Credibility Assessment of Misinformed vs. Deceptive Children

Thesis

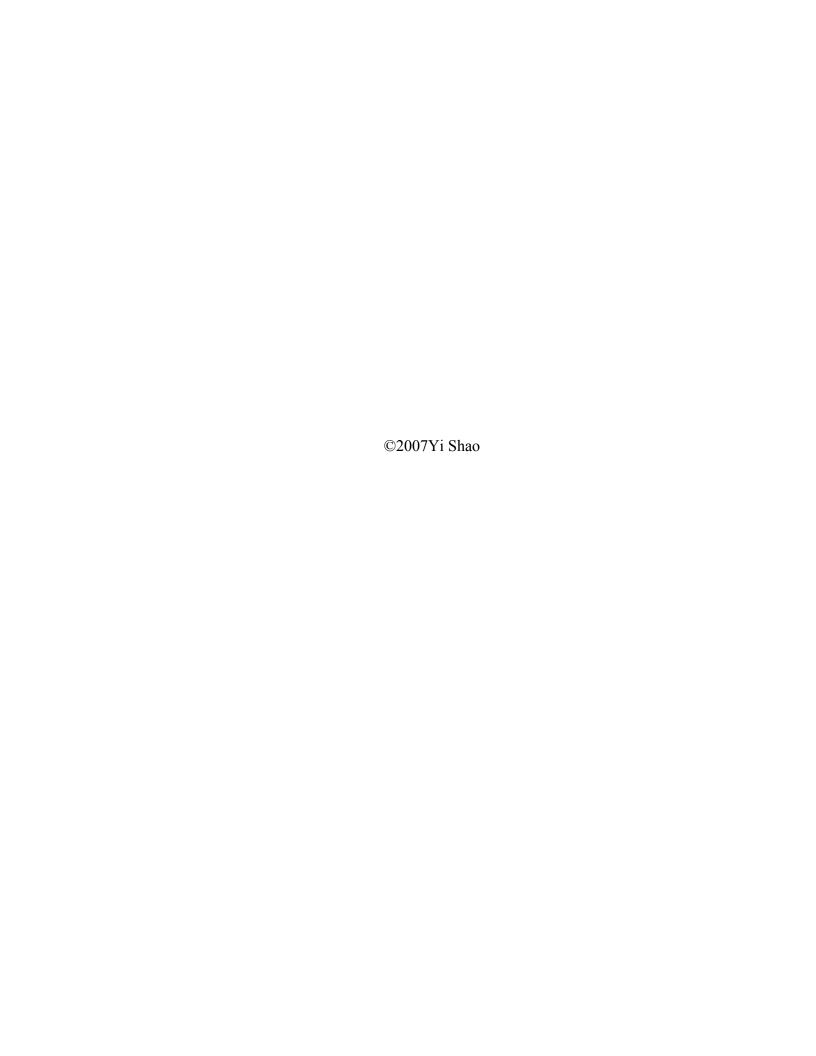Presented to the Faculty of the Graduate School

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in Partial Fulfillment of the Requirements for the Degree of

Master of Arts

by

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ABSTRACT

This is the first study to contrast how adults make credibility assessments about children who experienced a suggestive interview, children who had been coached to lie, and children who were telling the truth. Nine preschool children were interviewed about an event involving a minor infraction. Three of the children reported the truth, four were coached to lie, and two children reported misinformation as the result of a suggestive interview. Eighty-seven college students watched videotaped interviews of these nine children and assessed their credibility. Children who had experienced a suggestive interview were rated as credible as those who were telling the truth. Children who had been coached to lie were rated as less credible than the two groups of children. The results suggest that misleading information gets incorporated into children's memory, thus arguing for a cognitive rather than social explanation of suggestibility. The implication for children's court testimony and jury decisions are discussed.

BIOGRAPHICAL SKETCH

Shao, Yi was born on March 15, 1981, in Qingpu, a town in the suburb of Shanghai. She was the only child of her parents—her father, Shao, Xiaolong and her mother, Xu, Wa'neng. They had no formal education beyond primary school because of historical reason but placed a high value on education. They sent their only daughter off to Beijing, which is around 900 miles away, to learn something called psychology in Peking University in 1999. After the half-a-year re-union while Yi worked as a primary school teacher, they sent her off again, over the sea, to explore further in psychology at Cornell University in 2004. Shao, Yi defended her Master thesis in May, 2007 and her trip continued. Her next stop would be the Doctorate Degree.

ACKNOWLEDGMENTS

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

Over the past two decades, it is estimated that more than 1.5 million children have been interviewed in connection with court cases (Chae & Ceci, 2005). A substantial number of these children were interviewed as part of physical and sexual abuse investigations. In cases of abuse, the victimized child is usually the only witness to the crime. More often than not, these investigations relied heavily on children's reports. In the 1980s, influenced by the trend of adopting the presumption that all witnesses are competent (Federal Rule of Evidence 601), children started to serve as key witnesses in court (Haugaard, Reppucci, Laird, & Nauful, 1991). Consequently, determining whether children's testimony is credible has emerged as a critical issue and has attracted a great deal of attention by researchers and policy makers.

To answer the question of whether children's testimony is credible in legal cases, one major question has been to investigate whether children themselves are qualified as eyewitnesses. The first issue is the competence of children, concerning about whether they could remember their past events well enough to report (Kail & Nippold, 1984). The second issue concerns the credibility of children, and specifically whether they may make false reports based on what they have been told by an adult. Children's misreporting could be the result of being coached to lie or the result of suggestive interviews.

Previous studies suggest that children may not report much information but what they do report tends to be accurate (Cassel & Bjorklund, 1995; Ceci, Ross, & Toglia, 1987; Ruby & Goodman, 1989). Further, their mistakes are predominantly omission errors (i.e., failing to recall information that actually occurred) rather than commission errors (i.e., falsely claiming information had occurred when it had not). The current

study focuses on commission errors that may result from either suggestive interviews or coaching to lie.

The past three decades has witnessed a growing interest in suggestibility research, beginning in the 1970s (e.g., Loftus, 1975; McCloskey & Zaragoza, 1985; Zaragoza & Lane, 1994). In a common research paradigm, participants first viewed an event (e.g., reading a vignette, watching video, or a staged event). Participants then received some misleading information. For example, in a classic study (Loftus, Miller, & Burns, 1978), participants viewed a series of slides of a traffic accident, in which a car failed to stop at a Stop sign. Later, participants were asked, "Did another car pass the red Datsun when it was stopped at the Yield sign?". The presence of a Yield sign instead of the Stop sign was suggested. Finally, participants completed a memory task. The robust finding is participants tend to report the false suggestions, Yield sign in the previous example. Further, participants often misattribute the source of misinformation and are unaware of the misinformation (Lindsay & Johnson, 1989; Zaragoza & Lane, 1994). For example, participants would claim to have actually seen the Yield sign rather than heard it suggested by an interviewer.

Because of their legal implications, studies regarding the suggestibility of children have attracted a great deal of attention. In general, preschool-aged children are more susceptible to misleading post-event suggestions than older children and adults (Bruck & Ceci, 1999; Ceci & Bruck, 1993, 1995). One of the unresolved questions regarding children's high suggestibility is the mechanism that causes it. It remains debated whether misleading suggestions take their toll on report accuracy as a consequence of memory-based or socially based mechanisms. The extreme memory-based theory argues that misleading information permanently alters the original memory representation by replacing the original memory trace with the misleading trace (Loftus, 1975) or by making the original representation inaccessible (Lindsay, 1990).

Although the original hypothesis of "memory trace replacement" as opposed to social responding has been challenged (McCloskey & Zaragoza, 1985), the idea of cognitive-based misleading effect is maintained by most researchers. The misleading information may take effect because its relative strong memory trace interferes with the retrieval of the original memory trace (Pezdek & Roe, 1995). For children, the strength of original memory trace may not be strong as those of adults. For example, children were affected less by misleading information for fixed items of a repeated event (with stronger memory trace) than for variable items (with weaker memory trace) (Powell, Roberts, Ceci, & Hembrooke, 1999).

In contrast, the socially based theory states that suggested information has no impact on the underlying memory, but simply compels a child to report inaccurate information in an effort to please an adult or conform to peer pressure. That is, children reported consistent with what (they believed) other people expected them to report. Under these circumstances, underlying cognitive changes are not expected. Children may not actually believe what they reported. For example, 6- and 8-year old children were less likely to provide "I don't know", indicating they felt compelled to provide an answer even when they had no memory or the question is unanswerable (Cassel & Bjorklund, 1995). The children also tended to accept and report suggested information regardless of whether it was correct or not. In contrast, adults seemed more selective in what they accept and report. These results indicated that children were more willingly than adults to respond with the answer desired by the interviewer. Also, the misinformation effect was found when misinformation was delivered by highly credible adults rather than by children or adults who were described as silly (Lampinen & Smith, 1995), further suggesting that socially desirable responding may be at play.

Currently, many researchers endorse the view that social factors function

simultaneously with the changing of the mental representations. For example, children were less suggestible when misleading information was provided by a child than an adult (Ceci, Ross, & Toglia, 1987). However, in both misleading conditions, the children were influenced by misleading interviews in contrast with those who were not exposed to misleading interviews (cf. Lampinen & Smith, 1995). This indicates that children took credibility of information source into account, consistent with the social based argument. However, their memory was still influenced by intrusive suggestions, possibly due to their lack of metacognition to protect the original memory. Another similar example is, when motivated to be correct, children are less but still suggestible to misleading answerable questions (Roebers & Fernandez, 2002).

If the misleading effect of suggestive interview is more cognitive based, children may come to believe that they have seen the suggested information in the original event. As a result, they will behave as sincerely as children who are telling the truth and appear credible to raters. Alternatively, if the misleading effect of suggestive interview is more socially based so that children just report things conforming to what they believe adult authority figures want them to say, children may not actually believe their own false reports. As a result, these children may behave less sincerely and/or less confidently than children who are telling the truth or who are false but who genuinely believe that they are reporting as a result of incorporating the false suggestions. Further, the uncertainty and/or insincerity on the part of children who do not believe their own false reports may exhibit behavioral, affective, or linguistic indications of lying.

In recent years, the focus of children's suggestibility has progressed beyond dichotomized debates over whether children are more susceptible to suggestions than adults to an examination of the individual differences that affect children's suggestibility, with the goal of obtaining a measure of the suggestibility for a

4

particular child. Instruments such as the Gudjonsson Suggestibility Scale (Gudjonsson, 1984) and the Video Suggestibility Scale for Children (Scullin & Ceci, 2001) have been developed for this purpose. The progress of these instruments is promising but so far not satisfactory to diagnose the competence of a particular child.

Notably, when children give testimony in the court, it in essence is a process of information delivery, consisting of both the sender and receiver of the information. It might be problematic to focus only on the competence of the information sender rather than on the pair as a whole. As long as jurors are not misled by children's inaccurate testimony, justice is more likely to be served. Therefore, it is important to focus on jurors as well, who make credibility assessment. In previous studies on whether adult can tell accurate testimony from inaccurate testimony, inaccurate testimony has been limited to intentional lying, which leaves the inaccurate testimony due to suggestive interview procedure unstudied. The current study is aimed to fill in this gap.

Generally speaking, people can distinguish deceptions by adults only at chance level or slightly above it (e.g., Kassin & Fong, 1999; Vrij, 2000; Vrij, 2005). In some cases, the accuracy rate might be even lower than chance level (Vrij, 2005). A notable fact is people are better at detecting truths (67% accuracy rate) than detecting lies (Vrij, 2000), which is referred to as a truth bias. Thus, adults are poor at detecting deceptions by adults. In addition, confidence ratings of adults' decisions did not predict their accuracy (Depaulo, Charlton, Cooper, Lindsay & Muhlenbruck, 1997).

Results regarding how adults detect deceptions by children are controversial. There is some evidence that adults are able to detect deceptions by children better than chance level, for example, 59% in one study (Westcott, Davies & Clifford, 1991). Also, some studies found that adults can detect deceptions by younger children much better than those by older children and adults (Edelstein, Luten, Ekman & Goodman, 2006; Feldman, Jenkins & Popoola, 1979). In contrast, other studies have found that adults

5

performed at chance level for deceptions by children (Leach, Talwar, Lee, Bala, & Lindsay, 2004) and that the age of deceivers does not make a difference in adult jurors' performance (Vrij, 2000; Vrij, Akehurst, Soukara & Bull, 2004). The conclusion seems to be that adult jurors were competent at detecting the truths but less competent at detecting deceptions by children. The current study was designed to add to our knowledge regarding detecting deceptions by children.

Previous studies on credibility assessments have ignored one source of inaccurate testimony, that is, suggestive interviews. To date, few studies have explored the area of credibility assessments of participants' reports after receiving misinformation. In one study, children were given both pre-event stereotype information (e.g., "Sam Stone is always getting into accidents and breaking things!") and post-event misinformation suggestion (Leichtman & Ceci, 1995). Children's reports of the Sam Stone event were videotaped. Researchers and clinicians watched the video of these interviews, judged the accuracy of each child's report, and inferred what happened in the actual event. It was found that the least accurate child was judged as the most accurate by adults. Further, it suggested that the professionals made decisions on the amount of perceptual details involved in the children's descriptions. The least accurate child in the study incorporated most details in her vivid descriptions. As a result, the professionals made incorrect inferences about the elements of the actual event. These results suggest that adults cannot tell the difference between a child who is telling the truth and a child who is reporting misinformation as the result of misleading information. A recent study also examined misinformation detection among professional and non-professional people (Goodman, Batterman-Faunce, Schaaf & Kenney, 2002). Children of 7 and 10 years old were interviewed misleadingly about an arm-coordination event occurred four years ago. Their interviews were watched and judged as a possible sexual abuse case. The similar finding was found that people

cannot estimate the relative accuracy of children's narratives. However, the child participants in these studies were limited to those who had been suggested information; thus, it is unknown how sincere these children who received misinformation appeared to be, compared with children who had not been misleadingly interviewed and children who had been coached to lie.

In a similar study (Ceci, Huffman & Smith, 1994), preschool children were told to repeatedly think about a fabricated event (e.g., getting your finger caught in a mousetrap). Then, videos of their narratives and of children who were telling the real events were shown to professionals in psychology, social work, psychiatry and law enforcement. The professionals failed to discriminate the two kinds of narratives. Although the study compared children who were misled (by themselves) with those who were telling the truth, it deviated from the standard suggestive studies. Children's confusion about their own imagination with real event, which could only be identified as a special case of suggestive interview with the false information emerging from children's own imagination rather than from external information, involved in the common suggestive studies. In conclusion, there is some progress on misinformation detection. However, further work is needed to include children who were lying as a comparison group.

Another shortcoming in previous studies of credibility assessments is that participants were only required to judge whether the person was reliable or not. Notably, it has long been ignored that believing in somebody may not be an "all-or-none" phenomenon. That is, if a person is judged as reliable, then whatever he or she has narrated will be accepted. In the current study, I am testing the possibility that the two processes could coexist. That is, on one hand, adults have a general impression of whether a specific individual is credible or not. On the other hand, adults selectively accept the information the specific individual has conveyed

regardless of previous general impression, which could happen in legal settings. It is interesting and important to know whether jurors still remember and accept the information consistently with their general impression of the eyewitness.

The present study systematically examined how children who had been subjected to misleading interviews appeared to adults, compared with children who had been coached to lie and children who were telling the truth. Also, the present study examined the judgments on specific questions in addition to the judgments on the person in general. In the present study, I focused on preschool children, an age of high suggestibility and disproportionately more likely to serve as eyewitnesses at trial (Ceci & Bruck, 1993). Children first witnessed a staged event though they were not directly involved. Children were in one of four conditions: a) were provided misinformation about the event, or b) were coached to deceive, or c) were interviewed neutrally, or d) received no interview by an adult. After that, all the children received a final videotaped interview about the event. Adults assessed credibility on the basis of video clips of these interviews. It is necessary that children in the present study provided the same testimony regardless of what they had actually observed in the event. Therefore, there were two different staged events for children in different experimental conditions in this study.

Based on previous research on the misinformation effect and deception detection, I made the following hypotheses. First, I expected that the misleading effect to be more cognitively based than socially based. If true, then children would believe that they actually witnessed events that they had merely been suggested (Ackil & Zaragoza, 1995). Therefore, for adult raters, children from misleading interviews would appear as truthful as children who were telling the truth, in contrast with children who were deliberately lying. This should be reflected in the decisions adult raters make. Second, we hypothesized that participants would have higher accuracy of decisions for

children who were telling the truth than children who had been misleadingly interviewed and those who were lying. Third, we hypothesized that an overall credibility assessments for a child and for his or her responses to specific questions are highly but imperfectly correlated.

CHAPTER 2

METHOD

Participants

Eighty-seven college students participated (age *M*=19.74, *SD*= 1.32). Forty-four students (51%) were male. The majority of participants were Caucasians (66%), with the next most common ethnic group being Asian Americans (19%). Participants received either extra credit or $3 in exchange for their participation. The study was approved by the committee on Human Subjects of Cornell University.

Materials

Adult participants were shown a series of videotaped interviews of children. The videotaped interviews were prepared as follows.

Initially, twenty children participated in the creation of videotape for this study, recruited from three local child care centers. Study procedures were described in detail to parents and informed consent was obtained. All of the children had observed one of two versions of a staged art lesson one week prior to the interviews. Jamie, Bess and Yi were three college students familiar with these children. It was known to children that Jamie and Bess were good friends. Jamie taught an art lesson to the children. She drew a rainbow picture and told the children she would like to take a photo of it to show her mother. She left the picture with Bess. Then Yi tried to get the picture from Bess while Bess resisted. Half of the children observed event A: Yi spilled orange juice on the picture. The other half of the children observed event B: Bess spilled orange juice on the picture.

Immediately before the videotaped interview of the event, children who observed event A were either interviewed non-misleadingly by Jamie or not interviewed at all (see Appendix). Children who observed event B were either interviewed by Jamie. She either interviewed these children misleadingly (e.g., "Yi spilled on my drawing,

didn't she?") or coached them to falsely report that it was Yi who had spilled orange juice on the painting. In real cases, people who are close to children may mislead or coach them to accuse another individual. Therefore, in the current study, Jamie, who was familiar with the children and was involved in the event, was selected to be the interviewer. Children participants were randomly assigned to the four experimental conditions: no interview or non-misleading interview for children observed event A; misleading interview or instructions of lying for children observed event B.

The videotaped interview was carried out by a new interviewer, to mimic the interviewers children may confront in the legal settings. All children were asked eight questions, five of which were related to the event in the art lesson. They consisted of one open-ended question ("What did Yi look like?") and four close-ended questions primarily on the details of the event (e.g., "Did Yi spill on it on purpose?"). For each interview, the videocamera was positioned to provide a close-up head-on view of the child's face and part of the upper body. After the videotaped interview, children who were interviewed misleadingly or coached to provide the wrong information were debriefed. One week later, researchers visited the child centers to check whether children displayed any negative effects from their participation in the study.

Not all the children's interviews were included in the final video. The selection criterion for being involved in the final video shown to adults is that the child, regardless which event he or she originally observed, reported on video that Yi spilled orange juice on the painting. All children who met this criterion were included with the exception of a girl, whose video was poor quality, making her facial expressions hard to be seen. As a result, her interview was used as a practice video. One male child and eight female children between the ages of 3 and 5 years were involved in the final experimental video. Seven of the children (including the male child) were Caucasian and two of the children (both female) were Asian Americans. Among the nine children,

four children had been coached to lie (two Asian American), two children had been suggested misinformation, and three children told the truth (one of them had not been interviewed prior to the videotaped interview and the other two had been interviewed neutrally). From the memory checking question in the debriefing procedure, the two children who had been misinformed insisted they remembered the event consistent with the misinformation.

All adult raters were shown the interview from the male child first. The order of presenting the rest of the children from the four conditions was in a standardized random order to minimize any potential interaction between the practice effect and the gender difference between the children.

Procedure

After obtaining informed consent, the college student raters provided their demographic information and described their experience with children on a seven-point scale. Participants were told that some of the children's narratives were accurate and others were not. A practice interview was shown to familiarize them with the video format and the answer sheet. No feedback was given for the practice.

Participants then watched the experimental interviews. For each child, participants watched the entire interview first, rated whether the child was telling the truth in general. Then raters watched the same interview a second time and made judgments regarding the child's responses to each specific question asked on the videotape. For each question, both the general impression of the child and answers for specific questions, participants assessed their credibility (dichotomous "yes/no"), estimated their confidence on a seven-point scale, and provided the reason for the decision they made. This process was repeated for each child interview. The study lasted approximately 40 minutes. The process was self-paced. However, participants were unable to rewind the video and watched it only in the order presented.

CHAPTER 3

RESULTS

Perceived Credibility

Our first aim is to examine the perceived credibility of children from different experimental conditions (Neutral interview, No interview, Misleading interview, and Lying). My hypothesis is that children subjected to misleading interviews would appear as genuine as children who were telling the truth, in contrast to children who were coached to lie. To test the hypothesis, decisions on whether a particular child was telling the truth in general and the confidence rating were examined. Generalized Estimating Equations were carried out, with yes/no responses for each child as dependent variables, varied with different within-subject factors.

The percentage of participants who assessed the children as generally credible for each condition is listed in Table 1. Asian American children in the Lying condition were rated as credible as the children who were telling the truth as well as those who had been suggested misinformation. This resulted in 72.67% of the adult participants rating them as credible. A preliminary analysis within the Lying condition, with ethnic group (Caucasian American children and Asian American children) as within-subject independent factors indicated that Asian American children were rated more sincere than Caucasian children, $\chi^2(1, n=87)=27.9$, $p<.0001$. Because the ethnic group of children participants might be a confounding factor, the Asian American children's interviews were excluded in all the subsequent analyses. A preliminary analysis with the order of the child as a within-subject independent factor suggested that there was probably no effect of order or practice in the ratings, $\chi^2(1, n=84)=1.00$, $p=.32$.

Table 1.*Percentage of participants who reported believing the child's statement as a function of experimental conditions.*

	Neutral interview	No interview	Misleading interview	Lying
General Judgment	67.24	74.71	73.26	42.11
Q1.Reply to "Who ruined the drawing"	70.25	68.97	84.48	66.08
Q2. Reply to "Did she spill on it on purpose?"	73.56	84.89	50.89	40.59
Q3. Reply to "Did she spill on the drawing with apple juice or orange juice?"	39.08	-	72.94	38.37
Q4. Reply to "Did Yi hurt Bess?"	76.88	-	62.94	78.95
Q5. Reply to "What did Yi look like? What did Bess look like?"	64.50	59.76	56.07	68.79

Note. N = 87.

A preliminary analysis with age of the adult participants as a within-subject independent factor found no effect on the ratings of perceived credibility and it was not further analyzed. Females had a tendency to believe what the children had stated: 68.05 percent of their responses rated the child as credible, compared with 62.15 percent of responses from males, resulting in a marginally significant gender difference, $\chi^2(1, n=84)=2.66$, $p=.10$. Participants who rated themselves having more experience with children were more likely to believe children's answers, $\chi^2(1, n=83)=4.09$, $p<.05$.

Therefore, General Estimation Equation was conducted with four experimental conditions as within-subject independent factors, controlled with gender and perceived experience with children and the yes/no responses as dependent variables. As predicted, participants' ratings varied with children from different experimental conditions, $\chi^2(3, n=83)=28.29$, $p<.0001$. Children who had been suggested misinformation were used as the comparison group. Further analyses indicated that children who were lying appeared differently from other children in the other three conditions. They appeared less credible than children who had been misleadingly interviewed, $\chi^2(1, n=83)=27.98$, $p<.0001$, and children who had been neutrally interviewed, $\chi^2(1, n=83)=15.91$, $p<.0001$, and children who had not been interviewed, $\chi^2(1, n=83)=24.26$, $p<.0001$.

Accuracy

The second purpose of the current study was to examine the accuracy of participants' judgments across different conditions. We hypothesized that participants would have higher accuracy for children who were telling the truth than children who had been misleadingly interviewed and those who were deliberately lying. Preliminary analyses indicated that age and gender of adult participants and experience with children had no effect on the accuracy of judgment and were not further analyzed.

Generalized Estimating Equations were carried out, with accurate/inaccurate responses for each child as dependent variables and the four experimental conditions as within-subject independent variable. Participants' accuracy varied across four experimental conditions, χ^2(3, n=84)=42.42, p<.0001. Participants rated children who had not been interviewed most accurately, with 74.71% of the responses are correct. The next highest accuracy occurred when rating children who had been neutrally interviewed, with 67.24% of the responses being correct, followed by rating children who were lying, with 57.47% of the responses are correct. The accuracy for children who had been neutrally interviewed were lower than for children who had not been interviewed, χ^2(1, n=84)=2.84, p<.10, and were higher than for children who were lying, χ^2(1, n=84)=3.47, p<.10. Participants were least accurate rating children who had been misinformed, with 27.01% of the responses are correct. The accuracy was significantly lower than that for children who were lying, χ^2(1, n=84)=29.60, p<.0001.

To examine how the participants performed compared with chance, t-tests were carried out between the accuracy scores and 0.5, the expected accuracy if guessing. Participants could correctly judge when a child was telling the truth for children who had been neutrally interviewed and those who had not been interviewed. Both were significantly greater than guessing, t(173)=4.83, p<.001, d=.17, and t(86)=5.27, p<.001, d=.25, respectively. Participants falsely believed what the children who had been misinformed reported, with their accuracy being much worse than chance, t(171)=6.87, p<.001, d=.23. Finally, there was a trend that participants performed better than just guessing when confronting children who were lying, t(170)=2.09, p< .05, d=.08.

Confidence

Confidence ratings were determined by computing the average rating across four experimental conditions for each participant. The average of participants' confidence

ratings are listed in Table 2. A correlation analysis suggested that participants felt more confident when they judged the child as telling the truth than when they judged the child as not telling the truth, r=.13, p<.0005. However, confidence ratings were not significantly correlated with the accuracy of the judgment, r=.001, n.s.. Generalized Estimating Equations were carried out, with responses for each child as dependent variables and confidence ratings as independent variables. Participants were more confident when they judged the child as telling the truth than when they judged the child as not telling the truth, χ^2(1, *n*=84)=8.74, *p*<.005. In contrast, confidence ratings for accurate judgments are not different from those for inaccurate ratings, χ^2(1, *n*=85)=0, *p*=.99.

A PROC MIXED model was conducted, with confidence ratings as the dependent variable and the four experimental conditions as within-subject independent variable. There was a significant main effect for the four experimental conditions, *F*(3, 80)=6.19, p<.001. Participants were mostly confident about their ratings of children who had not been interviewed, which is significantly higher than their confident ratings for children who had been neutrally interviewed, *t*(80)= 2.45, *p*<.05. The next confident ratings were found towards children who had been coached to lie, which is significantly lower than those for children who had not been interviewed, *t*(80)= 3.21, *p*<.005. Participants were least confident about their ratings towards children who had been suggested misinformation, which is significantly lower than those for children who had been neutrally interviewed, *t*(80)= 1.76, *p*<.10, or not interviewed, *t*(80)= 3.94, *p*<.0005.

Table 2. *Mean and standard deviations in confidence ratings in the four conditions*

	Neutral interview	No interview	Misleading interview	Lying
General Judgment	4.83 (0.96)	5.09 (1.28)	4.58 (1.08)	4.58 (1.20)
Q1. Reply to "Who ruined the drawing"	4.67 (1.41)	5.07 (1.38)	5.02 (1.22)	4.82 (1.31)
Q2. Reply to "Did she spill on it on purpose?"	4.61 (1.54)	4.73 (1.52)	4.47 (1.48)	4.38 (1.50)
Q3. Reply to "Did she spill on the drawing with apple soda or orange soda?"	5.10 (1.60)	-	4.48 (1.43)	4.18 (1.49)
Q4. Reply to "Did Yi hurt Bess?"	4.62 (1.49)	-	4.20 (1.37)	4.41 (1.41)
Q5. Reply to "What did Yi look like? What did Bess look like?"	4.76 (1.41)	4.76 (1.48)	4.44 (1.43)	4.84 (1.48)

Note. N = 87. Rate on a 7-point scale, 1= Not confident at all, 7= Extremely confident.

General impression and selective information acceptance

Third, we hypothesized that credibility assessments of a child, in general, and for responses to specific questions, in particular, are highly associated but not consistent across questions. To examine this hypothesis, comparisons between responses to general impression and specific questions were compared.

Because of experimenter errors, for one child in misleading condition only three questions were asked and for another child in the lying condition only four questions were asked (rather than the usual five questions). Also, the child in the no interview condition answered "I don't know" for two out of the five questions. Participants therefore didn't make any judgments on these specific questions. The percentage of participants who assessed the child as credible for each condition is shown in Table 1.

One specific question asked participants to rate children's replies to "What did Yi look like?" and "What did Bess look like?". All children answered these questions. Children were asked to describe what the two people in the scene looked like. Some of the answers cannot be judged as either correct or wrong. For example, one child in the neutral interviewing condition answered that both of them looked stupid. Two children correctly described that Yi was wearing glasses but incorrectly described what Bess looked ("She has glasses, too", "She's orange"). Another two children, one in the lying condition and one in the misleading condition, failed to provide any answers for this question. Therefore, no further analysis on this question was carried out.

A correlation analysis suggested that participants who rated the child as credible tended to rated every response from the child as credible, $r=.58$, $p<.0001$. Results from general impressions suggested that children who had been suggested misinformation were perceived as sincere as children who had not been interviewed and more sincere than children who had been neutrally interviewed and lying. We were interested to see whether the trend was repeated across ratings for specific questions. General

Estimating Equation analyses were conducted for each specific question with ratings of credible ("yes/no") as dependent variable. Preliminary analyses with gender and age of adult participants, experience with children as independent variables didn't reveal any significant influence on the ratings. Therefore, these variables were not further analyzed. The following analyses were conducted with four experimental conditions as within-subject independent variable.

The ratings of credibility varied with the experimental conditions, with children who had been misleadingly interviewed as comparison group. This was consistently found across all four specific questions. $\chi^2(3, n=84)=14.78, p<.005, \chi^2(3, n=84)=43.76, p<.0001, \chi^2(2, n=84)=24.05, p<.0001,$ and $\chi^2(2, n=84)=7.72, p<.05$, respectively. However, each trend was different from that from general impression (children in Misleading condition were perceived as sincere as children in No interview condition and Neutral interview condition, and more sincere than children in Lying condition).

The first judgment was made on children's replies to "Who ruined the drawing?". All children reported that Yi ruined the drawing, which was the selection criterion of the children for the final video. Children who had been misinformed were rated as most credible, compared with children were children who had been neutrally interviewed. They appeared more credible than children who had not been interviewed, $\chi^2(1, n=84)=6.20, p<.05$, children who were neutrally interviewed, $\chi^2(1, n=84)=8.06, p<.005$, and children who were lying, $\chi^2(1, n=84)=14.17, p<.0005$.

The second judgment was made on children's replies to "Did she spill on it on purpose?". Children in Lying condition were perceived as less credible than children in Misleading condition, $\chi^2(1, n=84)=3.84, p<.10$. Children in Misleading condition were perceived as less credible than children in Neutral interview condition, $\chi^2(1, n=84)=14.11, p<.0005$. Last, children in Neutral interview condition were rated as less credible than children in No interview condition, $\chi^2(1, n=84)=4.38, p<.05$.

The third rating was on children's replies to "Did she spill on the drawing with apple juice or orange juice". The child in the no interview condition answered "I don't know" and participants didn't make judgments on this specific answer. Of the three remaining conditions, children in Misleading condition were perceived as most credible compared with children in Neutral interview condition, $\chi^2(1, n=84)=26.03$, $p<.0001$, and Lying condition, $\chi^2(1, n=84)=20.19$, $p<.0001$.

The fourth rating was on children's replies to "Did Yi hurt Bess?". Again, the child in the no interview condition answered "I don't know" and participants didn't make judgments on this specific answer. To note, of the three remaining conditions, children in Misleading condition were perceived as least credible compared with children in Lying condition, $\chi^2(1, n=84)=7.35$, $p<.01$, and Neutral interview condition, $\chi^2(1, n=84)=6.26$, $p<.05$, which is different from other findings in the present study.

Despite of the strong correlation between ratings for general impression and ratings for specific questions, these individual item analyses indicate that the two kinds of ratings were not consistent.

CHAPTER 4

DISCUSSION

The current study found that children who had been suggested misinformation, as a result of this misinformation reported falsely, were rated as credible as children who were telling the truth. In addition, children who had been suggested misinformation were rated more sincere than children who had been coached to lie.

False Beliefs: Children who believe false misinformation

The main hypothesis of the study was that children who had gone through a misleading interview would appear credible because they would incorporate the misleading information into their memory trace. There was a strong support for this hypothesis. Children who had been exposed to misinformation were perceived as credible as those who were telling the truth; and much more credible than children who were lying. Adult participants could correctly judge when a child was telling the truth and when a child was intentionally lying. However, when confronting children who had been misinformed, their accuracy was much worse than chance. In the current study, adult participants may believe that Yi was the person who ruined the painting purposefully despite of the fact that Bess ruined it accidentally.

The findings are important for understanding the mechanism of children's high suggestibility. It appears that the presentation of misinformation leads to children's memory representations being revised. Children exposed to, misinformation believed what they said. Thus these children behaved as they were telling the truth and the result was that adult raters incorrectly rated their accuracy. This is consistent with the cognitive-based explanation for suggestive effect. There is also some evidence from the memory checking questions from the debriefing immediately after the videotaped interview: During this phase children insisted they actually observed Yi spilling orange juice on the painting although Bess did this.

The findings are legally important. Incorrect information from child witnesses could emerge from both intentional lying and being misinformed. Conveying wrong information as the result of a suggestive interview has been long ignored in credibility assessment studies in which the critical contrasts were between lying and truth-telling and not false beliefs. The present findings are depressing in that adults believed children who had been suggested misinformation. In the current case, Yi might be accused of ruining the painting rather than Bess. In legal settings, some innocent people could be falsely accused.

Interestingly, participants had similarly low confidence for their ratings of children who had been misinformed and children who were lying. This suggests that children subjected to suggestive interviews triggered some doubts from adult participants.

Believe him in general, then believe whatever specifically he says?

This was the first study to examine whether a global rating of a child as credible or not, would predict whether people would accept or reject specific information delivered by the same child. Although there was a strong correlation between global impressions and the ratings of specific questions, findings indicate that people selectively accept or reject specific information regardless of the perceived global reliability of the source. Children who had been misinformed were rated as credible. However, they were rated less truthful for some question ("Did she do it on purpose?"). In contrast, children who were lying were rated as least credible. Yet, adult participants still believed in their narratives on some question ("Did Yi hurt Bess?"). This finding warns us that previous studies, which employed only general credibility assessments, can be problematic.

Accuracy of credibility assessments

Regardless of the possible reasons for children failing to convey the correct

information and regardless of the basis of the biases of jurors, if the latter can discriminate between accurate and inaccurate witnesses, justice is more likely to be served. There are two interesting findings concerning the accuracy of judgments. First, participants' accuracy for global ratings of children was greater than 50 percent, which is higher than chance as well as higher than the accuracy rates found in other studies with untrained observers (e.g., Ekman, O'Sullivan, & Frank, 1999; Edelstein, et al., 2006; Leach, et al., 2004). The possible explanation is that the two lying children in the current study behave evidently differently from other children. For example, they were giggling and trying hard not to tell the truth. Further, participants were fairly good detecting truth, with accuracy rates over 60%, which is consistent with the truth bias reported in previous studies (DePaulo, et al., 1997; Vrij & Baxter, 1999). Our findings reveal that the essence of truth bias is a bias to believe that other people don't have the intention to lie.

"Trust bias" revisited

Consistent with previous research (Akehurst, Bull, Vrij & Kohnken, 2004; DePaulo, et al., 1997; Ekman & O'Sullivan, 1991), we found that the confidence of ratings had little relationship to the accuracy of judgments. Instead, confidence was related to whether they believed the child. Participants were more confident when they claimed to detect truth than when they claimed to detect deception. The reason for this is still unclear. One previous hypothesis is that, barring evidence to the contrary, the presumption in communication is that other people are truthful. Therefore, people need more evidence to support the decision claiming to detect deceptions (Mann, Vrij, & Bull, 2004). A second possibility is that people who are competent in one area are usually better at estimating their performance in the specific area (Dunning, Johnson, Ehrlinger & Kruger, 2003) and individuals are usually better at detecting truths (Vrij, 2000) (though the current study indicates that people are actually better at detecting

24

the motivation of telling truths). Thus, when participants assess a child as honest, identifying the motivation of truth telling which he is good at, he is more capable of determining whether his decisions are correct. Therefore, participants will report higher confidence.

An unresolved question about "trust bias" is to identify who are more inclined to hold the bias. The college students who reported having more experience with children were more likely to believe children were telling the truth. This has not been found before. One explanation is that usually, the more familiar two people are, the higher tendency they will have to believe in each other. Therefore, when college students identify children as a group they are familiar with, they tend to believe the group as a whole. In addition, females were more likely than males to believe children, which is consistent with previous studies (Castelli, Goodman, & Ghetti, 2005; Golding, Sanchez, & Sego, 1997). However, in the context of child sexual assault cases, previous researchers attributed the bias to the greater likelihood for women to be victims of sex crimes: Women who are usually victims of sex crimes tend to believe children. However, the event in the present study was not related to sex abuse, thus limiting this explanation. This indicates that females might be just more likely to believe in children, or people in general.

Limitations and future studies

The present study systematically examined people's ability to detect children's misinformation as the result of suggestive interviews. There are several caveats of the present study and further empirical studies are needed. First, the children's interviews were shown to all the participants in a fixed order. Although there was no practice or fatigue effect, the previous interview and decision might have an effect on the later decisions. A counterbalanced presentation should be adopted in future studies.

The second issue concerns the generalizability of the results. There were only two

children in each experimental condition. The two children might be not representative of their age. That is, they may be more or less reliable compared with other children. Further, the majority of children were girls. Boys might be perceived as more or less trustful than girls. There is some evidence that laypersons can rate more accurately towards the narratives provided by boys than those by girls (Goodman, et al., 2002). In addition, there might be an interaction between the gender of jurors and children. Our data are too limited to explore any potential relationship.

In the present study, an effort was made to create an ecologically valid setting including a real life event was chosen for children participants, and having adult participants watched a video rather than read fictional scripts. However, the nature of the event (i.e., spilling juice) is not serious enough or emotionally-charged compared to those in justice system. The interviews were relatively brief and they were not confrontational as in legal cross-examinations. In addition, the children in the present study just took the role as bystanders rather than victims that they usually are in sexual assault cases. Thus, studies which are both legally more relevant but at the same time ethnically permissible need to be conducted.

The current study also revealed some interesting findings worth further studied. For example, it is interesting to know how general impression and accepting/rejecting specific information influence each other. In the present study, participants provided their general judgments before they judged the specific questions. Further studies may manipulate the order to address this question. In addition, more studies are needed to find out the reason why people are more confident in their decisions that children were telling the truth. The finding that females are more likely to believe children's narrations also calls for new studies.

CHAPTER5

CONCLUSION

Despite its limitations, the current study is the first to systematically examine how children influenced by suggestive interviews appear to raters compared with both children who were telling the truth and children who are lying. Children who reported incorrect information as the result of misleading interviews appeared as sincere as those who were telling the truth in contrast to those who were intentionally lying. High suggestibility of preschool children appears to be cognitively based, given that the children resisted debriefing (indicating they really believed their erroneous reports and were not merely responding in a socially desirable manner), and adult raters believed them as more than they did children who were deliberately not telling the truth.   The finding that adults trusted children who had been suggested misinformation, should be a siren to the justice system.

APPENDIX

1. Script of Neutral Interview conditions

Free Recall: Can you tell me in your own words what happened when I came to your class? Just tell me in your own words everything that you can remember from that day.

Direct Questions:

1. What did Bess look like?

2. What did Yi look like?

3. Did I make a drawing?

    If no, Are you sure? (If child maintains Experimenter did not make a drawing skip to 8.)

4. My drawing got spoiled, right?

    If no, Are you sure? (If child maintains the drawing was not spoiled skip to 8.)

5. Do you remember who spilled on the drawing?

6. Did [whoever child says spilled on the drawing] spill on it on purpose or was it an accident?

7. Did [whoever child says spilled on the drawing] spill on it with apple soda or orange soda?

8. Did Yi touch Bess?

2. Script of Misleading conditions

Misleading Suggestion: My mom was a bit disappointed that my drawing was ruined. Although she likes the new one very much, I need to tell her what happened. That's why I want to talk to you. Some of the other kids said that Yi spilled on my drawing on purpose. It's OK for you to tell me what really happened.

Direct Questions:

1. What did Bess look like?

2. What did Yi look like?

3. Did I make a drawing?

   If no, Are you sure? (If child maintains Experimenter did not make a drawing skip to 8.)

4. My drawing got ruined, right?

   If no, Are you sure? (If child maintains the drawing was not spoiled skip to 8.)

5. [*Misleading*]Yi spilled on my drawing, didn't she?

   If no, Who spilled on the drawing?

   (Repeat the sentence several times.)

6. [*Misleading*]Did [whoever child says spilled on the drawing] spill on it on purpose?

7. [*Misleading*]Yi spilled on the drawing (Repeat the phrases several times) with apple soda, didn't she?

8. [*Misleading*]Why did Yi hurt Bess?

3. Script of Lying conditions

Game Prompt: Yi is a very silly girl! She is always playing tricks on Bess and me. Now we want to play a trick on her. We want everyone to think that she spilled on my drawing instead of Bess. She will think this is a fun game. Do you want to help us play this trick? (Wait for child to give an affirmative response. If the child does not want to continue, then the interview ends.) OK, good! So if anybody asks you who spilled on the drawing, tell them Yi did. Remember this is only a game, and we know that Bess really spilled on the drawing. Let's practice:

Who spilled on the drawing?

    If Yi, Good job! Even though we know it was really Bess you did good saying that Yi spoiled it.

    If Bess, That's right. Bess did spill on the drawing. But remember, we are playing a game and saying Yi really spilled on the drawing. (Question is repeated.)

Now let me ask you some more questions about that day:

1. What did Bess look like?
2. What did Yi look like?
3. Do you remember who spilled on the drawing?

    If Bess, repeat the game prompt, "That's right Bess did spill on the drawing, but remember the game we are playing. We are going to say Yi spoiled the drawing to trick her."

4. Did Yi spill on the drawing on purpose or was it an accident?
5. Did Yi spill on it with apple soda or orange soda?
6. Did Yi touch Bess?

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