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Assessment of a Novel Interview Technique for Improving
Young Children's Forensic Reports

Rebecca G. Ryan

Thesis submitted to the Eberly College of Arts and Sciences
at West Virginia University in partial fulfillment
of the requirements for the degree of

Master of Arts
in
Life-Span Developmental Psychology

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ABSTRACT

Assessment of a Novel Interview Technique for Improving Young Children's Forensic Reports

Rebecca G. Ryan

The present study examined a novel interview technique and its effectiveness when administered to 3- to 7-year-old children. This novel interview technique isolated the effects of source-monitoring training (SMT). All of the children in the present study viewed a video of a magic show and after a one-week delay were asked both misleading and accurate questions about the magic show video. After another one-week delay the children were randomly assigned to either the SMT group or the control group. The SMT group received source-monitoring training prior to the final interview about the magic show video. The control group received no training and was interviewed with the same final interview, which included empirically supported interview techniques and was made up of free recall and questioning portions. Results were intended to investigate if SMT would result in a difference in the amount of accurate recall between the two groups even with the control group receiving an empirically sound final interview. The results were mixed such that the SMT group displayed more accurate recall as compared to the control group when the questioning format was used but not when the free recall format was used. Age differences were found during both the free recall and questioning portions of the final interview, as well as during other measures of accurate recall during the SMT such that the 5- to 7-year-olds displayed more accurate recall as compared to the 3- to 4-year-olds. Findings suggest that SMT may increase accurate recall if a closed-questioning format is used and that the discovery of interview techniques that improve the accurate recall of 3- and 4-year-old children is essential.

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INTRODUCTION

Assessment of a Novel Interview Technique for Improving Young Children's Forensic Reports

We are now at a point in the realm of research on child suggestibility where we have established a substantial knowledge base in regard to how prone to suggestion children are when being questioned (Ceci & Bruck, 1993). Due to the importance of children's testimony, researchers are now concentrating on how to develop interviews that elicit as much accurate information as possible while minimizing inaccurate reporting (Memon, 1997; Thierry & Spence, 2002). Past literature has shown that children are prone to confusing recollections of events they have witnessed with information they are exposed to in later accounts (Ceci & Bruck, 1995; Poole & Lindsay, 1995).

The current study involved posing misleading questions, or in other words presenting inaccurate information, to young children. These misleading questions pertained to a previously viewed target event. After being exposed to this misleading information the children in the current study were interviewed about the target event either with or without the benefit of source-monitoring training (SMT). SMT has been shown to elicit more accurate information from young children as compared to a more conventional interview technique (Thierry & Spence, 2002). As previously mentioned, young children are prone to confusing post event information with their memories for a target event and SMT is a viable option for dealing with this problem. SMT entails asking children a series of questions which require them to identify where information that they recall came from (i.e., a live performance/video performance or a story/conversation) and also involves teaching the children how to identify misleading yes-no questions by having them identify questions that ask about something that did not occur as the interviewer stated in the question.

REVIEW OF THE LITERATURE

As emphasized by Walker and Hunt (1998), the characteristics of an interview are as important for the perceived reliability of the child as age. The goal of providing the legal system with effective tools for interviewing children is a daunting one due to the myriad of factors that affect a child's memory. These factors that affect a child's ability to accurately recall information may include any number of influences in the child's environment (external sources of misinformation) and individual differences between children (internal sources of misinformation). A few of the key factors that pertain to the current study will be discussed below. Internal sources are affected by the age of the child. The external sources discussed will pertain to the most common sources of information children may experience. Any inaccurate information posed to or a result of these factors may lead to distortions of a child's memory.

Factors Affecting Children's Recall of Events: Internal Sources

Cognitive Immaturity

Children are not only more likely to incorporate false information into their memories; they are also simply more apt to forget critical information about past experiences. Children are also less able to encode, store, and recollect information. Memory skills associated with these abilities improve with age. These deficiencies make children more susceptible to suggestion simply due to their memories being weaker. In addition, these abilities depend on the knowledge base a child has, which is not as fully developed as in older children or adults (Ceci & Bruck, 1995). Because children are less able to encode and store information, they are more likely to reconstruct or overwrite their memories with post-event information that fills in gaps in their memories (Welch-Ross, Diecidue, & Miller, 1997). Interview techniques are needed that will bolster a child's ability to distinguish between what they have experienced and what they have

not so that they are less likely to integrate post-event information as a means of filling in weaker traces in memory storage.

Specifically, several studies have shown that when comparing participants of various ages such as 6, 9, 11, and 16-year-olds, 3- and 6-year-olds, 3- to 12-year-olds, etc. that the younger participants are more likely to succumb to suggestions and also provide less accurate information across a variety of interview segments, including free recall, misleading questioning, and direct questioning (Ceci & Bruck, 1993). Also, studies which include a delay between the presentation of information and subsequent questioning pertaining to that information have found that memory decay occurs faster with younger children as compared to older children (Ceci & Bruck, 1998).

Executive Functioning

Another component that contributes to very young children's tendency to integrate post event information into their memories is their inability to successfully inhibit the influence of false information during memory retrieval (Perner & Lang, 1999). Executive functioning is related to this ability to inhibit the impulse to combine information about an event from different places and times. Executive functioning entails the processes of higher-level control over one's actions such as planning, coordination and inhibition of impulses. Past literature has shown that children are commonly not able to inhibit such impulses until around the age of four (Perner & Lang, 1999).

Source Monitoring

There are many possible memory characteristics that may contribute to the identification of a source for a memory. These characteristics may include the spatial context, temporal information, the media, or experiences involved in the presentation of the information. These

characteristics in combination define the circumstances surrounding the acquisition of the memory and can determine whether a memory is strongly or weakly encoded. Source monitoring is believed to be a process that an individual decides to perform when remembering information as opposed to a process that is inherently involved in memory retrieval (Johnson, Hashtroudi, & Lindsay, 1993). The SMT utilized in the current study is therefore assumed to be necessary so that the children will make such a conscious decision to think about where the information they are recalling came from.

Source-monitoring theory attributes inaccurate reports to the individual confusing the source of the information he or she recollected. Based on this assumption, Johnson, Hashtroudi and Lindsay (1993) claim fewer false recollections will be reported if individuals make source-monitoring judgments that require them to evaluate the characteristics of their memories. In regard to age differences in children and the ability to monitor the source of their memories, some research has shown that the younger children are, the more likely they will be prone to incorporate inaccurate information into their memories. A study by Foley (1983) provided evidence for this assertion. In her study 6-year-olds were inferior to 9-year-olds and 17-year-olds in tasks involving discriminating between words that were spoken versus words that were imagined and in a task of discriminating whether actions were imagined or acted out. A similar study by Parker (1995) found that 10-year-olds were superior to 6-year-olds when discriminating real and imagined events both with an immediate and a delayed test.

According to Drummey and Newcombe (2002), there appears to be a substantial change between the ages of 4 and 6 years in regard to children's ability to source monitor. This shift appears to coincide with the development of theory of mind as well. It would be interesting to investigate the emergence of source monitoring ability and if it is predictive of suggestibility.

Not only would it be interesting to know when and how source monitoring ability occurs, it would also be very beneficial to those who need to know how reliable a child's reports are at a particular age. Along with these issues there is also the possibility that through some technique it may be possible to increase the reliability of a child's reports of past experiences.

We know that children are not able to identify the source of their memories as well as older children and adults (Reyna & Lloyd, 1997). We also know that in real-life cases children are often interviewed multiple times (Goodman, 1997) and also often have multiple conversations about the event in question. Young children are prone to incorporating post-event information into their memory of an event due to their inefficient ability to monitor the source of their memories (Welch-Ross, Diecidue & Miller, 1997). Due to the large number of instances during which children may discuss the event of interest, source-monitoring ability is vital to judging the accuracy of interview accounts. Such ability would entail accurately identifying where and when the information that one is reporting came from and not confusing separate events or letting information that does not pertain to a specific event become incorporated into one's memory of that event.

Another possible factor that could contribute to the problem children have with correctly recalling past events could be their tendency to confuse what has actually happened with what they have only imagined or dreamed. Foley and Ratner (1998) compared children and adults' abilities to distinguish between self-performed, other-performed, and imagined actions. The participants were exposed to four kinds of perform/imagine situations where they had to correctly identify whether the action was performed by another, performed by self, imagined by another, or imagined by self. The two groups compared were made up of 6-year-olds and adults. The recall of the 6-year-olds was worse than the adults in all four of the conditions. These

examples of children intermingling fantasy and reality lead us to assume that children, after being exposed to inaccurate information in conversations, may incorporate into their memories of events situations that they have thought of or fantasized about.

The study of source monitoring in children is important for several reasons. Not only does examining this phenomenon supply us with a window to interesting cognitive processes, it is also a practical and useful tool for those interested in memory retrieval. As stated previously, young children are not as able to accurately monitor the source of their memories compared to older children and adults. Due to the importance of source monitoring ability for accurate testimony, the task of exploring ways to compensate for these age differences in cognitive ability is believed to be of great significance. Techniques that help children to be resistant to their tendency to incorporate information from other sources into their memories will be beneficial in avoiding memory distortions (Ceci & Bruck, 1995).

Factors Affecting Children's Recall of Events: External Sources

Suggestive Questioning

In a review of past research conducted by Ceci and Bruck (1993), the literature illustrated the tendency of children to be susceptible to making false or inaccurate statements about critical events. Often these false statements are the result of leading or suggestive questions posed to the child. A leading question is often defined as a question that offers information that has not been previously revealed by the child (Goodman, 1997). Past research has found that children will sometimes integrate this information into their memories (reviewed in Ceci and Bruck, 1998) and the resulting distortion is a problem that researchers are trying to overcome with various techniques.

Not only does the content of the questions influence later reports, the way that the questions are worded also has an impact on how the children respond to questions. Children are often thought to view adults as authority figures and so are likely to respond according to what they think the adult wants to hear as a way of agreeing with the adult's assertions (Ceci & Bruck, 1995). In a study by Dale, Loftus, and Rathbun (1978) it was shown that children are very prone to answer affirmatively to yes-eliciting questions such as "Didn't you see some...", "Didn't you see the...", and "Didn't you see any...". This study supported the researcher's hypothesis that children are aware of the expectation for an affirmative answer that is implied by how these questions are worded. When an adult poses questions of this nature, the child appears to be more cognizant of the expectations of the adult and not as concerned with an accurate retelling of the event in question. For this reason we know that it is very important for the child to be taught that what they remember is of utmost importance and to not be influenced by the types of questions that are asked and also, if possible to not use these types of questions during interviews.

Posing misleading suggestions to individuals often results in an overwriting of the original memory and this new inaccurate information can become inseparable from the original accurate memory (Lindsay, 1990). An interesting and important question in regard to this finding is whether or not children can be taught to overcome this problem. If a child could be taught the importance of keeping information from differing sources separate then perhaps this occurrence of overwriting their memories would not occur. Current literature that addresses children's abilities to transfer this type of skill will be mentioned in a later section.

Developmental differences are seen in regard to children's responsiveness to suggestive questioning. Past research has shown that although adults are sometimes misled by suggestive questioning, it is commonly found that the younger the participant the more likely the person will

respond inaccurately to suggestive questions (Ceci, Ross, & Toglia, 1987). The types of questions used in the interview have been shown to have an impact on whether or not a child will be misled. Younger children are more likely to change their reports to agree with the information suggested in repeated yes/no questions as compared to open-ended questioning (Cassel, Roberts, & Bjorklund, 1996). Similar age related findings have been documented in regard to source monitoring as well (Foley, Johnson, & Raye, 1983; Ackil & Zaragoza, 1995).

Conversational Influences

Studies have examined the influence that conversations have on children when they are the source of inaccurate post-event information. Poole and Lindsay (1995) found that inaccurate information presented by parents was a tremendously influential contaminant of 3- to 4-year-old's testimony. They found that children ages 3 to 4 years and 5 to 7 years gave highly accurate accounts when they received an interview immediately after the live event that was comprised of non-suggestive questions about the live event. During this first interview Poole and Lindsay used prompts that they hypothesized would encourage the children to report more information.

Three months after this initial phase of the study the children were read a story by their parents about what they saw that included experienced and nonexperienced events. After this exposure to inaccurate post-event information the children participated in a second interview that included source-monitoring, leading and nonleading questions. The children, in particular the 3- to 4-year-olds, displayed substantially more erroneous reports in this second phase. Specifically the 3- to 4-year-olds who reported the information only read to them in the story as having occurred in the earlier event during the free recall session, had a strong inclination to respond yes to the leading questions, and showed no improvement when asked to separate recollections of the story from those of the live event.

A similar study of Poole and Lindsay's (2001) found that after misinformation was presented by parents and age differences were assessed in regard to the children being asked to differentiate between the statements made by their parents and what they had witnessed (a source-monitoring task) the youngest children did not correct their earlier false reports whereas the older children did. An important finding of this study was that even the youngest of the participants (3- to 4-year-olds) could accurately report complex events that had occurred recently, though this only held true if the children had not been exposed to any misinformation or leading questions before the recall. However, after these influences even the children's free recall contained inaccurate information. Another important finding of this study is that the use of continued open-ended prompting (as described in Poole and Lindsay's aforementioned study) was found to be useful for each of the age groups.

Techniques that Improve Children's Memory for Events

The Cognitive Interview

Many recent studies are testing varying methods for improving the recall memory of children in interview settings. A technique that is currently being used and evaluated is the cognitive interview. The cognitive interview was first developed by Geiselman (1984) to be used in forensic interviews. This interviewing method is now widely used in law-enforcement agencies and has been tested on multiple age groups and populations. According to a meta-analysis conducted by Kohnken, Milne, Memon, and Bull on the cognitive interview literature this method as compared to control interviews results in 41% more correct information (Geiselman, 1999).

This technique entails asking witnesses to mentally reconstruct the external and internal environment at the time of the event in question. The external environment includes the location,

where objects were, the time of day, etc. The internal context includes the emotions the person was feeling at the time as well as the temperature, sounds, smells, etc. This is often achieved by asking witnesses to think back to when they were exposed to the information in question and concentrate on all the aforementioned characteristics of that situation. A researcher may single out these characteristics and ask the witness to report about each separately. Witnesses are also often asked to recall everything that they can regardless of whether they deem it to be irrelevant or if they cannot recall it fully. Two other components to the cognitive interview that are sometimes utilized are asking the witness to recall the information from the perspective of others and having the witness retell the information in varying order as opposed to always attempting to recall from beginning to end (Memon & Higham, 1999).

A study by Memon (1997) that used 8 and 9 year-old children as participants found that employing the cognitive interview did result in an increase in correct details as compared to a structured interview that served as the control. This was the finding when the delay to interview was 2 days. All of the children in this study viewed a live magic show and were then questioned about the event. Children in the cognitive interview (CI) group first pictured the context mentally and reported in a free recall phase.

The questioning phase entailed the CI group being asked to mentally picture images from various stages of the event in question. For example, the children were asked to “picture the magician’s face and then describe it”. In the last phase of the interviews the children in the CI group received a reverse order recall prompt; “Tell me about the very last thing you remember in the magic show and then what happened before that, and before that, so you’re working your way back to the first thing you remember” (Memon, 1997). Interviews were conducted again for some of the children after a 12-day delay and the positive effects of the cognitive interview in

that instance were not seen. Perhaps the best explanation for the failure are theories of memory that hypothesize that as time passes memories become less context dependent and so the memories fade in terms of their relation to context (Memon, 1997).

Utilizing a similar methodology, another study by Memon (1996) found that conducting a cognitive interview following misleading questions decreases the detrimental effects of those misleading questions (again participants were 8- and 9-year-old children). In this study as well, the cognitive interview resulted in more accurate recall during a post-interview following the viewing of a videotaped event, in which the children were asked misleading questions. Memon speculates that utilizing this interview technique may be a way of preventing the detrimental effects of suggestive questioning which is so frequently used during forensic interviews.

Aldridge (1999) provided a detailed review of the cognitive interview compiling research findings from research studies, social work literature, and legal practice. She refers to the cognitive interview as a “reliable memory enhancer”, “immune to the effects of suggestion and leading questions” and “the most successful and promising area of applied memory research.” These findings are most consistent when referring to participants who are not young children. Past literature has shown that children sometimes have difficulty with the cognitive tasks, such as reversing order, and so for children this method has sometimes been viewed as having limited value (Geiselman, 1999). However, as demonstrated in the work of Memon, the cognitive interview technique is seen to have an effect on children 8 and 9 years of age when modified. An interesting question to pursue at this point is if, with further modification, some of the components of the cognitive interview can be helpful when striving to attain the most accurate information possible from even younger children.

The cognitive interview has been used with children as young as 4 years old with positive results when the techniques were used as a way of solidifying the children's memories before the presentation of misinformation (Holliday, 2003). The cognitive interview also has the tendency to result in more information as compared to other interview techniques. Unfortunately, this increase in recall applies to both accurate and inaccurate information (Scullin, Kanaya, & Ceci, 2002).

Source-Monitoring Training (SMT)

Techniques that encourage children to use source monitoring may help them tap into the cognitive and social mechanisms that result in better monitoring of sources. Source-monitoring training (SMT) has been proposed as a technique that could serve as a sort of push towards mastery of this ability. A study conducted by Thierry, Spence, and Memon (2001) compared 3- and 4-year-olds to 5- and 6-year-olds where half of the children in each age group were required to monitor the source of their memories and the other half were not. All of the children watched both videotaped and live demonstrations of science experiments.

The children in the source monitoring groups were asked 20 questions about the various experiments that they had seen performed and were told that it was necessary for them to distinguish whether they had seen the experiment in the live condition or in the videotaped condition. The children in the control group were also asked a set of 20 questions, but these questions were standard yes-no recognition questions. This questioning revealed no significant differences for age or for the source-monitoring group versus the control group. Requiring the children in the source monitoring group to specify whether they had seen the experiment in the live condition or in the videotaped condition was the key feature of source monitoring training in

this study. Having children practice thinking about where their memories originated is the goal of source monitoring training.

After this initial phase of questioning the children were then asked by a different interviewer to report everything that they could remember about what they had seen in the live performance. After the children completed this free recall session they were asked to report everything they could remember about the videotaped event. Analysis revealed that the 3- to 4-year-olds in the source-monitoring group were more accurate than the 3- to 4-year-olds in the control group. Among the 5- to 6-year-olds there was no difference in the source-monitoring and the control groups. The researchers attribute the reason for this age difference being that the 5- to 6-year-olds used the free recall session as an opportunity to monitor the source of their memories whereas the 3- to 4-year-olds did not. This finding also lends support to the aforementioned finding that the younger the child the less skilled he or she will be at monitoring the source of her or his memories.

The final phase of the study entailed asking the children misleading questions about the events. All children were told before the questioning that some of the information in the questions might be false and they were instructed to tell the experimenter if any of the actions mentioned in the questions did not occur. Similar findings were reported for the misleading questions phase where the 3- to 4-year-olds in the control group were less accurate than those in the source-monitoring group and the 5- to 6-year-olds displayed no differences.

Due to the absence of an effect for the 5- to 6-year-old age group a second experiment was conducted that did not include the free recall phase that was believed to be an opportunity for these children to monitor the source of their memories. When the source-monitoring or control tasks were followed immediately by misleading questions (administered by another

experimenter) the source-monitoring group did provide significantly more accurate responses as compared to the control group. Results indicate that when the 5- to 6-year-olds did not receive the free recall phase the source-monitoring group was less suggestible than the control group. So for both age groups a source-monitoring task resulted in more accurate responses.

A follow-up study was conducted by Thierry and Spence (2002) in order to evaluate the effects of SMT with 3- to 4-year-olds. Their task was to see if this training would make the children more resistant to suggestion by enhancing their ability to identify and reject inaccurate memories. In this study the children viewed a live performance of “Mrs. Science” demonstrating various experiments after which the children viewed a video of “Mrs. Science” demonstrating similar experiments. This phase of the experiment was followed by another presentation of video and live performances in the form of a puppet show that took place 3 - 4 days after the “Mrs. Science” demonstrations. Following the puppet show the children received either source-monitoring training or recognition training (control group). The major distinction for the SMT group is that they received questions that required them to identify the source of the information used to answer the questions and were positively reinforced for correct answers and provided with the correct answer if they answered incorrectly.

Both groups were given training that helped the child identify trick or misleading questions about the puppet show. The children were asked a series of questions and then asked to tell the experimenter whether or not the question they were being asked was a trick and why. A trick question, as told to the children was a “question that is really sneaky because it might ask about something that is not right”. The child was also told that she or he must “listen really carefully to the question and think very hard about the answer.” The children were also asked

non-misleading questions and all were required to reach a criterion of four consecutive correct responses or receive a total of 24 trials of training (Thierry & Spence, 2002).

The training that the SMT children received in the second phase of the study was expected to transfer to the third phase that required the children to answer questions about the live and video presentations by “Mrs. Science”. This phase entailed the children being asked a series of 24 questions about these events. The questioning consisted of 12 yes-no questions and 12 open-ended questions. The children who received the source-monitoring training expected, during this line of questioning, to transfer what they had previously learned in regards to the importance of identifying the source of the information one reports and how to identify misleading questions, and thus more accurate answers as compared to the control group.

The children in the source-monitoring group did prove to be more resistant to suggestive questioning and provided more correct answers when compared to the control group. This was the case in regard to the yes-no questioning and the open-ended non-misleading questioning but was not the case when the questions were misleading open-ended. The researchers hypothesized that this would occur due to the very young age of the children and their tendency to succumb to social demand characteristics. Nevertheless, the children who received the source-monitoring training were more accurate than the control group when responding to misleading and non-misleading yes-no questions and non-misleading open-ended questions (Thierry & Spence, 2002).

Prompts

Often it is difficult to obtain detailed reports from very young children. In an attempt to overcome this problem verbal prompts were built into an interview utilized by Poole and Lindsay (1995). These included asking the children to report everything that they could remember, report

more, report how everything looked, report everything they heard, and finally the children were asked to think about everything that they had reported so that they could decide if they has recounted everything. The two prompts that resulted in significantly more new accurate information compared to a control group for both age groups were the *looked* and *heard* prompts. These prompts were presented to the child in the form of the statements “Sometimes we remember a lot about how things *looked*. Think about all of the things that were in the science room. Tell me how everything looked” and “Sometimes we remember a lot about sounds, or things that people said. Tell me about all of the things you *heard* in the science room.” Repeating these prompts has had positive effects on the amount of recall without increasing inaccurate recall (Poole & Lindsay, 1995).

Study Rationale

The children in the present study watched a magic show video and after a one-week delay were asked questions about the magic show that contained inaccurate as well as accurate information about the magic show. After another one-week delay the children were separated into an SMT group and a control group in order to administer different final interviews about the magic show video. Before the children in the SMT group had their final interview they received source-monitoring training that pertained to a separate event and the skills the children were intended to learn from this training were expected to transfer and be used during the subsequent final interview. Thierry and Spence (2002) used only a three to four day delay between the children in their study viewing the science demonstration and then being questioned about it during the last interview. These researchers recommended that future studies assess the effectiveness of SMT with a design that incorporates a longer time delay between the

presentation of the target event and the interview pertaining to the target event, which was accomplished by the current study.

Due to the use of an empirically sound final interview for all of the children, the differences seen between the two groups may be attributed solely to the SMT. A major contribution of the current study is the examination of the effectiveness of SMT even under the condition of a control group that receives a sound final interview. The study by Thierry and Spence (2002) demonstrated the positive effects that source monitoring training can have. In their study the children first experienced a target event. Later, some of the children received source monitoring training that taught them to attend to the source of their memories and how to identify tricky questions. The SMT pertained to a different event, as would be the case if the training were to be applied in a real life setting where an interviewer would not be aware of what had happened in the target event and so would have to train a child with a different event and expect transfer to occur. The children who received SMT in Thierry and Spence's study were assumed to have transferred the abilities that they learned to the subsequent questions about the target event due to their more accurate recall as compared to the control group.

Transfer was expected to occur during the present study as well. Due to the similarity of the format for training the children in the SMT group with that of the final interview near transfer is expected to occur. Near transfer, as defined by Kimball and Holyoak (2000) is transfer between tasks that are highly similar. The SMT is structured in such a way that the cognitive requirements necessary for accurate recall are highly similar during the questioning about the clown show and the magic show. After initially watching the video of the magic show and having a conversation about the magic show that included accurate and inaccurate information, the SMT group then watches the clown show video and is told a story about a clown that

contains information contrary to what occurred in the video. The skill that the children in the SMT group must transfer to the final interview is the ability to recognize tricky questions and to attend to the source of their memories.

In both situations the child is required to answer questions whose answers could have come from either a video or a conversation and so the similarity between the training and the final interview are such that the probability of transfer is high. This similarity is recommended by Kimball and Holyoak (2000) for transfer to be likely. Another recommendation of these authors is to have representative and variable examples incorporated into the training procedure. During the questioning about the clown video that is incorporated into the SMT, the children are asked various questions that refer to auditory and visual information. The type and style of the questions are similar to those used during the final interview.

Perhaps most importantly, the processing that is required of the children to attend to the source of their memories and recognize misleading questions is the same and is referred to by Kimball and Holyoak (2000) as transfer-appropriate processing. Considering the ages of the children in the current study, the younger participants may have more difficulty learning and thus transferring the aforementioned skills. However, Crisafi and Brown (1986) did find that 2 and 3 year-olds were able to learn separate solutions to problems and later combine that information to solve a new problem. These researchers did find age differences in that the younger participants could not solve the more difficult problems that the 4- and 5-year-olds could. These researchers also mention the importance of having the children state the concepts that they are required to learn and transfer. In the current study the children receiving the SMT are required to explain their answers to the interviewer so that the reasons for reporting their recollections accurately are stated explicitly and thus reinforced.

The current study focuses on the retrieval of information as the children receiving the SMT are meant to learn to attend to where they acquired information over the course of a trial of several questions that require them to state whether the information they recall came from a video or from a story. Over the course of the questioning the children are allowed to practice retrieving accurate information and this questioning procedure will reinforce the correct process of retrieval operations and improve subsequent recall (Brown & Craik, 2000).

The present study sought to isolate the effects of SMT by investigating if it would still result in more accurate recall even when the control group receives a final interview that is designed to elicit accurate recall through the use of empirically supported sound interview techniques. These techniques, which are explained below, included a truth versus lie review, a “don’t know” response review, a cognitive interview component, and the use of repeated prompts.

Another contribution of this study was the assessment of the effects of source-monitoring training at different ages. Previous literature has found that children around the age of four and a half years old display predictable patterns of suggestibility (Scullin, Kanaya, & Ceci, 2002). The findings of this study will also provide evidence as to whether or not the children are able to transfer what they have learned about source-monitoring to other situations. Also, individual differences may be explored by seeing if children who perform better at the source-monitoring training also perform better during the second interview about the initial magic show. A major goal of this study was to develop an interview method that results in more accurate recollections of 3- to-7 year-olds after exposure to inaccurate post-event information. Simple source-monitoring tasks such as those utilized by Poole and Lindsay (2001) were found to be ineffective at this young age. Another interesting question to explore will be whether the children

who are more successful at the SMT are also more accurate in their recollections during the final interview.

METHOD

Participants

Ninety-one 3- to 7-year-olds were recruited from local daycare centers and kindergarten and first grade classrooms of local schools. There were 44 children in the SMT group and 47 children in the control group. The daycares and elementary schools were first given an introductory letter that described the study and asked for their participation. After assent to conduct the study was attained from the site representatives consent forms were distributed to the parents of the age appropriate (3 to 7-year-old) children. The data used in the current study was obtained from 16 3-year-olds, 40 4-year-olds, 16 5-year-olds, 12 6-year-olds, and 7 7-year-olds.

Measures

First Magic Show Interview

The first magic show interview contained introduction, rapport, and questioning portions. The 20 yes/no questions comprising the questioning portion contained either accurate or inaccurate information about the magic show video. The inaccurate post-event information, provided by these questions which contained content about actions and descriptions which were not presented in the video, was presented to the children so that they could later be questioned about the magic show video and be required to distinguish between this inaccurate information and what they actually saw during the video. The data from this measure was obtained by tallying the total number of correct responses each child provided. This information served as a baseline measure of each child's level of accurate recall before any training has taken place.

Source-Monitoring Training

The source-monitoring training contained an introduction and questioning portion. The questioning portion began with a yes/no questioning pertaining to either the clown video or the story about a clown that the children viewed/heard immediately prior to the training. After an affirmative answer to the yes/no question the child was then asked to state whether they had seen the seen what the question pertained to or whether they had heard about the information the question pertained to. After each video/heard question the children were then told the definition of a tricky question and were posed with a question that they were to identify as either tricky or not tricky. This sequence continued for a total of 10 yes/no and 10 video/heard questions. The data from this measure was obtained by tallying the total number of correct responses to each of the questions.

Final Magic Show Interview

The final magic show interview contained introduction, rapport, truth versus lie, knowledgeable, cognitive interview, free recall, questioning, closing, and debriefing portions. The children's responses during the free recall portion were coded (see Appendix A) and a numerical value representing the amount of correct information was used as the data for this portion of the final interview. The questioning portion contained 20 yes/no questions and the total number of correct responses was used as the data for this segment of the final magic show interview. A composite final magic show interview score was obtained for each child by combining the values for the free recall and questioning portions.

Study Procedure

Session One

All of the children whose parents returned a signed consent form watched a videotape of a magician performing various tricks. This video was shown to groups of children with the participants from each respective school or daycare watching the video together. The magician began with an introduction and by telling the children that he is preparing to go to the movies with his mom. To prepare for the movies the magician put on his cape and performed tricks to get what he needed for the movies. The tricks included the magician making flowers appear for his mother, shrinking money so he can pay for his movie ticket, making a bag of pretzels bigger, and making a napkin appear. To perform these tricks the magician used a variety of props including a magic enlarger hat, a magic wand, his magic cape, a book of magic, and an abnormally large dime and crayon (see Appendix B).

Session Two

After a one-week delay all of the children were asked questions about the magic show video, some of these questions included inaccurate information. This first interview about the magic show was administered by research assistants conducting one-on-one interviews with the children. These questions presented the children with information that could be easily confused with what they saw in the video. This session began by building rapport with the child. The interviewers introduced themselves to the children and addressed them by name. The children were then asked if they would like to talk with the interviewer a little bit about something that he or she is very curious about. The children were asked if they remember the magic show video that they viewed earlier and told that they are going to be asked some questions about the magic show (see Appendix C).

Session Three

After another one-week delay the children were randomly assigned to either the SMT group or the control group and were then interviewed about what they saw in the magic show video with the final magic show interview, which immediately followed SMT for the SMT group. The SMT was administered to the participants individually and all of the children received the final interview in a one-on-one session with an interviewer. The children in the SMT group were shown a video of a clown show (see Appendix D) and received training similar to what Thierry and Spence (2002) utilized. After viewing the video the children were told a story about a clown. Some of the actions of the clown in the story were different from what the children had seen the clown do in the video (see Appendix E). After this inaccurate post-event information was presented the children were told a statement about the importance of knowing the difference between what they have seen and what they have heard. Specifically, they were told that the researcher needs them to help him or her out by being very careful to tell the difference between what they remember from the clown performance and what they may have just heard.

The source-monitoring training entailed the children being asked a series of questions that inquired if they remember an event from a clown show. If the child responded affirmatively to these questions they were then asked to identify where that information came from: the clown video or the clown story. Accurate responses were positively reinforced and inaccurate responses were corrected. After the source of the memory had been correctly stated the researcher then taught the child how to identify tricky questions. The definition of a tricky question, as told to the child, was the same as used by Thierry and Spence, “a question that is really sneaky because it might ask about something that is not right” and the child is told to, “listen really carefully to

the question and think very hard about the answer”. The child was then asked either a misleading or accurate question pertaining to the source information just stated. The misleading questions should be identified as tricky questions and the accurate questions as good questions. If the children correctly identified tricky/good questions they were positively reinforced. If the children did not accurately identify tricky/good questions they were corrected and told why the question was either a good or tricky question (see Appendix F).

In summary, SMT entails an interview procedure that incorporates teaching and reinforcing concepts important for accurate recall. With repetition of this style of questioning, the children are meant to learn that when answering a question about a specific target event it is important to think about only that target event and not information that they may have been exposed to later on. When addressing the source of memory aspect of the SMT that will be used in the current study, a focus on the differentiation of memory sources is the essential component of source monitoring theory that the training allows the children to learn this skill. According to source monitoring theory, memories may be differentiated in terms of their characteristics- whether auditory, perceptive, verbal, or contextual- and the SMT encourages the children to discriminate between the different sources of their memories (Johnson, Hashtroudi, & Lindsay, 1993).

The control group watched the same clown show video and listened to the same story about a clown in order to have the time and experiences held as constant as possible as compared to the SMT group. The only difference between the SMT group and the control group was the training that the SMT group received that allowed them to practice identifying where their memories originated and also how to identify tricky questions.

After either the SMT for the SMT group or the clown story for the control group, all of the children received the final interview. The final interview began with a rapport component for the control group. For all of the participants the interviewers began by telling the children that they did not see the same magic show that the children saw but they would really like to know what happened and that the children could really help them out by telling him or her everything that they remember.

The final interview included a truth versus lie review, a “don’t know” response review, a cognitive interview component, and the use of repeated prompts. The truth versus lie review allowed the children to practice identifying truthful and untruthful statements. The children were positively reinforced for correctly identifying the nature of the statements and were corrected if they made a mistake. This review also included emphasizing the importance of only telling the truth. The “don’t know” response review required the children to answer a question that they could not possibly have an answer for (“Can you tell me my dog’s name?”). The children were positively reinforced for a response of “I don’t know” and corrected if they made no response or made up a name for the dog. This review also included emphasizing the importance of saying, “I don’t know” if they were not sure about the answer to a question.

Some cognitive interview techniques, as suggested by Köhnken (1993) were employed during the final interview. For the current study, due to time constraints, all of the components of a cognitive interview were not incorporated into the final interview. The components that were most feasible to incorporate into the current interview protocol included the children being asked to pretend that they were back in the place where they saw the magic show video. They were then asked to think about what the room looked like, how they felt at the time, and what sounds they heard. The children were asked to report everything that they could remember about the

magic show video for the free recall portion of the final interview. The importance of reporting only information that they obtained from the video was emphasized at this time.

The children were then reminded that it is very important that they only report what actually happened during the magic show, that some of the questions might be tricky, and that if they do not know the answer to a question it is ok to say that they do not know. The suggestions of Köhnken were also utilized during the final interview questioning. These were included in the training of the interviewers and included how to respond to the child, to not to interrupt, and to have the child create a cognitive picture that the he or she must exhaust before moving on to another topic (Köhnken, 1993).

The prompts that Poole and Lindsay (1995) found to result in significantly more new accurate information were repeatedly employed during the free recall portion of the final interview. These were the prompts to report everything they heard and report how everything looked. After the free recall portion of the final interview the children will then be asked a series of misleading and nonleading questions about what they saw on the video. It was hypothesized that the earlier training will result in the SMT group being more resistant to these misleading questions as compared to the control group (see Appendix G). The misleading questions that follow the free recall portion of the interview would not normally be included in a cognitive interview. Research assistants and the principal investigator gave the interviews conducted during the second and third sessions. The temporal order of the study is displayed in Figure 1.

Hypotheses

Age

1. It was anticipated that the SMT would improve the performance of the children in this group as compared to the control group.

2. It was anticipated that the positive effects of the SMT would be more pronounced with the older children.

Individual Differences

3. It was anticipated that the children's' performance during the SMT would be predictive of their performance during the final interview.
4. It was anticipated that SMT would result in an improvement in accurate recall relative to each child's performance during the first magic show interview.

SMT effectiveness

5. It was anticipated that the SMT would result in more accurate recollections during the free recall and questioning portions of the final interview.
6. It was anticipated that the children who received SMT would be more resistant to suggestion.

RESULTS

In order to test the hypotheses pertaining to the effectiveness of SMT in more detail, the following results include analyses that compare the SMT and control groups' performance on the components of the final interview, as well as various age divisions. The final interview was made up of a free recall portion, which allowed the children to state all of the information that they could remember about the magic show video they had seen earlier. After the free recall portion of the final interview the children were then asked a series of twenty questions about the magic show video, which included questions that were both accurate as to what occurred during the magic show video and misleading as to what occurred during the magic show video.

The misleading questions that were included in the questioning portion of the final interview contained information that the children were exposed to during the first magic show

interview. During the first magic show interview the children were asked questions that were both accurate and misleading with the expectation that the information presented in the misleading questions could become confused with the information that the children were exposed to during the magic show video. The children's performance during the first magic show interview was measured and analyses were conducted in order to compare levels of improvement in accurate recall from the first magic show interview to the final interview between the SMT and control groups.

Hypothesis 1

For the first hypothesis an ANOVA was conducted in order to assess the effects of SMT (training condition) and age on the children's overall performance during the final interview. The children's overall performance on the final interview was defined as a composite of their scores on both the free recall and questioning portions. A correlation was conducted to examine the relation between these two measures. This analysis revealed a significant correlations ($r = .373$, $p < .01$) between the total points assigned by the free recall coding scheme and the total number of correct responses to the questions. The children were divided into two groups of 3- to 4 and 5- to 7-year-olds. The results of the ANOVA indicated a nonsignificant effect for training condition, $F(1,87) = .98$, $p = .33$, partial $\eta^2 = .01$, a significant main effect for age, $F(1,87) = 45.63$, $p < .05$, partial $\eta^2 = .34$, and a nonsignificant interaction between training condition and age, $F(1,87) = .70$, $p = .41$, partial $\eta^2 = .01$. The age main effect indicated that the older children ($M = 24.66$, $SD = 10.18$, $N = 35$), tended to have more accurate recall during the final interview than the younger children ($M = 12.23$, $SD = 7.19$, $N = 56$). The values for the 3- to 4 and 5- to 7-year-olds performance on the final interview are presented in Table 1 and the values for the SMT and control groups performance on the final interview are presented in Table 5.

Hypothesis 2

For the second hypothesis an ANOVA was conducted in order to assess the effects of SMT and age on the children's overall performance during the final interview in order to assess if the effects of SMT were more pronounced as age increased. Age was separated into categories according to year. The results of the ANOVA indicated a nonsignificant effect for training condition, $F(1,81) = 1.65$, $p = .20$, partial $\eta^2 = .02$, a significant effect for age, $F(4,81) = 14.26$, $p < .05$, partial $\eta^2 = .41$, and a nonsignificant interaction between training condition and age, $F(4,81) = 1.44$, $p = .23$, partial $\eta^2 = .07$. The age main effect indicated that the older children tended to have more accurate recall during the questioning portion of the final interview. Follow-up analyses to the main effect for age were conducted with a Tukey post hoc procedure which indicated that there were significant differences between the 3-year-olds ($M = 8.69$, $SD = 5.94$, $N = 16$) and 4-year-olds ($M = 13.65$, $SD = 7.21$, $N = 40$), from the 5-year-olds ($M = 23.63$, $SD = 10.53$, $N = 16$), 6-year-olds ($M = 24.17$, $SD = 10.80$, $N = 12$), and the 7-year-olds ($M = 27.86$, $SD = 8.99$, $N = 7$). The values for the 3 through 7-year-olds are presented in Table 2 and Figure 2 displays the increase in accurate recall with age.

Hypothesis 3

For the third hypothesis a linear regression was conducted in order to evaluate the prediction of the children's performance on the final interview from their performance during the SMT. The SMT training included questions that required the children to respond "video" or "heard" to questions about where they remembered information from, and "yes" or "no" to whether or not they believed questions posed to them were tricky. A correlation was conducted to examine the relation between these two measures. This analysis revealed a significant correlation ($r = .581$, $p < .01$) between total correct on the video/heard portion and total correct on

the yes/no portion of the SMT. Due to the significant correlation of these two measure they were combined in a composite score for a total correct SMT variable.

The linear regression analysis did not reveal a significant relationship when the performance on the final interview was a composite of the free recall and questioning portions of the interview. A linear regression analysis with only the performance on the questioning portion of the final interview was also conducted and again no significant relationship was revealed.

Hypothesis 4

For the fourth hypothesis difference scores were calculated so that the children's performance during the first magic show interview could be compared with their performance during the questioning portion of the final interview. The analyses explored each training condition separately in order to assess if the SMT resulted in a higher level of accurate recall from the first magic show interview to the final interview. A one-way ANOVA was conducted with the difference scores which revealed a significant difference between the SMT group and control group, $F(1,76) = 5.47, p < .05$. This significant difference indicated that the SMT group tended to improve their level of accurate recall on the questions from the time of the first magic show interview to the time of the final interview (see Figure 3). One could consider the first magic show interview to be a baseline assessment of the accuracy of each child's recall. Finding that the children in the SMT group ($M = .32$), displayed less of a decline than the children in the control group ($M = -1.15$), when comparing their baseline scores and final interview scores implies that the SMT was bolstering enough to affect a child's level of accurate recall. The means and standard deviations for the training condition performance for the first magic show interview and the questioning portion of the final interview are presented in Table 3.

Hypothesis 5

For the fifth hypothesis ANOVAs were conducted in order to assess the effects of SMT on the children's performance during the separate portions of the final interview. The final interview consisted of a free recall portion and a questioning portion. The free recall portion was analyzed first. In order to analyze the children's performance during the free recall portion of the final interview each child's utterances were transcribed and then coded according to a scheme (see Appendix A) previously used by Memon which assigns one point for accurate persons, actions, objects, and surroundings (Memon, Wark, Bull, & Koehnken, 1997). Two raters independently coded the children's utterances and inter-coder agreement for total accuracy was 98% ($r = .97$, $p < .0001$).

With age divided into groups of 3- to 4 and 5- to 7-year-olds the results of an ANOVA revealed a nonsignificant effect for training condition, $F(1,87) = .10$, $p = .75$, partial $\eta^2 = .001$, a significant effect for age, $F(1,87) = 45.41$, $p < .05$, partial $\eta^2 = .34$, and a nonsignificant interaction between training condition and age, $F(1,87) = .09$, $p = .77$, partial $\eta^2 = .001$. The age main effect indicated that older children ($M = 12.97$, $SD = 8.32$, $N = 35$), tended to have more accurate recall than the younger children ($M = 3.45$, $SD = 5.01$, $N = 56$), during the free recall portion of the final interview. The values for the 3- to 4 and 5- to 7-year-olds on the free recall portion of the final interview are presented in Table 3 and the values for the SMT and control groups on the free recall portion of the final interview are presented in Table 5.

As previously stated the coding scheme that was used to assign a score for each child's performance during the free recall session is a composite of points assigned to persons, actions, objects, and surroundings. In order to compare the SMT and control group's performances on the free recall portion in more detail each of the four components of the coding scheme were also

analyzed individually to assess the effects of training condition and age. ANOVAs conducted with each of the four measures displayed significant effects for age with age divided into groups of 3- to 4-year-olds and 5- to 7-year-olds. The values for the age groups on the components of the free recall coding scheme are presented in Table 4.

The ANOVA conducted in order to assess the effects of SMT and age on the children's performance on reporting person information during the free recall session indicated a nonsignificant effect for training condition, $F(1,87) = .441, p = .508$, partial $\eta^2 = .005$, a significant effect for age $F(1,87) = 28.89, p < .05$, partial $\eta^2 = .249$, and a nonsignificant interaction between training condition and age, $F(1,87) = .199, p = .657$, partial $\eta^2 = .002$. The age main effect indicated that the older children ($M = 2.29, SD = 1.81, N = 35$), tended to recall more person details from the magic show video during the free recall session as compared to the younger children ($M = .696, SD = .971, N = 56$).

The ANOVA conducted in order to assess the effects of SMT and age on the children's performance on reporting action information during the free recall session indicated a nonsignificant effect for training condition, $F(1,87) = 1.01, p = .317$, partial $\eta^2 = .011$, a significant effect for age $F(1,87) = 53.83, p < .05$, partial $\eta^2 = .382$, and a nonsignificant interaction between training condition and age, $F(1,87) = .861, p = .356$, partial $\eta^2 = .010$. The age main effect indicated that the older children ($M = 3.63, SD = 2.46, N = 35$), tended to recall more action details from the magic show video during the free recall session as compared to the younger children ($M = .714, SD = 1.29, N = 56$).

The ANOVA conducted in order to assess the effects of SMT and age on the children's performance on reporting object information during the free recall session indicated a nonsignificant effect for training condition, $F(1,87) = .027, p = .869$, partial $\eta^2 = .00$, a

significant effect for age, $F(1,87) = 32.54, p < .05$, partial $\eta^2 = .272$, and a nonsignificant interaction between training condition and age $F(1,87) = .025, p = .874$, partial $\eta^2 = .00$. The age main effect indicated that the older children ($M = 6.74, SD = 4.88, N = 35$) tended to recall more object details from the magic show video during the free recall session as compared the younger children ($M = 1.96, SD = 3.03, N = 56$).

The ANOVA conducted in order to assess the effects of SMT and age on the children's performance on reporting surroundings information during the free recall session indicated a nonsignificant effect for training condition, $F(1,87) = .012, p = .913$, partial $\eta^2 = .00$, a significant effect for age $F(1,87) = 5.82, p < .05$, partial $\eta^2 = .063$, and a nonsignificant interaction between training condition and age, $F(1,87) = .247, p = .620$, partial $\eta^2 = .003$. The age main effect indicated that the older children ($M = .314, SD = .676, N = 35$), tended to recall more surroundings details from the magic show video during the free recall session as compared to the younger children ($M = .071, SD = .26, N = 56$).

Finally, the questioning portion of the final interview was analyzed. With age separated into two groups of 3- to 4 and 5- to 7-year-olds. The results of the ANOVA indicated a significant effect for training condition, $F(1,79) = 4.16, p < .05$, partial $\eta^2 = .05$, a significant effect for age $F(1,79) = 7.89, p < .05$, partial $\eta^2 = .09$, and a nonsignificant interaction between training condition and age, $F(1,79) = .46, p = .50$, partial $\eta^2 = .006$. The age main effect indicated that the older children ($M = 12.03, SD = 3.24, N = 34$), tended to have more accurate recall during the questioning portion of the final interview as compared to the younger children ($M = 10.04, SD = 2.90, N = 49$). The training condition main effect (see Figure 4) indicated that the children in the SMT group ($M = 11.60, SD = 3.55, N = 40$) tended to have more accurate recall during the questioning portion of the final interview as compared to the control group ($M =$

10.16, $SD = 2.65$, $N = 43$). The values for the age groups on the questioning portion of the final interview are presented in Table 1 and the values for the SMT and control groups on the questioning portion of the final interview are presented in Table 5.

Hypothesis 6

For the sixth hypothesis an ANOVA was conducted in order to assess the effects of SMT and age on the children's performance when answering only misleading questions from the questioning portion of the final interview. With age divided into groups of 3- to 4-year-olds and 5- to 7-year-olds the results of the ANOVA indicated a nonsignificant effect for training condition, $F(1,72)=.00$, $p = .99$, partial $\eta^2 = .00$, a nonsignificant effect for age, $F(1,72)=3.57$, $p<.06$, partial $\eta^2 = .05$, and a nonsignificant interaction between training condition and age, $F(1,72)=2.93$, $p = .09$, partial $\eta^2 = .04$.

DISCUSSION

The present study assessed the effects of source-monitoring training on young children. For those children in the study who received SMT more accurate recall was expected during a final interview that required them to remember information about a magic show video that they had seen 2 weeks prior. The final interview in the current study included a free recall portion and a questioning portion that included both misleading and accurate questions. Previous studies have shown that young children have difficulty correctly monitoring the source of their memories across a range of stimuli, such as children confusing what one they have done with what they have imagined themselves doing. Source-monitoring ability is considered to develop as one ages and deficits in this skill have been speculated to stem from reasoning skills having not yet fully developed (Johnson, Hashtroudi, & Lindsay, 1993).

Overall most of the analyses in the current study revealed that the older children displayed higher levels of accurate recall as compared to the younger children. This could be due to the younger children not being able to inhibit the impulse to combine the information that they received during the video of the magic show with the information they received about a magic show during the first interview. This deficit pertains to the acquisition of executive functioning which was mentioned previously as a process of higher-level control that children are typically are not proficient at until around the age of four (Perner & Lang, 1999). The maturational differences found in the current study may be attributed to the younger children not receiving an intervention sufficient enough to allow them to display these cognitive abilities that they have not yet mastered. The younger children may have displayed lower levels of accurate recall due to a faster rate of memory decay as compared to the older children (Ceci & Bruck, 1998).

The older children in the current study displayed more accurate recall than the younger children in every memory assessment used in the current study. This finding emphasizes the fact that younger children are especially in need of assistance during interview procedures, as has been found in previous literature (Ceci, Ross, & Toglia, 1987). The age differences found in the current study provide yet another example of the need for interview techniques that will result in higher levels of accurate recall in young children (3- to 4-year-olds).

Other interesting age differences were seen when the components (person, action, object, surrounding) of the free recall responses were examined separately. Previous studies (Ceci & Bruck, 1993) have found that older children (7 - 12 years) provide more accurate recall in regard to actions as compared to younger children (4 - 6 years) as was found in the current study. The aforementioned study also found no age differences in regard to person details, a finding which was not supported by the current study. A contribution of the present analyses is the finding of

age differences in regard to details about persons, surroundings, and objects. Based upon the findings of the current study it appears that older children (5 - 7 years) tended to recall all of the components of the free recall coding scheme more accurately and in greater amount than younger children (3 - 4 years).

A similar study conducted by Thierry and Spence (2002) found that SMT was effective in producing more accurate recall with misleading, nonmisleading, and open-ended questions. The present study used a similar technique to that used by these researchers; however, some key differences make this study unique in the information that it provides and also may have contributed to the fewer significant findings of the current study.

Thierry and Spence used a mastery criterion procedure during the SMT procedure whereas the present study did not. By continuing the training of the children until they achieved a mastery criterion and were deemed to have learned to source monitor, this design produced higher levels of learning in the SMT group children. In the current study due to time constraints, a mastery criterion procedure was not utilized and so it is probable that lower levels of learning the skills involved in the SMT occurred for the children in the present SMT group. The mastery criterion used during Thierry and Spence's SMT procedure ensured that all of the children in their SMT group had reached the same level of skill in regard to learning the ability to monitor the source of their memories. It appears as though a more parsimonious and less time consuming training protocol is not as effective as the intensive training that was used during Thierry and Spence's study.

Even without the use of a mastery criterion the SMT used in the current study was associated with more accurate recall during the questioning portion of the final interview and there was also a marginally significant effect found when a linear regression analysis was

conducted to evaluate the prediction of the children's performance during the questioning portion of the final interview and their performance during the SMT such that as successful performance during the SMT increased successful performance during the questioning portion of the final interview increased.

Even though the differences between the SMT and control groups in the present study were not as pronounced as expected the findings are nonetheless very important. The current SMT procedure could be viewed as a condensed version of the procedure used by Thierry and Spence. It is useful to know that a simplified version of the original SMT is not as effective. Also, even with this more simplified procedure a difference was still produced between the SMT and the control groups on the questioning portion of the final interview, leading one to conclude that even a small dose of such training can impact young children's recall for the better.

Significantly, more accurate recall was seen with the SMT group as compared to the control group when performance during the questioning portion of the final interview was explored. In Thierry and Spence's study, only questions were used during the last interview with no free recall session being included in their design. The current study included a free recall session as part of the final interview and was the first such study to assess performance on a free recall interview segment after those interviewed have either received SMT or not. A major limitation of this portion of the final interview was the absence of responses that many of the children displayed. This difference in response rate led to the questioning portion of the final interview being a better measure of performance. In spite of this problem the free recall portion of the final interview was vital due to the frequent use of free recall in forensic interviews and the recommendation by the National Institute of Child Health and Human Development (NICHD) that a free recall phase be used during interviews. A useful contribution of the current

study was the finding that SMT appears to benefit a questioning interview phase more so than a free recall interview phase.

There was also a difference in the amount of time that had passed from when the children viewed the stimuli used in Thierry and Spence's study to the time that they were questioned about it. In their study only 3 - 4 days had passed and in the current study a 7 - 10 days had passed from the time the children viewed the magic show video and were later interviewed about it during the final interview session. This time difference may partially account for the lower levels of accurate recall that were seen in the current study, though it was suggested by Thierry and Spence that future studies should assess the effectiveness of SMT with longer delays.

Previous literature has found lower levels of accurate recall being associated with a longer time delay as compared to a shorter time delay between the presentation of information and subsequent questioning about that information for both older (7 - 12 years) and younger children (4 - 6 years) (Ceci & Bruck, 1993). The amount of time that passed from the time the children in the current study viewed the video of the magic show and the time that they received the final magic show interview may have been so long that it resulted in the less significant findings of this study as compared the Thierry and Spence's findings. This finding has implications for forensic interviews as it supports the assertion that children must be interviewed as soon as possible after witnessing or experiencing an event and also that the longer the delay between such an experience and an interview pertaining to it, the greater the chances of memory decay.

Other limitations of the current study include the used of video taped stimuli. Conducting a similar study with live performances would be more pertinent for forensic applications. Also, one should not assume that improving children's memories for event stimuli such as those used

in the current study are applicable to situations where the child experiences or views a traumatic event. The videos used in the current study were of a magic show and a clown show. These events were entertaining and many children reported that they were funny and enjoyable to watch and so the findings of the current study may not be applicable to what one would see when assessing memories for upsetting or traumatic events (Johanson, Hashtroudi, & Lindsay, 1993)

The stimuli that the children in the current study were required to distinguish between were visual and auditory in nature; specifically, a videotaped performance and an interview. This resembles a suggestibility procedure, which typically entails exposing participants to a visual stimuli and then exposing the participants to verbal misinformation and one expects, as was the case in the current study that the participants will confuse what they have heard with what they have seen (Johnson, Hashtroudi, and Lindsay, 1993). The previous source-monitoring study used a live performance and a video taped performance to test how well the children could distinguish between the two whereas the current study was more applicable to a forensic setting, which would entail visual stimuli, followed by verbal misinformation.

The current study has been the first to assess the effectiveness of SMT without the use of a mastery criterion during the training, with a free recall portion during the final interview, with a longer time delay than previously used, and with a distinguishing requirement that is between a video and an interview. It appears that the absence of a mastery criterion diminished the effects of the SMT if one were to assume that SMT could be effective during a free recall session. However, the SMT was found to make a difference during the questioning portion of the final interview, though the differences between the SMT and control group would probably have been more pronounced if a mastery criterion had been used during the training.

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Table 1

Descriptive Statistics and Summary of Analysis of Variance Comparing Age Group and Performance during the Final Interview and its Components.

Interview	Age	Mean	SD	F	p
Final Interview	3 - 4 (N = 56)	12.23	7.19	45.63*	.00
	5 - 7 (N = 35)	24.65	10.18		
Free Recall Portion	3 - 4 (N = 56)	3.45	5.01	45.41*	.00
	5 - 7 (N = 35)	12.97	8.32		
Questioning Portion	3 - 4 (N = 49)	10.04	2.90	7.89*	.006
	5 - 7 (N = 34)	12.02	3.24		

Table 2

Descriptive Statistics and Summary of Analysis of Variance Comparing Age by Year and Performance on the Final Interview.

Interview	Age	Mean	<i>SD</i>	<i>F</i>	<i>p</i>
Final Interview	3 (<i>N</i> = 16)	8.69	5.94	14.26*	.00
	4 (<i>N</i> = 40)	13.65	7.21		
	5 (<i>N</i> = 16)	23.63	10.53		
	6 (<i>N</i> = 12)	24.17	10.80		
	7 (<i>N</i> = 7)	27.89	8.99		

Table 3

Descriptive Statistics for Training Condition Performance during the First Magic Show Interview and the Final Interview and its Components.

Interview	Training Condition	Mean	<i>SD</i>
First Magic Show Interview	SMT (<i>N</i> = 38)	11.32	2.75
	Control (<i>N</i> = 40)	11.41	2.78
Final Interview	SMT (<i>N</i> = 44)	18.06	10.78
	Control (<i>N</i> = 47)	16.02	10.00
Free Recall Portion of Final Interview	SMT (<i>N</i> = 44)	7.52	8.08
	Control (<i>N</i> = 47)	6.72	7.89
Questioning Portion of Final Interview	SMT (<i>N</i> = 40)	11.6	3.55
	Control (<i>N</i> = 43)	10.16	2.65

Note. First Magic Show Interview Occurred Pre-SMT

Table 4

Descriptive Statistics and Summary of Analysis of Variance Comparing the SMT Group Performance to Control Group Performance on the Components of the Free Recall Coding Scheme.

Components of the Free Recall Coding Scheme	Age	Mean	<i>SD</i>	<i>F</i>	<i>p</i>
Person	3 – 4 (N = 56)	.696	.971	28.89*	.000
	5 – 7 (N = 35)	2.29	1.81		
Action	3 – 4 (N = 56)	.714	1.29	53.83*	.000
	5 – 7 (N = 35)	3.63	2.46		
Object	3 – 4 (N = 56)	1.96	3.03	32.54*	.000
	5 – 7 (N = 35)	6.74	4.88		
Surrounding	3 – 4 (N = 56)	.071	.26	5.82*	.018
	5 – 7 (N = 35)	.314	.676		

Table 5

Summary of Analysis of Variance Comparing the SMT Group Performance to the Control Group Performance on the Final Interview and its Components.

Interview	Training Condition	<i>F</i>	<i>p</i>
Final Interview	SMT (<i>N</i> = 44)		
	Control (<i>N</i> = 47)	.98	.33
Free Recall Portion	SMT (<i>N</i> = 44)		
	Control (<i>N</i> = 47)	.10	.75
Questioning Portion	SMT (<i>N</i> = 40)		
	Control (<i>N</i> = 43)	4.16*	.04

Figure 1.

Temporal Order of Procedure

Figure 2.

Age and Performance on Final Interview

Figure 3.

Training Condition and Performance from First Magic Show Interview to Final Interview

Figure 4.

Training Condition and Performance on the Questioning Portion of the Final Interview

Appendix A

Coding Scheme

Memon et al. alternative scoring procedure for Magic Show Performance Free Recall

If anything is repeated do not score twice

P=Person, A=Action, O=Object, S=Surrounding

Man/boy (1-P) in a white room (1-S) with a table (1-S) in front of him (1-P) waves (1-A) he (1-P) says (1-A) 'hi boys and girls' (1-P) I'm (1-P) 'Perogi the magnificent' (1-P) 'and today I'm' (1-P) 'going to' (1-A) 'the movies' (1-S) 'with my mom' (1-P) 'and I think I'm' (1-P) 'going to need' (1-A) 'some of my magic' (1-O) 'to get ready' (1-A) as has hands on hips (1-A) 'I've (1-P) already got on my nice bright yellow sweater' (1-O) points (1-A) to shirt (1-O) 'to wear' (1-A) 'but I (1-P) 'also think I'm going to put a nice colorful ribbon (1-O) around my waist' (1-A) just to complement (1-A) it/ribbon (1-O) a little bit picks up (1-A) ribbon/scarf (1-O) off the table (1-S) and ties it around (1-A) his waist (1-O) says 'so let me (1-A) tie (1-A) this (1-O) 'around here, that' (1-O) 'does look nice' (1-A) 'that's quite lovely' (1-A) 'I (1-P) 'think I'll tie' (1-A) 'one/scarf/ribbon' (1-O) 'around my neck' (1-O) picks up (1-A) scarf (1-O) from table (1-S) and ties (1-A) around neck (1-O) 'its time for my (1-P) 'magic cape' (1-O) picks up (1-A) cape (1-O) off table (1-S) and puts it on (1-A) 'because I'm a magician (1-P) and this is how people (1-P) will know (1-A) that I'm a magician and I think that I'm (1-P) going to have to get (1-A) my mom (1-P) a present (1=O) 'cause its nice of her to be taking (1-A) me to the movies (1-S) 'so are you (1-P) 'ready for my first magic trick' (1-A) 'I'm (1=P) going to put my hand over here (1-A) 'and look theres flowers' (1-O) pulls (1-A) flowers (1-O) from behind cape (1-O) my (1-P) mom (1-P) 'is going to love' (1-A) those (1-O) smells (1-A) flowers (1-O) and lays (1-A) them down on the table (1-S) 'next I (1-P) 'need money (1-O) to get into (1-A) the

movie theater' (1-S) I'll (1-P) get (1-A) 'my nice money box' (1-O) picks up (1-A) box (1-O) off table (1-S) 'which is shaped like a star (1-O) 'I'll take out (1-A) one dime' (1-O) takes off (1-A) the lid of the box (1-O) and puts it on (1-A) the table (1-S) takes (1-A) dime (1-O) out of box (1-O) says 'which is just enough to get me into (1-A) the movie theater (1-S) drops (1-A) dime (1-O) into hat (1-O) accidentally then puts box (1-O) back on the table (1-S) says 'huhoh boys and girls (1-P) I (1-P) just dropped (1-A) my dime (1-O) into my enlarger (1-A) hat (1-O) that when you (1-P) put stuff in they come out all big (1-A) he (1-P) pulls (1-A) huge dime (1-O) out of the hat (1-O) and holds (1-A) it (1-O) up says 'I (1-P) don't know how I'm going to get into (1-A) the movies (1-S) like this' he sets (1-A) dime (1-O) down on the table (1-S) Says these enlarger (1-A) hats (1-O) are pretty fun (1-A) 'see you (1-P) can put (1-A) anything (1-O) into them (1-O) and it becomes big (1-A) like a crayon (1-O) 'heres a little crayon (1-O) for coloring (1-A) a little picture (1-O) you put (1-A) the crayon (1-O) in the hat (1-O) and now you (1-P) can color (1-A) a big picture (1-O) picks up (1-A) small crayon (1-O) off table (1-S) and drops it (1-A) into hat (1-O) and pulls out (1-A) a huge crayon (1-O) says 'I'll (1-P) just put that (1-O) over there and color (1-A) when I get back (1-A) from the movies (1-S) 'but how an I (1-P) going to make (1-A) my dime (1-O) small again I (1-P) think I'm going to look (1-A) in my book (1-O) of magic tricks' picks up (1-A) book (1-O) off table (1-S) and opens (1-A) the book (1-O) 'making dimes (1-O) small again (1-A) flips (1-A) through the book (1-O) says I (1-P) need my magic wand (1-O) picks up (1-A) wand (1-O) off the table (1-S) reads (1-A) from the book (1-O) says 'step one put dime (1-O) into magic hat' (1-O) picks up (1-A) dime (1-O) and puts it into the hat (1-O) reading (1-A) from the book (1-O) says 'and then once, twice, three times' as taps (1-A) hat (1-O) with wand (1-O) three times then puts (1-A) the book (1-O) down on the table (1-S) and takes regular size dime (1-O) out of the hat (1-O) says 'I'm (1-P) going to put (1-A)

this (1-O) in my pocket (1-O) for same keeping' says 'now I've (1-P) got to get (1-A) a snack (1-O) cause those movies (1-S) can get long (1-A) and I'm going to get hungry (1-A) cause I'm (1-P) a growing (1-A) magician (1-P) 'I packed (1-A) myself (1-P) a little bag of pretzels (1-O) cause those are a good snack (1-O) picks up (1-A) bag of pretzels (1-O) off the table (1-S) says I'm (1-P) feeling pretty hungry (1-A) so I'm going to put (1-A) them (1-O) into my enlarger (1-A) hat (1-O) he throws (1-A) pretzels (1-O) into hat (1-O) and pulls out (1-A) a bigger bag of pretzels (1-O) says 'now I (1-P) can eat (1-A) all throughout the movie (1-S) puts (1-A) bag (1-O) on the table (1-S) says 'my mom (1-P) is going to buy (1-A) some popcorn (1-O) at the movies (1-S) and I (1-P) will steal (1-A) some of her (1-P) popcorn (1-O) cause its (1-O) pretty good (1-A) but its (1-O) going to get all messy and buttery (1-A) on my hands (1-O) so I'm going to need a napkin (1-O) 'now I (1-P) haven't' done this magic trick (1-A) in a while but I know how to pull (1-A) a napkin (1-O) out of my ear (1-O) he then puts his finger (1-O) to his ear (1-O) and there is a squeaking noise (1-A) he shakes (1-S) his finger (1-O) says 'this (1-A) doesn't seem to be working (1-A) puts finger (1-O) to ear again (1-A) and says 'oh here it (1-O) is boys and girls (1-P) and he pulls (1-A) a napkin out from his hood (1-O) says 'that squeaking (1-A) you (1-P) heard (1-A) is because I (1-P) haven't practiced (1-A) that trick (1-A) in a while but I'll practice (1-A) and get better (1-A) he puts (1-A) the napkin (1-O) on the scarf (1-O) says 'so I (1-P) can wipe (1-A) my hands (1-O) off says 'I've got my pretzels (1-O) and my flowers (1-O) for my mom (1-P) picks them (2-O) up off the table (1-S) says I'm ready for the movies (1-S) I'm (1-P) going to take (1-A) this cape (1-O) off he pulls (1-A) cape (1-O) off and lays it (1-A) on the table (1-S) says so everyone (1-P) at the movie theater (1-S) won't know (1-A) I'm a magician (P) cause then they'll (1-P) want me (1-A) to make (1-A) their food (1-O) bigger too

and I want to enjoy the movie (1-A) says ‘see you later” and waves (1-A) and walks away (1-A) while smelling (1-A) the flowers (1-O) and holding (1-A) the pretzels (1-O)

Descriptions

Perogi/magician- brown/black hair, blue jeans, bright yellow shirt/sweater, black glasses, black cape, black hat, scarf/ribbon around waist and neck

Book- large with symbols on the front

Wand- black with a white tip

Hat- black tophat

Box- gold and in the shape of a star

Napkin- small and blue

Cape- black and long

Flowers- bouquet multicolored

Crayon- a small one and a large one both are red

Pretzels- a large bag and a small bag in a clear plastic bag

Dime- small and large silver

Appendix B

Transcript of Magic Show

Video opens with magician standing in front of a white background behind a long white table that has a gold star shaped box, small bag of pretzels, a red crayon, a large book, a black wand, a big scarf, a small scarf, a large black top hat, and a black cape on it. The magician has brown hair, is wearing glasses and is wearing a bright yellow fleece shirt and jeans.

“Hi boys and girls, I’m Parogi the magnificent (as waves at the camera) and today I’m going to go to the movies with my mom.” “But I think I’m going to use some of my magic to help me get ready.” “So first I’ve already got on my nice bright yellow sweater to wear (as points to sweater he has on and brushes it off) but I also think I’m gonna put a nice colorful ribbon around my waist just to complement it a little bit” (as picks scarf up off of the table). “So let me tie this around here” (as ties scarf around sweater at the waist). “Oh wow, that does look nice.” “That’s quite lovely.” (picks up other scarf) “I think I’ll tie one around my neck as well” (as ties smaller scarf around neck).

“Ok, well now that I’ve got all that, of course I need my magic cape” (as picks up cape off of table). “Cause I am a magician and this is how people will know I’m a magician” (as puts cape on). “So let me get my magic cape on, like so.” “All right, looks quite magical.” “And I think I’m going to have to get my mom a present cause it’s quite nice of her to be taking me out to the movies.”

“So are you ready for my first magic trick boys and girls?” “Watch this; I’m just going to put my hand over here and oh uh flowers!” (as pulls bouquet of flowers out of sleeve). “That was pretty magical wasn’t it?” (as smells flowers and says “Ahhh!” and lays then down on the table off to the side). “All right my moms gonna love those”.

“So lets see, what’s next?” “Next I need money to get into the movie theater, so let me get my nice money box which is shaped like a star” (as picks up box off table and holds it up for everyone to see). “And we’ll take out one dime, just enough to get in the movie” (as takes top off box and takes out a dime and then drops dime into top hat). “Oh uh, boys and girls, I’ve just dropped my dime into my enlarger hat” (as put top back on box and sets it on the table).

“My enlarger hat is a hat that when you put stuff in small they come out all big” (as pulls large dime out ho hat and holds up large dime for everyone to see). “I don’t know how I’m going to get into the movie like this” (sets dime on table). “These enlarger hats are pretty fun, (as picks up red crayon from off the table) you can put anything in, even a little crayon like this.” You’re coloring a little picture, you put it in” (as puts crayon into top hat and pulls out a large crayon). “Now you can color a big picture, isn’t that wonderful?” “Ok we’ll just put that over there.” “I’ll color when I come back from the movies” (as sets large crayon on table off to the side).

“But how am I going to make my dime small again?” “I think I’m going to look in my book of magic tricks” (as points to and then picks up large book off of the table). “This is my nice book of magic tricks that I have” (as pats book). “Let me see what we have (as leafs through book) making dimes small again.” (stops at a page) “Ok, I need my magic wand which is here” (as picks up black wand off of table). “And step one, put dime into magic hat, ok lets get rid of that thing” (places large dime into top hat). “And then once twice three times” (as taps hat with wand three times). “Wow boys and girls, it worked, my dimes all small again” (as puts book and wand back on the table and picks up dime out of hat and holds up dime to show everyone). “I’m going to put this in my pocket, just for safe keeping” (put dime into jeans pocket and pats pocket).

“Ok, well now that I’ve got my money I need to get a snack cause those movies can get kinda long and I’m going to get really hungry (as picks up small bag of pretzels off table) cause I’m a growing magician.” “So I’ve packed myself a little bag of pretzels (as holds up bag to show everyone). “Those are a good snack I think.” “But today I’m feeling pretty hungry boys and girls so I’m going to put it into my enlarger hat (drops bag into hat) and presto!” “Look at that” (picks up large bag of pretzels from out of the hat). “I can eat all throughout the movie” (lays bag down on table off to the side).

“Ok, now I’ve got my snack” (pats bag). “And you know what else, my moms going to buy some popcorn there and I think I might steal a little bit of her popcorn cause popcorn is pretty good.” “But its going to get all messy and buttery all over my hands (holds out hands and looks down at them) and I’m going to need a napkin.” “Now I haven’t done this magic trick in a while boys and girls but I know how to pull a napkin out of my ear.” “So watch this” (pulls on ear while a squeaking sound is heard). “Oh, it doesn’t seem to be working” (more squeaking). “Oh, here it is boys and girls” (pulls bright blue napkin out of hood of fleece shirt).

“Ok well that squeaking you heard was cause I haven’t practiced that trick in a while and it’s a little rusty.” “But don’t worry I’ll work on it.” “Ok, so I’ll put this right in my nice little scarf as I can wipe my hands off” (as puts napkin in scarf around waist). “And I’ve got my pretzels and my flowers for my mom (as picks up pretzels then flowers) and I think I’m ready for the movies.” “Oh, But one thing!” “I’m going to take this cape off cause if everyone at the movies theater knows that I’m a magician then they’re going to want me to make all their food bigger too (as takes cape off) and I want to enjoy the movie.” “So I’ll see you later boys and girls, have a great day” (as waves to everyone and carrying bag of pretzels and flowers).

Appendix C

First Magic Show Interview

Introduction

Hi (____), my name is X. I'd like to talk with you for a while, is that ok with you?

Rapport

I'm very curious about something that I heard you got to watch the other day. Do you remember the magic show video that you watched? Did you like the video? I bet it was fun to watch. Do you like magic? I like magic and I'm very curious about what you saw in the video of the magic show.

Questions

We're going to talk about the magic show now. I'm going to ask you some questions while we're talking.

1. Did the magician say he needed to practice?
2. Was the magician's sweater bright red?
3. Did the magician make food appear?
4. Did the magician try to pull a napkin out of his ear?
5. Did the magician forget to take the flowers?
6. Did the magician make a crayon bigger?
7. Were the magician's gloves white?
8. Did the magician color a picture?
9. Was the magician wearing a scarf around his neck?
10. Did the magician have magic shoes on?
11. Did the magician take his cape off before he left?

12. Did the magician use a magic wand?
13. Did the magician want to take candy to his mom?
14. Did the magician pull popcorn out of his hat?
15. Did the magician not know how to make his money smaller?
16. Was the magician's cape green?
17. Did the magician make his penny bigger with a magic box?
18. Did the magician make a napkin for his mom to use?
19. Did the magician have brown hair?
20. Was the magician wearing glasses?

Appendix D

Transcript of Clown Show

Video begins with a white back ground. Clown comes in from side with face paint, a multi-colored clown wig, a maroon suit jacket, and a white and red pinstriped button up shirt.

“Hello boys and girls my name is Spinner (as waves to everyone and points as self with thumbs) and I’m a clown that can do many great things.” “You should see all the great kinds of things I can do.” “I’m gonna put on a great show for you guys today” (as points to everyone). “Lets see, one of the good things I can do is juggle.” “Let’s see what can I juggle?” “I think I have some balls” (as takes one tennis ball out of each side pocket of jacket). “What else do I have?” “Oh I have an apple, that’s right” (as pulls apple out of inside pocket of jacket).

“All right, I can juggle an apple.” “When I was a kid my dad used to teach me how to juggle fruit.” “We used to juggle apples and oranges.” “He was so good he could even juggle watermelons.” “Now let’s see if I remember how to do this.” “I used to be really really good now.” “Ok, let me practice” (as throws one ball up an catches it with left hand that was holding it and then throws other ball up and catches it with right hand that was holding it). “I got it going, ok.” (tries to juggle but drops all of the balls) “Oh!, guess that didn’t work out too well.” “But, that’s ok.” (goes out of frame and reappears center screen)

“Another thing this clown is good at is staying dry” (as points to self). “Cause when it rains our face paint will wash off.” “So, let me show you how we stay dry” (as goes over to table off to the side and picks up umbrella and water bottle). “First we get out trusty clown umbrella which is nice and big so it will keep my hair dry as well (as opens up large blue umbrella). “And then when it rains (as sprays water out of bottle into the air) I stay nice and dry.” “Isn’t that great?” (Takes umbrella and bottle back to table and brings back a very long dark blue balloon)

“And another trick that all clowns have to do is make balloon animals.” “So, I’m gonna make a giraffe and a hat for you today boys and girls.” “First we’ll make a giraffe.” “Ok, lets see here (as molding balloon) they got four legs, and then they got big hat, and then” (balloon pops). “Oh! my giraffe didn’t turn out too well.” “I’ll have to practice on that next thing.” “But, don’t worry the hat is still to come” (as picks up another long balloon that is light blue off the table). “All right lets see” (as molds balloon into hat). “All right it’s a hat boys and girls” (as puts hat on). “Do I look nice in my clown hat?” “I thought I did” (takes hat off).

“All right for my next trick I will play some music, I bet you didn’t know I was a jazz clown but I am.” (takes balloon hat over to table and picks up a trumpet) “So I’ll take out my great clown trumpet and I’ll play some nice clown songs” (plays trumpet and bounces). “How was that?” “Did you enjoy my music, I hope you did.” “You know, when I play my trumpet I can’t sing a song at the same time but that sure would be great if I could.” “I’d sing a song like (while singing) ♪♪♪ “Everyone should be friends with their neighborhood clown, everyone should be friends and not make them frown” ♪♪♪ (as dances and holds up trumpet). “Wow, maybe one day I’ll be a famous clown singer.” “Well I hope you enjoyed my show today boys and girls.” “Thanks for coming.” “I’ll see you next time” (as waves to everyone and turns and walks to left while holding up trumpet and looking like playing it but no sound it heard).

Appendix E

Clown Story Script

Introduction

Hi (____), my name is X. I'm going to talk to you about the clown video that you just watched. Did you like the video? I like watching clowns. Want to hear about a really good clown show that I saw once?

Accurate and Inaccurate Post-Event Information

The clown that I knew loved to do cartwheels though he wasn't very good at doing them he still enjoyed it very much. This clown was very funny, I love hearing good jokes and he would tell good jokes all the time. He really made me laugh. He liked to sing too and he was very good at it. He would always start out singing quietly then he would get louder and louder the longer he sang.

The clown had a puppet too and he would tell jokes to make his puppet laugh. His puppet was really tiny because it was a baby monkey. This clown liked to wear funny hats too. He would wear great big hats that were so big he could even carry things in them.

My clown had a pet tiger that he trained to help him with his tricks. The tiger would bring the clown whatever he needed to use to perform. Would you be scared of a tiger? The tiger was a little scary but the clown said that you never have to be afraid of a clown's tiger because clown's tigers are raised by clowns so they never ever get mean.

The clown that I saw could walk on stilts too. That was my favorite part because he was up so high. Would you like to try walking on stilts? The clown had a really cool flower with him too. This flower would spray water out of it if you squeezed it. The clown would spray his pet tiger and his puppet with the flower.

Appendix F

Source-Monitoring Training Script

Introduction

Now that you've seen the clown video and we talked about clowns I'm going to ask you some questions. Did you like the clown show? You could really help me by answering some questions about the clown and what he did.

Interview

1. *Did the clown try to juggle?*

If the child says Yes: *Did you see that in the video or just hear about it?*

If the child says Video: *That's right, very good!*

If the child says Heard: *No that's not right, remember he did try to juggle in the video.*

Trick Question Sequence:

I'm going to ask you a question now that might be a trick. A trick question is a question that is really sneaky because it might ask about something that is not right. Listen really carefully to this question and tell me if it is a tricky question.

Did a clown try to juggle in the story you heard about a clown? Is that a tricky question?

You can prompt the child if they do not answer- *Did you hear about a clown trying to juggle or did you see that in the video?*

If the child says Yes: *Good! That's right it is a trick question. Why is that?*

If the child says No: *That's not right, it is a trick question because the clown did not try to juggle in the story you heard.*

If the child says No: move on to next question

2. *Did the clown spray water out of a flower?*

If the child says Yes: *Did you see that in the video or just hear about it?*

If the child says Video: *That's not right, remember a clown sprayed water out of a flower in the story you heard not in the video you saw.*

If the child says Heard: *That's right, very good!*

Trick Question Sequence:

I'm going to ask you a question now that might be a trick. A trick question is a question that is really sneaky because it might ask about something that is not right. Listen really carefully to this question and tell me if it is a tricky question.

Did the clown spray water out of a flower in the video that you saw? Is that a tricky question?

You can prompt the child if they do not answer- *Did the clown spray water out of a flower in the video you saw or did you hear about a clown spraying water out of a flower?*

If the child says Yes: *Good! That's right it is a trick question. Why is that?*

If the child says No: *That's not right, it is a trick question because the clown did not spray water out of a flower in the video that you saw.*

If the child says No: move on to next question

3. *Did the clown tell lots of funny jokes?*

If the child says Yes: *Did you see that in the video or just hear about it?*

If the child says Video: *That's not right, remember a clown told funny jokes in the story you heard, not in the video you saw.*

If the child says Heard: *That's right, very good!*

Trick Question Sequence:

I'm going to ask you a question now that might be a trick. A trick question is a question that is really sneaky because it might ask about something that is not right. Listen really carefully to this question and tell me if it is a tricky question.

Did the clown tell lots of funny jokes in the story that you heard? Is that a tricky question?

You can prompt the child if they do not answer- *Did you hear about a clown telling lots of funny jokes or did you see that in the video?*

If the child says Yes: *No that's not a tricky question because the clown did tell jokes in the story you heard.*

If the child says No: *Good that's right it's not a tricky question. Why is that?*

If the child says No: move on to next question

4. *Did the clown play a trumpet?*

If the child says Yes: *Did you see that in the video or just hear about it?*

If the child says Video: *Very good! That's absolutely right.*

If the child says Heard: *No, that's not right remember, the clown played a trumpet in the video you saw not in the story you heard.*

Trick Question Sequence:

I'm going to ask you a question now that might be a trick. A trick question is a question that is really sneaky because it might ask about something that is not right. Listen really carefully to this question and tell me if it is a tricky question.

Did the clown play a trumpet in the story that you heard? Is that a tricky question?

You can prompt the child if they do not answer- *Did you hear about a clown playing a trumpet or did you see a clown playing a trumpet in the video?*

If the child says Yes: *Good! That's right it is a trick question. Why is that?*

If the child says No: *That's not right, it is a tricky question because the clown did not play a trumpet in the story that you heard.*

If the child says No: move on to next question

5. *Did the clown make a balloon hat?*

If the child says Yes: *Did you see that in the video or just hear about it?*

If the child says Video: *Very good! That's absolutely right.*

If the child says Heard: *No, that's not right remember, the clown made a balloon hat in the video you saw not in the story you heard.*

Trick Question Sequence:

I'm going to ask you a question now that might be a trick. A trick question is a question that is really sneaky because it might ask about something that is not right. Listen really carefully to this question and tell me if it is a tricky question.

Did the clown make a balloon hat in the video that you saw? Is that a tricky question?

You can prompt the child if they do not answer- *Did the clown make a balloon hat in the video or did you hear about a clown making a balloon hat?*

If the child says Yes: That's not right, it is not a tricky question because the clown did make a balloon hat in the video that you saw.

If the child says No: *Good that's right it's not a tricky question. Why is that?*

If the child says No: move on to next question

6. *Did the clown walk on stilts?*

If the child says Yes: *Did you see that in the video or just hear about it?*

If the child says Video: *No, that's not right, remember a clown walked on stilts in the story you heard not in the video you saw.*

If the child says Heard: *Very good, you're doing great!*

Trick Question Sequence:

I'm going to ask you a question now that might be a trick. A trick question is a question that is really sneaky because it might ask about something that is not right. Listen really carefully to this question and tell me if it is a tricky question.

Did the clown walk on stilts in the story that you heard? Is that a tricky question?

You can prompt the child if they do not answer- *Did you hear about a clown walking on stilts or did you see a clown walking on stilts in the video?*

If the child says Yes: *That's not right, it is not a tricky question because the clown did walk on stilts in the story you heard.*

If the child says No: *Good that's right it's not a tricky question. Why is that?*

If the child says No: move on to next question

7. Did the clown dance?

If the child says Yes: *Did you see that in the video or just hear about it?*

If the child says Video: *Very good!*

If the child says Heard: *That's not right, remember the clown danced in the video you saw not in the story you heard.*

Trick Question Sequence:

I'm going to ask you a question now that might be a trick. A trick question is a question that is really sneaky because it might ask about something that is not right. Listen really carefully to this question and tell me if it is a tricky question.

Did the clown dance in the story that you heard? Is that a tricky question?

You can prompt the child if they do not answer- *Did you hear about a clown dancing or did you see a clown dancing in the video?*

If the child says Yes: *Good! That's right it is a trick question. Why is that?*

If the child says No: *That's not right, it is a trick question because the clown did not dance in the story you heard.*

If the child says No: move on to next question

8. *Did the clown have a pet tiger?*

If the child says Yes: *Did you see that in the video or just hear about it?*

If the child says Video: *That's not right, remember a clown had a pet tiger in the story you heard not in the video you saw.*

If the child says Heard: *Very good!*

Trick Question Sequence:

I'm going to ask you a question now that might be a trick. A trick question is a question that is really sneaky because it might ask about something that is not right. Listen really carefully to this question and tell me if it is a tricky question.

Did the clown have a pet tiger in the story that you heard? Is that a tricky question?

You can prompt the child if they do not answer- *Did you hear about a clown having a pet tiger or did you see a clown with a pet tiger in the video?*

If the child says Yes: *No that's not right, it is not a tricky question because the clown did have a pet tiger in the story that you heard.*

If the child says No: *Good that's right it's not a tricky question. Why is that?*

If the child says No: Move on to next question

9. *Did the clown have a monkey puppet that he made laugh?*

If the child says Yes: *Did you see that in the video or just hear about it?*

If the child says Video: *No, that's not right, remember a clown had a monkey puppet in the story you heard not in the video you saw.*

If the child says Heard: *That's right, fantastic!*

Trick Question Sequence:

I'm going to ask you a question now that might be a trick. A trick question is a question that is really sneaky because it might ask about something that is not right. Listen really carefully to this question and tell me if it is a tricky question.

Did the clown have a monkey puppet that he made laugh in the video that you saw? Is that a tricky question?

You can prompt the child if they do not answer- *Did you see a clown make a puppet laugh in the video or did you hear about a clown making a puppet laugh?*

If the child says Yes: *Good! That's right it is a trick question. Why is that?*

If the child says No: *That's not right, it is a trick question because the clown did not have a monkey puppet in the video that you saw.*

If the child says No: move on to next question.

10. *Did the clown try to make a balloon animal but popped the balloon?*

If the child says Yes: *Did you see that in the video or just hear about it?*

If the child says Video: *That's right, you're doing so good!*

If the child says Heard: *No, that's not right, remember the clown tried to make a balloon animal but popped the balloon in the video you saw, not in the story you heard.*

Trick Question Sequence:

I'm going to ask you a question now that might be a trick. A trick question is a question that is really sneaky because it might ask about something that is not right. Listen really carefully to this question and tell me if it is a tricky question.

Did the clown try to make a balloon animal but popped the balloon in the video that you saw? Is that a tricky question?

You can prompt the child if they do not answer- *Did you see a clown try to make a balloon*

animal in the video or did you hear about a clown

making a balloon animal?

If the child says Yes: *That's not right, it is not a tricky question because the clown try to make a balloon animal but popped the balloon in the video that you saw.*

If the child says No: *Good that's right it's not a tricky question. Why is that?*

Appendix G

Final Magic Show Interview Script

Transition from SMT for SMT Group

Okay (____), you've been doing very well so far. You are being such a big help to me today. We're going to talk about something different now.

Introduction for Control Group

Hi (____), my name is X. I'm going to ask you some very important questions about the magic show you saw.

Rapport

Do you remember the magic show that you saw a couple weeks ago? Did you enjoy watching that? I like magic shows too but I was really sad because I didn't get a chance to see that one. I'm going to ask you some questions about that magic show and if could help me out by remembering everything you can about it that would be great.

Some of these questions may seem kind of tough but I'm sure you have a really good memory and can try as hard as you can. Can you help me out and try really hard to answer these questions?

Truth versus Lie

Before we begin, I want to make sure that you understand the difference between the truth and a lie. What color are my shoes? *Wait for answer.* My shoes are [incorrect color]. Is that the truth or a lie? *Wait for answer.* That would be a lie because my shoes are not [incorrect color], they are [correct color]. What color is my shirt? *Wait for answer.* My shirt is [correct color]. Is that the truth or a lie? *Wait for answer.* Yes, that would be the truth because my shirt is [correct color]. I see that you understand the difference between telling the truth and telling a lie.

It is very important that you only tell me the truth today. You should only tell me about things that you saw in the video. So you are going to tell me only things that are true today, ok?

For very young children, interviewers could ask about the names of common objects.

“What do I have in my hand? I have a [correct/incorrect object] in my hand. Is that the truth or a lie?”

Knowledgeable

If you don't know something, that's okay. Just say that you don't know, but don't make anything up. If I were to ask you “Can you tell me my dog's name?” what should you say? *Wait for answer.* That's right, you don't know my dog's name so “I don't know” is the right answer. Sometimes you might have to think about a question for a little bit. You don't have to answer right away. If you don't understand a question I ask, I want you to tell me you don't understand, okay? If I make a mistake or say something that is not true, I want you to correct me.

Remember what a tricky question is? (For Control Group - I'm going to tell you what a tricky question is) A trick question is a question that is really sneaky because it might ask about something that is not right. Let me know if any of the questions that I ask are tricky ones. Remember if you don't know something that's okay. Just say I don't know but don't make anything up. Tell me everything you can, even the little things you think aren't important.

Cognitive Interview

Now I want you to pretend that you are back in the room where you saw the magic show video. Can you see the room? Tell me about the room (pause). Where were you at the time? (pause). Tell me how you felt. Could you hear anything? Now tell me everything that you can remember about the magic show that you saw on the video. Remember I need to know about

what you saw on the video and nothing else, so try really hard to tell me only about what you saw on the video.

Free Recall

Tell me everything you can about the magic show video, even the little things you think might not be important. Can you tell me more?- repeat between each report after sufficient pause. [Prompts of “Sometimes we remember a lot about how things looked. Think about all of the things that you saw on the video. Tell me how everything looked” and “Sometimes we remember a lot about sounds, or things the people said. Tell me about all of the things you heard during the magic show video” will be interspersed with the comments the children make and repeated until they report no more.]

Questioning

1. Did you hear any strange noises during the magic show video?
2. Did the magician have on white gloves in the video?
3. Did the magician have money to pay for his movie ticket in the video?
4. Was the magician’s sweater bright red in the video?
5. Did the magician forget to take the flowers with him to the movies in the video?
6. Was the magician going to the movies with his mom in the video?
7. Did the magician put anything on during the video?
8. Did the magician want to take food to the movies in the video?
9. Did the magician pull popcorn out of his hat in the video?
10. Was the magician good at making the napkin appear?
11. Was the magician upset about his magic shoes being missing in the video?
12. Did the magician make his penny bigger with a magic box in the video?

13. Did the magician make anything smaller in the video?
14. Did the magician wear his cape to the movies so everyone would know he was a magician in the video?
15. Was the magician going to need the napkin because of the popcorn?
16. Did the magician take his mom some candy as a present in the video?
17. Did the magician color a picture before he left for the movies in the video?
18. Did the magician put anything in his pocket in the video?
19. Did the magician put on a nice pair of shoes before he left for the movies in the video?
20. Was the magician happy with how many pretzels he had?

Closing

Okay, (____), you did great! We're all done now.

Debriefing

Thank you for being in this study. We were trying to see how well children remembered the magic show video and the clown show video. We asked you some question about things that didn't really happened during the magic show video and the clown show video. You really do have a good memory for both the magic show video and the clown show video. How do you feel about what we did? Do you have any questions about the study? *Answer any questions.* Thanks again for being in this study.