86)	13.11 (5.93)	17.89 (9.59)	8.84 (4.84)
Locations	Pre	2.46 (2.18)	1.75 (2.46)	1.47 (1.19)	1.20 (1.61)
	Sch	5.12 (2.52)	4.32 (2.19)	6.53 (3.79)	2.47 (2.12)
Activities	Pre	7.85 (7.97)	7.00 (5.05)	7.53 (6.38)	4.40 (3.00)
	Sch	15.18 (5.82)	13.05 (5.48)	17.26 (5.91)	9.74 (5.18)
Attributes	Pre	8.77 (10.08)	7.00 (7.98)	10.07 (7.28)	4.13 (4.56)
	Sch	28.29 (19.84)	18.05 (13.02)	29.26 (18.55)	10.58 (8.33)
Time	Pre	0.15 (0.38)	0.25 (0.58)	0.40 (0.63)	0.13 (0.35)
	Sch	1.47 (1.07)	1.05 (0.71)	1.05 (0.97)	0.79 (0.71)
Emotions	Pre	0.85 (0.80)	0.31 (0.60)	1.13 (1.30)	0.00 (0.00)
	Sch	1.88 (1.54)	1.16 (1.01)	2.53 (2.41)	0.42 (1.39)
Cognitions	Pre	0.77 (1.17)	0.25 (0.45)	0.47 (0.74)	0.40 (0.63)
	Sch	2.65 (1.87)	1.58 (1.35)	2.74 (2.18)	0.89 (1.24)

Completeness

Completeness data were analyzed using a series of univariate analyses of variance (ANOVAs). Two (age group) by four (condition) univariate ANOVAs were used to test the effects of age group and interview condition on the percentage of correctly and incorrectly recalled main details. As with the UUI analysis, data were analyzed by interview section – free recall, open-ended recall (i.e. a combination of free and NET recall) and specific questions – as well for the interview as a whole.

Percentage of correctly recalled main details. A summary of the results for correctly recalled main details can be found in Table 6. In the free recall section, there was an effect of age group, $F(1,125) = 43.82$, $p < .001$, with primary school children correctly recalling a greater percentage of main details ($M = 16.31\%$, $SD = 11.08\%$) than preschool children ($M = 5.65\%$, $SD = 6.17\%$). There was no effect of condition, $F(3,125) = 1.44$, $p = .234$, and no interaction, $F(3,125) = 0.37$, $p = .772$. In open-ended recall, the same pattern of results was found. There was an effect of age group, $F(1,125) = 80.30$, $p < .001$, with primary school children correctly recalling a greater percentage of main details ($M = 24.59\%$, $SD = 12.22\%$) than preschool children ($M = 8.33\%$, $SD = 7.72\%$). There was no effect of condition, $F(3,125) = 1.49$, $p = .220$, and no interaction, $F(3,125) = 0.72$, $p = .543$.

For the specific questions section of the interview, there was an effect of condition, $F(3,125) = 3.13$, $p = .028$, with children in the control condition ($M = 19.81\%$, $SD = 7.37\%$) correctly providing a greater percentage of main details than children in the streamlined NET with verbal prompts condition ($M = 15.16\%$, $SD = 6.50\%$). There was

no effect of age group, $F(1,125) = 1.45$, $p = .231$, and no interaction, $F(3,125) = 0.36$,

$p = .785$. For the interview as a whole, there was an effect of age group, $F(1,125) = 61.55$,

$p < .001$, with primary school children correctly recalling a greater percentage of main

details ($M = 41.00\%$, $SD = 11.23\%$) than preschool children ($M = 26.06\%$, $SD = 10.34\%$).

There was no effect of condition, $F(3,125) = 0.14$, $p = .938$, and no interaction,

$F(3,125) = 0.49$, $p = .684$.

Table 6

Mean percentages of correctly recalled main details by interview section, age group and

interview condition

Section	Age	Condition				Sig.
		Full NET	NET Cards	NET Verbal	Control	
		M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*p*
Free	Pre	3.36 (5.62)	5.81 (5.59)	5.70 (5.80)	7.58 (7.37)	.234
	Sch	15.69 (8.83)	14.93 (8.67)	14.53 (12.14)	20.02 (13.63)	
Open-Ended	Pre	7.39 (7.01)	8.72 (8.51)	9.57 (8.46)	7.58 (7.37)	.220
	Sch	25.64 (10.28)	24.02 (10.55)	28.79 (13.16)	20.02 (13.63)	
Specific	Pre	17.89 (8.62)	17.09 (6.09)	15.73 (5.88)	20.23 (8.81)	.028
	Sch	14.48 (5.11)	16.78 (3.70)	14.71 (7.09)	19.48 (6.23)	
Total	Pre	25.28 (9.51)	25.81 (8.20)	25.30 (12.45)	27.80 (11.51)	.938
	Sch	40.12 (9.52)	40.80 (9.65)	43.50 (12.89)	39.50 (11.99)	

Descriptive statistics summarizing the percentage of children's correct NET recall that was provided in response to each of the four NET cards (or NET verbal prompts) can be found in Table 7. Main details were also classified by categories of information. The percentage of main details correctly recalled in each category can be found in Table 8.

Table 7

Mean percentages of correct NET recall by NET card/prompt

Card	Age	Condition			
		Full NET	NET Cards	NET Verbal	Control
		M (SD)	*M (SD)*	*M (SD)*	*M (SD)*
People and Animals	Pre	37.17 (40.71)	27.50 (41.58)	24.59 (36.81)	--
	Sch	36.69 (22.16)	37.31 (27.55)	32.89 (20.97)	--
Places	Pre	34.09 (36.98)	38.89 (42.85)	46.25 (45.45)	--
	Sch	36.48 (25.29)	31.18 (28.09)	32.44 (21.66)	--
What Happened	Pre	20.02 (32.93)	25.00 (42.49)	24.33 (31.90)	--
	Sch	10.81 (18.14)	20.13 (25.38)	24.95 (25.13)	--
Thinking Feeling	Pre	8.71 (17.12)	8.61 (23.59)	4.84 (12.69)	--
	Sch	16.02 (18.23)	11.39 (17.79)	9.72 (10.19)	--

Table 8

Mean percentages of correctly recalled main details by category of information

Category	Age	Condition			
		Full NET	NET Cards	NET Verbal	Control
		M (SD)	*M (SD)*	*M (SD)*	*M (SD)*
People (23 details)	Pre	32.61 (11.91)	35.36 (10.76)	27.54 (15.56)	31.59 (18.26)
	Sch	40.92 (11.61)	43.71 (7.87)	39.82 (11.34)	40.27 (10.54)
Presentation (34 details)	Pre	16.81 (6.04)	22.94 (7.31)	21.18 (12.24)	20.20 (8.31)
	Sch	31.83 (13.57)	32.04 (10.23)	32.82 (12.83)	31.42 (11.77)
Characters (19 details)	Pre	32.33 (13.98)	36.14 (14.60)	37.90 (19.20)	43.16 (13.07)
	Sch	52.63 (11.32)	49.58 (16.58)	53.19 (18.56)	49.86 (10.87)
Plot (21 details)	Pre	25.85 (17.49)	22.22 (13.55)	24.76 (17.00)	28.57 (17.45)
	Sch	43.14 (13.09)	45.61 (15.25)	50.63 (22.35)	46.37 (19.30)
Sequence (12 details)	Pre	12.50 (14.15)	5.00 (14.02)	5.56 (12.06)	11.11 (27.22)
	Sch	25.00 (21.85)	27.63 (32.99)	35.09 (31.99)	27.63 (31.80)
Scenes (8 details)	Pre	41.07 (24.72)	26.67 (19.97)	37.50 (29.50)	35.83 (22.09)
	Sch	58.09 (21.17)	55.92 (22.58)	70.39 (18.26)	46.71 (22.38)

Percentage of incorrectly recalled main details. A summary of the results for incorrectly recalled main details can be found in Table 9. In the free recall section, all children provided similar percentages of incorrect main details ($M = 0.37\%$, $SD = 0.53\%$). There was no effect of age group, $F(1,125) = 3.13$, $p = .079$, or condition, $F(3,125) = 0.85$, $p = .470$, and no interaction, $F(3,125) = 0.28$, $p = .838$. In open-ended recall, there was an effect of age group, $F(1,125) = 4.84$, $p = .030$, with primary school children incorrectly recalling a greater percentage of main details ($M = 0.56\%$, $SD = 0.64\%$) than preschool children ($M = 0.33\%$, $SD = 0.55\%$). There was no effect of condition, $F(3,125) = 0.34$, $p = .796$, and no interaction, $F(3,125) = 0.22$, $p = .883$.

For the specific questions section, there was an effect of age group, $F(1,125) = 17.35$, $p < .001$, with preschool children incorrectly recalling a greater percentage of main details ($M = 4.10\%$, $SD = 2.71\%$) than primary school children ($M = 2.42\%$, $SD = 1.87\%$). There was no effect of condition, $F(3,125) = 0.86$, $p = .463$, and no interaction, $F(3,125) = 1.23$, $p = .302$. The same pattern of results was found for the interview as a whole. There was an effect of age group, $F(1,125) = 11.80$, $p = .001$, with preschool children incorrectly recalling a greater percentage of main details ($M = 4.43\%$, $SD = 2.82\%$) than primary school children ($M = 2.99\%$, $SD = 1.93\%$). There was no effect of condition, $F(3,125) = 0.62$, $p = .602$, and no interaction, $F(3,125) = 1.28$, $p = .284$.

Table 9

Mean percentages of incorrectly recalled main details by interview section, age group

and interview condition

Section	Age	Condition				Sig.
		Full NET	NET Cards	NET Verbal	Control	
		M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*p*
Free	Pre	0.12 (0.31)	0.34 (0.54)	0.28 (0.53)	0.34 (0.54)	.470
	Sch	0.35 (0.53)	0.35 (0.59)	0.49 (0.52)	0.54 (0.58)	
Open-Ended	Pre	0.18 (0.36)	0.45 (0.71)	0.34 (0.54)	0.34 (0.54)	.796
	Sch	0.55 (0.85)	0.58 (0.64)	0.58 (0.50)	0.54 (0.58)	
Specific	Pre	4.21 (2.88)	3.82 (2.76)	3.99 (2.90)	4.39 (2.54)	.463
	Sch	3.37 (2.39)	2.34 (1.61)	2.61 (1.86)	1.48 (1.10)	
Total	Pre	4.40 (2.76)	4.27 (3.07)	4.33 (2.99)	4.73 (2.72)	.602
	Sch	3.92 (2.44)	2.92 (1.72)	3.19 (1.78)	2.02 (1.34)	

The percentage of incorrectly recalled main details in each category of

information can be found in Table 10. Descriptive statistics summarizing the percentage

of children's incorrect NET recall that was provided in response to each of the four NET

cards (or NET verbal prompts) was not provided as only 13 children provided incorrect

information in the NET recall section of the interview.

Table 10

Mean percentages of incorrectly recalled main details by category of information

Category	Age	Condition			
		Full NET	NET Cards	NET Verbal	Control
		M (SD)	*M (SD)*	*M (SD)*	*M (SD)*
People (23 details)	Pre	4.97 (7.00)	0.58 (1.53)	2.90 (6.71)	5.80 (7.65)
	Sch	3.84 (5.73)	3.43 (5.14)	2.98 (4.60)	1.14 (1.97)
Presentation (34 details)	Pre	4.83 (2.96)	4.51 (3.99)	5.49 (4.70)	4.70 (4.27)
	Sch	4.67 (3.76)	1.86 (2.01)	2.79 (3.46)	1.55 (2.66)
Characters (19 details)	Pre	4.89 (9.78)	5.61 (5.79)	4.91 (5.06)	4.56 (4.82)
	Sch	4.64 (6.41)	4.99 (5.68)	4.15 (4.14)	4.99 (4.11)
Plot (21 details)	Pre	6.46 (5.79)	8.57 (6.54)	6.35 (5.88)	7.30 (5.65)
	Sch	5.04 (5.95)	4.76 (5.02)	6.26 (5.03)	2.51 (3.32)
Sequence (12 details)	Pre	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
	Sch	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Scenes (8 details)	Pre	0.89 (3.34)	5.83 (10.42)	3.33 (7.42)	2.50 (7.01)
	Sch	2.21 (6.61)	0.66 (2.87)	0.00 (0.00)	1.32 (5.74)

Discussion

The purpose of this study was to determine whether NET could be streamlined for use with three to seven year old children. Unlike past attempts to streamline NET, the present study involved completely omitting the training session, without substituting a rapport-building session, in the streamlined NET and control conditions. In addition, whereas the control conditions used in several past NET studies included a NET recall section, this study compared NET interviews with a standard control interview. For the purposes of analyses, the sample was divided into preschool (i.e. three to five years old) and primary school (i.e. five to seven years old) children.

It was found that there were no differences in correct and incorrect free recall across conditions, which was expected, as all children received the same free recall questions. Primary school children did, however, provide more correct UUIs and a greater percentage of correctly recalled main details in free recall than did preschool children. As there were no differences across conditions in free recall, comparing open-ended recall (i.e. combined free and NET recall) across conditions gave an indication of the effectiveness of NET. As there was no NET recall section in the control condition, any differences between the NET conditions and the control condition could be attributed to NET.

In terms of UUIs, the full NET interview helped primary school children recall more correct information in open-ended recall. In addition, the streamlined NET interview with verbal prompts was as effective with these children as the full NET interview. This is consistent with past research with NET verbal prompts (Brown & Pipe,

2003a), and suggests that the effectiveness of NET verbal prompts is not contingent on training or rapport building. The full NET interview elicited more incorrect information in open-ended recall than did the control condition, but this may have been due simply to the fact that the control interview was shorter.

Surprisingly, preschool children in the NET conditions did not recall more correct UUIs in open-ended recall. This suggests that NET was not effective with these younger children, which is in contrast to past research (Peterson et al., 2013). Past research with this age group involved very salient, stressful events (i.e. injuries) and the interviews were conducted in the children's homes (Peterson et al., 2013). The staged event used in the present study may not have been salient enough for NET to be effective with these younger children and the location of the interviews (i.e. childcare centres) may have been distracting.

In terms of completeness, there were no differences across conditions in the percentage of correctly and incorrectly recalled main details provided in open-ended recall. Primary school children did, however, have greater percentages of both correctly and incorrectly recalled main details than did preschool children. Whereas NET helped primary school children in the full NET and streamlined NET with verbal prompts conditions provide more correct UUIs, it did not help these children correctly recall a greater percentage of main details. This suggests that NET either helped these children provide more descriptive recall of main details, or helped children recall more secondary details. This is still beneficial, as more descriptive recall and secondary details may improve the perceived credibility of a child eyewitness.

Of interest in the specific questions section was that there were no differences in correct and incorrect UUIs across conditions, although primary school children provided more correct UUIs than preschool children. The lack of differences across conditions demonstrates that, even though the children in two of the NET conditions provided more information in open-ended recall, they were able to continue to provide comparable amounts of correct information in response to specific questions.

When considering the interview as a whole, there were no differences across conditions in either the correct and incorrect UUIs or the percentages of correctly and incorrectly recalled main details. The only differences were between the two age groups, with preschool children providing a greater percentage of incorrectly recalled main details, and primary school children providing a greater percentage of correctly recalled main details, as well as more correct UUIs. Although children in the NET conditions did not recall more information overall, there was a non-significant trend for the primary school children to provide more correct UUIs in the NET conditions (especially the streamlined NET condition with verbal prompts). In addition, children in the NET conditions did provide a greater percentage of their correct UUIs in open-ended recall (i.e. prior to the use of specific questions). This is important as, in cases where interviewers cannot determine the accuracy of recall, the information provided by children in open-ended recall can be deemed as more likely to be accurate.

This study had three hypotheses. The first was that the streamlined NET interview with cards would be as effective as the full NET interview. While the streamlined NET interview with cards was no worse than the full NET interview with preschool children,

none of the NET conditions proved to be effective with the preschool children. With primary school children, the streamlined NET condition with cards was not significantly worse than the full NET interview, but it was also, surprisingly, not significantly better than the control condition. The mean number of correct UUIs in open-ended recall for this condition fell between those of the full NET and control conditions. This suggests that, if NET cards are used, some form of training may be necessary. The second hypothesis was that the streamlined NET condition with verbal prompts would be as effective as the full NET interview with the primary school children, but less effective than the full NET interview with the preschool children. Our results confirmed the hypothesis about the primary school children, but, as discussed, none of the NET conditions were effective with the preschool children. The final hypothesis was that the streamlined NET interview with cards would be more effective than the streamlined NET interview with verbal prompts. Our results did not support this hypothesis. While the two streamlined NET conditions did not differ significantly from each other in either the UUI or completeness data, only the streamlined NET interview with verbal prompts proved to significantly more effective than the control condition in free and NET recall.

Limitations

There are a number of limitations in the present study. First, the target event used in this study was not highly salient or stressful and did not involve the children as active participants. This form of target event was a convenient method of testing these streamlined NET interviews for the first time, but necessitates further research with other types of target events. Second, five interviewers conducted the interviews, introducing

potential interviewer differences. To address this limitation, interviewers conducted interviews in all interview conditions and age groups, spreading any interviewer differences across conditions. The interviewers and coders were also not blind to condition assignment. This was, unfortunately, not possible, as condition assignment was apparent from the interview questions. Finally, the setting of the interviews was not always ideal. As interviews were conducted in schools and childcare centres, the interview rooms varied depending on the resources available. Some interview rooms were more distracting than others.

Conclusion

In conclusion, the results of the present study demonstrate that NET can be streamlined with five to seven year old children, by both omitting the training session and replacing the NET cards with verbal prompts, without decreasing the effectiveness of the technique or increasing incorrect recall. Based on the results of this study, if the training session is to be omitted, it is advisable to also remove the NET cards. The streamlined NET interview with verbal prompts proved to be a very promising version of the NET technique. While it did not reach statistical significance, primary school children in the verbal prompt condition provided more correct UUIs in open-ended recall than children in the full NET condition, despite lack of familiarity with their interviewer. Any rapport building activities in real-world settings would have the potential of making this streamlined NET interview superior to the full NET interview. In addition to eliminating the need for training and for interviewers to have NET cards, the streamlined NET interview with verbal prompts eliminates any possible distraction caused by the cards and any chance of children misinterpreting the purpose of the cards. Anecdotally, it was found that some children in this study were distracted by the NET cards (e.g. playing with the cards), which would not have occurred if only verbal prompts had been provided.

In future research, the use of verbal prompts, without training and without NET cards, needs to be replicated with other types of target events, including highly salient and stressful events. If effective with these types of events, NET verbal prompts could be easily incorporated into any forensic interview, following free recall. These four simple questions would 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 would provide interviewers with more

information on which to base specific follow-up questions, which could increase the

amount and accuracy of information obtained from child eyewitnesses.

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Appendix A

NET Cards (Saywitz & Snyder, 1996)
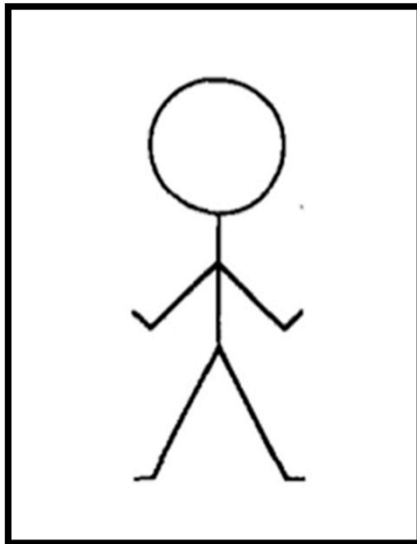
People and Animals
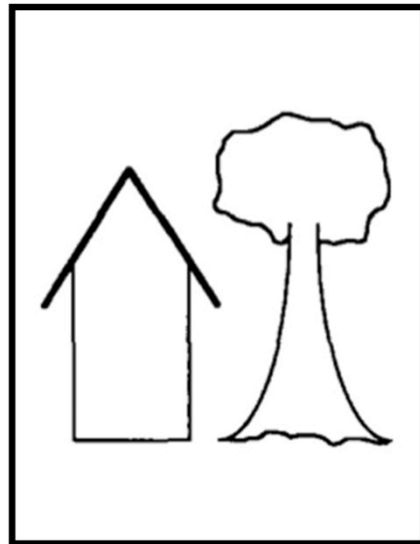
Places
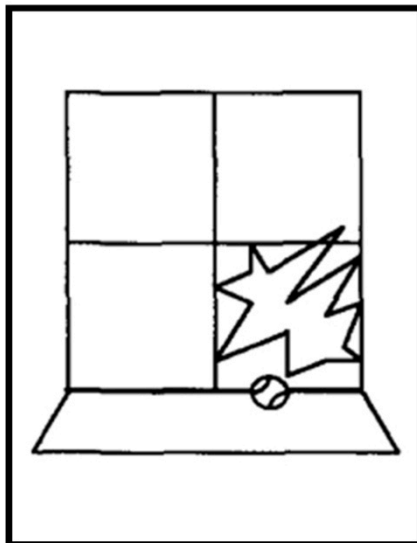
What Happened
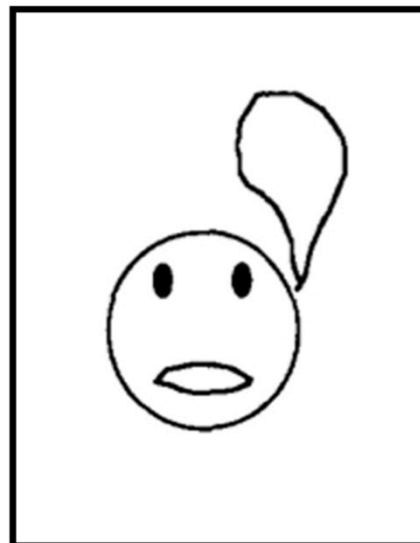
Talking Feeling

Appendix B

Script of Staged Activity

Presentation:

Neil in cage.

P: Hey everyone! I'm Susan and this is my friend Neil the bunny. We are here today

        to teach you about bunnies. First I'm going to teach you some things about

        bunnies and then later, I'm going to show you a puppet show that I wrote about

        Neil. I'm going to take Neil out of his cage now. We don't want to scare him so

        it's really important that everyone stay sitting down and not touch the bunny.

Take Neil out of cage.

P: First I want to talk about what type of bunny Neil is. I've brought a few pictures

        of different types of bunnies.

Pull out a few blown up pictures of different rabbit breeds.

P: One thing that is different between types of bunnies is the kinds of ears they have.

        As you guys can see, Neil has little ears and they stand up high on his head when

        he is excited, or sometimes they lie flat on his back when he's relaxing. Let's look

        at the different types bunnies I have here in my pictures. One type is called a lop

        eared bunny, and they have long ears that flop down on the sides of their faces.

        Another type of bunny is a lion head bunny. As you can see from this picture, they

        have fuzzy fur around their faces like a real lion does.

        Now I'm going to talk about the different kinds of thing you need to take care of a

        bunny. Neil doesn't sleep in a bed like you and me. Bunnies need clean cages that

are filled with pine shavings on the bottom. Pine shavings keep them warm and dry, and the cage will stop them from running lose in your house! Bunnies can run really fast so you don't want to lose them! Neil also needs a water bottle attached to his cage that he can drink from, and he has a bowl of food in his cage as well. Neil only likes to eat certain kinds of food. Now I'm going to talk to you about what types of food Neil likes to eat!

Holding up a carrot or a piece of bread.

P: Do you think Neil will want to eat the bread or the carrot?

After they reply, begin to feed Neil the carrot.

Confederate enters room, angry.

I: There you are! I have been looking for you everywhere. You aren't supposed to have Neil now! It's Neil's naptime!

P: What? I'm doing a presentation for the kids. Can't Neil's nap wait?

I: No, it can't wait! I told you you couldn't have him until later.

P: I'm so sorry, I forgot!

I: That's okay, Susan. I'm sorry I got angry. I was just worried about Neil. He really needs his nap.

P: Sorry kids, Neil has to go have a nap now. Let's everybody say bye to Neil! Bye Neil!

Susan puts Neil in cage. Confederate takes cage out of room. Susan turns back to the class.

P: Now it's time for the puppet show! It's too bad that Neil won't be able to see it…

I really love bunnies so I wrote this puppet show about Neil and his friend Sara.

This bunny is going to be Neil. See, he's even wearing the same bow as Neil was!

And this bunny is Sara.

These are my two friends. They are going to help with the puppet show.

Puppet Show:

Scene: Neil's House.

N: Guess what, Sara? The carrots I grew in my garden are finally ready to be picked!

S: That's so exciting, Neil. We should celebrate by making a carrot cake.

N: That's a great idea – I love carrot cake! Let's go to the garden and pick the carrots

right now.

Scene: Garden.

N: Oh no! The storm last night destroyed the garden. My carrots are ruined!

S: That's okay, Neil. I have carrots at my house. We can use those.

N: Okay. Let's go to your house.

Scene: Forest.

Neil and Sara walking to Sara's house.

N: I'm so glad you have carrots, Sara. I'm really excited about making the carrot

cake.

S: Me too, Neil. I haven't had carrot cake in so long.

Fox appears.

S: *Startled*: Oh no! Look, Neil – it's a fox!

N: Run, Sara!

Neil and Sara run away from the fox, screaming.

All duck down.

Neil and Sara pop up, scream and run back and forth.

N: Phew, that was close. I think the fox is gone.

S: Yes. But Neil, where are we?

N: I don't know Sara. That fox really got us lost.

Neil and Sara walking.

S: Neil, is that a farm over there?

N: You're right, Sara. That's Farmer Bill's farm. He'll be able to help us! Let's go!

All duck down.

Scene: Farm.

S/N: Farmer Bill? Farmer Bill? Are you home?

Farmer Bill appears.

N: Hi Farmer Bill.

FB: Hi there, little bunnies. What are you two doing so far from home?

S: We're lost, Farmer Bill. We were going to my house to get carrots to make a

carrot cake and a fox chased us. It was so scary and now we don't know how to

get home!

FB: Don't worry, Sara. I can take you back to Neil's house. And if you need carrots, I

have some extra ones you can have.

N: That's wonderful, Farmer Bill. I knew you could help us.

Scene: Neil's House.

N: Thank you so much, Farmer Bill. We really appreciate all your help.

S: Would you like to stay awhile and make the carrot cake with us?

FB: I would love that, Sara. Carrot cake is my favourite.

End.

Appendix C

Puppet Show Characters and Scenes

Sara, fox, Neil and Farmer Bill

Neil's House

Garden
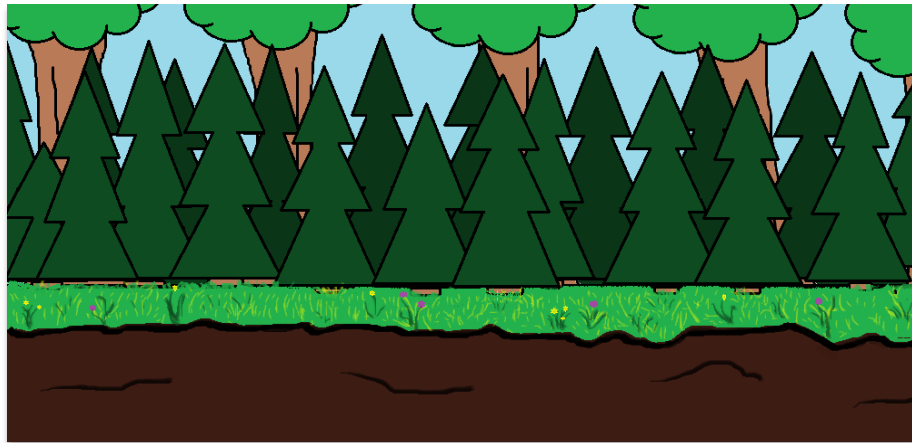
Forest
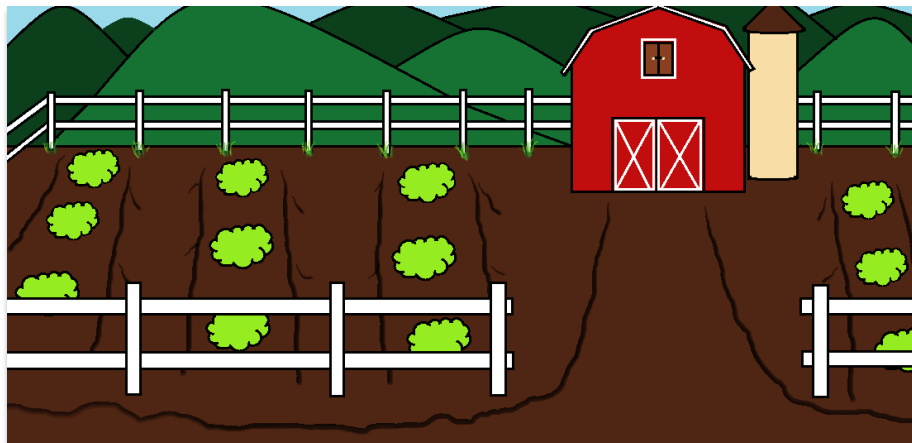
Farm

Appendix D

Interview Questions

Free Recall: All Interviews

Can you tell me everything you can remember about [when the real bunny was in the room, before the puppet show OR the puppet show]?

NET Recall: Full NET Interview

Does the People and Animals Card remind you to tell me anything else?

> *After answer:* Do you remember anything else about the people and animals?
>
> *If do not answer:* Does the card remind you to tell anything else about who was there and what the people and animals looked like? How did each person and animal look?

Does the Places Card remind you to tell me anything else?

> *After answer:* Do you remember anything else where you were and how the places looked?
>
> *If do not answer:* Does the card remind you to tell anything else about where it happened and what it looked like? Where were you? How did the place look?

Does the What Happened Card remind you to tell me anything else?

> *After answer:* Do you remember anything else about what happened?
>
> *If do not answer:* Does the card remind you to tell anything else about what happened? What did the people and animals do?

Does the Talking Feeling Card remind you to tell me anything else?

> *After answer:* Do you remember anything else about what the people and animals said and how they felt?
>
> *If do not answer:* Does the card remind you to tell anything else about what the people and animals said? How did the people and animals feel?

NET Recall: Streamlined NET 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 remember more.

This is the People and Animals Card. It reminds you to tell who was there and how the people and animals looked. Does this card remind you to tell me anything else?

This is the Places Card. It reminds you to tell where it was and how the place looked. Does this card remind you to tell me anything else?

This is the What Happened Card. It reminds you to tell everything about what happened and what people and animals did. Does this card remind you to tell me anything else?

This is the Talking Feeling Card. It reminds you to tell about what the people and animals said and how they felt. Does this card remind you to tell me anything else?

Note: "After answer" and "If do not answer" questions were also used, as in the Full NET interview.

NET Recall: Streamlined NET with Verbal Prompts

Now I have a few 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 something more about where it was and how the place looked?

Tell me something more about what happened and what all of the people and animals

did?

Tell me something more about what all of the people and animals said and how they felt?

Note: "After answer" and "If do not answer" questions were also used, as in the Full

NET interview.

Specific Questions: All Interviews

Now I'm going to ask you some questions about when the bunny came to visit you.

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 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?

Was anyone else there for the puppet show?

> *If 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 say which 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? Where did the bunnies go for carrots when they found out the garden was destroyed?

>> *If yes:* Did they go anywhere else to get more carrots? Where?

> *If 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.

Appendix E

UUI Coding Sheet

UUI	Free Recall Bunny	NET Bunny	Free Recall Puppet	NET Puppet	Direct Q's Bunny	Direct Q's Puppet
People						
Objects						
Location						
Activity						
Attribute						
Time						
Emotion						
Cognition						

Appendix F

Completeness Coding Sheet

			Free	NET People	NET Places	NET What	NET Talk	Direct
People	Presenter	General						
		Gender						
		Hair colour						
		Shirt colour						
		Wearing necklace						
	interrupter	General						
		Gender						
		Hair colour						
		Shirt colour						
		Wearing scarf						
	Male puppeteer	General						
		Gender						
		Hair colour						
		Shirt colour						
	Female puppeteer	General						
		Gender						
		Hair colour						
		Shirt colour						
	Camera person	General						
		Gender						
		Hair colour						
		Shirt colour						
		Other kids present						

			Free	NET People	NET Places	NET What	NET Talk	Direct
Presentation	Bunny	Name						
		Colour						
	Presentation	Learned about bunnies/kinds of bunnies						
		Learned about things bunnies need						
		Bunny was in a cage/had a cage						
		Took bunny out of cage						
		Bunny had little ears						
		Bunny's ears stand up when excited						
		Bunny's ears lie back when relaxed						
		Showed pictures						
		Showed pictures of bunnies						
		Lop-eared bunny						
		Bunny with ears that hang down/are long						
		Lion head bunny						
		Bunny with fur around face						
		Bunnies sleep/live in cages						
		Bunnies run fast/don't want to lose them						
		Shavings in cage						
		Bunny had water						
		Water in bottle						
		Bunny had food						
		Showed bread						
		Showed carrots						
		Picked carrot/bunny ate carrot						
	Interruption	Bunny did not stay whole time						
		Bunny had to have a nap						
		interrupter came looking for the bunny						
		interrupter was angry						
		Interrupter angry because the bunny not napping						
		Interrupter took bunny away						
		Presenter forgot nap time						
		Interrupter apologizes/forgives presenter						
		Presenter stays						
	Other	Location of presentation						

			Free	NET People	NET Places	NET What	NET Talk	Direct
Puppet Show	Neil	General character						
		Bunny						
		Name						
		Colour (white/beige)						
		Male						
		Representing the real bunny						
	Sara	General character						
		Bunny						
		Name						
		Colour (yellow)						
		Female						
		Neil's friend						
	Fox	General character						
		Fox						
	Farmer Bill	General character						
		Farmer						
		Dog						
		Male						
		Name						
	Plot	Puppet show about bunnies						
		Bunnies wanted carrots						
		Wanted carrots for a carrot cake						
		Neil has carrots in his garden						
		Bunnies went to a garden						
		Garden was Neil's garden						
		Did not get carrots from garden						
		Carrots in garden were destroyed						
		Carrots destroyed by storm						
		Sara has carrots at her house						
		Leave to go to Sara's						
		Scared/chased by fox character						
		Bunnies felt scared when chased						
		Get lost						
		Get lost because of fox/chase						
		Find a farm						
		Farmer character helps them get home						
		Farmer character gives them carrots						
		Going to make carrot cake						
		Invite farmer to stay for carrot cake						
		Bunnies happy to find farmer, that farmer helps						

		Free	NET People	NET Places	NET What	NET Talk	Direct
Puppet Show	Sequence	Start at Neil's house Neil's garden after house Leaving for Sara's after house Leaving for Sara's after garden Chased by fox/lost after house Chased by fox/lost after garden Chased by fox/lost after leaving for Sara's Farm after house Farm after garden Farm after leaving for Sara's Farm after chase/lost Return to Neil's house						
	Neil's House	General Kitchen						
	Garden	General Garden						
	Forest	General Forest/trees						
	Farm	General Farm						