

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

FACT OR FICTION?

ADULTS' ABILITY TO JUDGE CHILDREN'S MEMORY REPORTS

A thesis submitted in partial fulfillment of the requirements
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by

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ABSTRACT

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This study examined adults' ability to discern children's true and false memory reports. Jury-eligible community members ($N = 329$) watched video-clips from children's interviews about a memory event involving a secret and rated various attributes related to children's perceived cognitive ability and honesty. Video-clips were divided into eight experimental conditions based on event type (secret, no secret), child response (report, denial) and child age (5-6 years, 7-8 years). Overall, adults were more likely to believe reports over denials, but they were likely to be misled by both false reports and false denials. When children were asked to keep a secret, adults believed children who reported more than those who incorrectly denied, but when children were not asked to keep a secret, adults believed children who falsely reported more than those who accurately denied. This presents a problem for the legal system. If jurors are unable to correctly assess the accuracy of children's statements, there are serious risks for the miscarriage of justice in child maltreatment cases.

CHAPTER I

INTRODUCTION

Child maltreatment is a serious problem in the world. Twenty-five percent of all adults reported having been physically abused as children (World Health Organization [WHO], 2014). From 3 million cases of child maltreatment reported in the United States, 1 million are corroborated, and a large number of cases are never reported (Bottoms, Golding, Stevenson, Wiley, & Yozwiak, 2007). Child maltreatment includes physical and emotional ill-treatment, sexual abuse, neglect, and exploitation—all of which have many life-long consequences (WHO, 2014). Maltreated children grow up with increased risk for behavioral and mental health problems such as depression, drug abuse, high-risk sexual behavior, and heart-disease (WHO, 2014). In order for the law to prevent and prosecute crimes against alleged child victims, children must be given a chance to testify in front of adults who can properly assess the validity of children's reports.

Alleged child victims are often the only source of evidence in child maltreatment cases, in particular sexual abuse cases, because of the inherently private nature of this type of crime (Lamb, 1994). Due to the important role children play as witnesses, research on children's reports and on adults' ability to judge children's memory reports has gained considerable attention over the last few decades. False reports (i.e., incorrectly stating an event occurred when the event did not occur) and false denials (i.e., incorrectly denying the event occurred when it did in fact occur) are particularly problematic if jurors are unable to correctly assess the accuracy of children's reports (Lamb, Orbach, Hershkowitz, Esplin, & Horowitz, 2007). The fairness of a trial could be severely undermined if adults are unable to reliably discern between children's true and false

memory reports. If jurors believe alleged child victims' false reports, innocent adults may be charged and ultimately convicted of crimes, and conversely, if jurors do not detect children's false denials, guilty criminals may remain free and continue to abuse children.

The purpose of the present study was to examine adults' ability to discern children's true and false memory reports about a staged event involving a secret. To examine the full range of possible answers, I varied event type (whether the child was asked to keep a secret or not) and child response (whether the child reported or denied) to determine whether these four type of responses had an effect on adults' beliefs that children were asked to keep a secret, and on adults' perceptions of children's cognitive ability and honesty. I also manipulated child age to determine whether adults' ratings of perceived credibility and accuracy varied for 5-6 year olds compared to 7-8 year olds.

Table 1. Range of children's responses resulting from event type and child response.

		EVENT TYPE	
		TRUE	FALSE
CHILD RESPONSE	REPORT	TRUE REPORT	FALSE REPORT
	DENY	FALSE DENIAL	TRUE DENIAL

CHAPTER II

REVIEW OF LITERATURE

Adults have difficulty discerning the accuracy of children's reports (Goodman, Batterman-Faunce, Schaff, & Kenney, 2002; Leippe & Romanczyk, 1989; Leippe, Manion, & Romanczyk, 1992). Regardless of the actual accuracy of children's testimony, children are both less and more believed than adults (Leippe, Manion, & Romanczyk, 1993). This is problematic as it implies that adults' decisions about children's testimony are often affected by factors beyond children's actual accuracy. For example, evidence suggests that jurors' decisions are influenced by a variety of factors such as jurors' attitudes, strength of evidence, witness and defendant gender, and a wide array of other variables (Bottoms, Golding, Stevenson, Wiley & Yozwiak, 2007). While a substantial review of the factors affecting jurors' decisions is not feasible here, the present study will focus on how event type and response type can affect adults' accuracy and perception of children's credibility. Briefly, credibility encompasses children's perceived ability to recall an event (i.e., cognitive ability) as well as their perceived ability to tell the truth (i.e., honesty) (Tabbak & Klettke, 2013). What follows is a brief synthesis of previous research examining factors that affect adults' ability to accurately discern children's reports as well as a short discussion on how this study can improve upon that research.

Adults' Ability to Discern Accuracy in Child Witness Testimony

Deception research suggests that adults' ability to discern children's lies is just above chance (Vrij, 2002). However, fact finders are more likely to correctly identify truths over lies (DePaulo, Charlton, Cooper, Lindsay & Muhlenbruck, 1997; Vrij, 2000). In a review of the deception literature, Vrij (2000) found that the mean accuracy rate was

67% for detecting truths over 44% for detecting lies. One explanation is the availability heuristic, which suggests that people are more likely to believe and expect truthful statements because they are more often exposed to true statements than lies in their everyday lives (Vrij & Baxter, 1999). When Strömwall and Granhag (2005) asked adults to judge children's truths and lies, 70% of all judgments were truth judgments. This suggests people's inability to accurately detect deceptive statements may be partly due to a truth bias.

A majority of research examining adults' abilities to determine accuracy in children's reports has largely focused on information about experienced *true* events (Ball & O'Callghan, 2001; Leippe et al., 1993). Leichtman and Ceci (1995a; 1995b) told adult participants that a confederate named Sam Stone visited preschoolers in a daycare center. Sam Stone did in fact visit all children, but some children were subjected to interviews with biased and repeated suggestions afterwards. Clinical professionals and lay people watched videos of the preschoolers' interviews and rated their confidence that Sam Stone had actually visited. Adults were no better than chance at discerning preschoolers' accurate versus false accounts about Sam Stone's visit. Because the study included a true event only, the researchers were unable to test whether adults could discern between preschoolers' accurate and false accounts of an event that never actually occurred.

In addition, previous evidence suggests that adults have a tendency to believe the majority of children's "yes" disclosures. For example, adults in a study by Laimon and Poole (2008) watched videos of 3-8 year old children who reported false information regarding "Mr. Science," an adult who visited the children's classroom (true event). Seventy-five to 89% of adults incorrectly rated children's false reports as accurate.

However, adults in this study only watched reports about a true event. Including a false event (e.g., if Mr. Science did not visit) would have allowed for a wider range of responses and a more realistic interview.

The full range of events resulting in true reports and denials, and false reports and denials, must be examined to better understand the factors affecting jurors' accuracy judgments of children's reports. Only a few studies have assessed jurors' perceptions of children's reports with these considerations in mind. Block and colleagues (2012) examined the ability of adults to differentiate between children's true and false reports of events that did or did not actually occur. Adults viewed interviews of 3-5 year old children whose responses about an event fell into four categories: accurate reports, false reports, accurate denials, and false denials. Block and colleagues then measured accuracy through adults' rated confidence that the event had occurred. Overall, adults were more confident that the event occurred when children made accurate compared to false reports. This is consistent with Vrij's (2000) evidence that adults are better able to correctly identify truths over lies. In addition, adults in the Block et al. study were somewhat confident that events had not occurred when children made false reports. This finding is surprising because adults are not generally good at identifying children's false reports (Leichtman & Ceci, 1995a). Nevertheless, Block and colleagues reported that adults were still more likely to believe false reports over accurate denials. More importantly, adults' ratings of false denials were the most inaccurate. That finding is consistent with previous research suggesting that adults are particularly fooled by false denials (Lyon, 1999). Block and colleagues concluded that adults had the greatest difficulty identifying false denials compared to all other memory reports. This suggests that adults tend to over

believe children who falsely deny and falsely report—particularly making more judgment errors about the first than the second.

Another exception to the trend of having adults rate children's memories for true events only is a study by Saykaly and colleagues (2013). They examined adults' perceptions of children of different ages (4-5 years, 6-7 years, and 8-9 years) who provided descriptions of true and false stressful and non-stressful events. Overall, adults were not significantly better than chance at making accurate judgments (only 56% accurate judgments), and there was no significant effect for child age. These results are comparable with previous evidence suggesting that lies are difficult to detect even in young children (Bond & DePaulo, 2006; Vrij, 2002). Saykaly and colleagues also revealed that adults were more accurate at discriminating non-stressful events when they viewed different stories by the same child, as opposed to stories by different children. However, those findings are at odds with real world court cases in which alleged child victims only provide one account of their stories to jurors. Finally, children in the Saykaly and colleagues study were coached to lie or tell the truth. It remains to be seen whether children of different ages who respond spontaneously to questioning would be perceived differently by adults.

Evidence from the two previous studies highlights a few significant problems for child witness reports. First, adults are more likely to struggle with identifying false denials as compared to all other conditions. Second, though adults identified false reports with relative accuracy, they were still more likely to believe false reports over accurate denials. This is a particularly important issue because if adults cannot tell when children falsely deny an event occurred, then guilty suspects may not be convicted of crimes.

Also, if adults cannot accurately discern false reports, then innocent suspects may be erroneously accused and convicted of crimes they did not commit. Finally, the studies highlight the need for more ecologically valid research examining adults' ratings of children's interviews about true and false events. For example, studies that may be higher in ecological validity are those where adults rate only one child, view children's true and false reports, or otherwise hear and see the same representations real adults would in a jury. Thus, the more a juror simulation contains features that a real juror would experience, the more ecologically valid the study will be (Kovera, 2014).

The present study improves on previous research in several ways. First, this study extended knowledge about the pattern of findings that includes four different response types. Like Block and colleagues' (2012) study, the current study included children's responses (report, denial) to different event types (secret, no secret), as opposed to previous studies that have only included true or false events. An examination of the full range of events affecting jurors' accuracy judgments of children's reports—specifically those leading to false reports and false denials—is of great importance to the fairness of legal trials.

The present study also used a more ecologically valid—or realistic—procedure than other research on jurors' perceptions of children. Whereas Block and colleagues (2012) questioned children about relatively neutral events (e.g., a trip to Disneyland), children in McAuliff (2013) participated in a staged event that incorporated abuse-related behaviors such as adult/child physical contact, placing objects in the child's mouth and hands, having the child adjust/remove clothing, and asking the child to keep a secret about adult-initiated touch. Moreover, Block and colleagues relied on parents' imperfect

reports of whether the events in question had actually occurred, but McAuliff's memory event took place in a controlled laboratory setting. Children's medical examinations and interviews were video-recorded so that the accuracy of children's responses to the interviewer's questions could be determined without error.

Adults in the present study only rated one video of a child because jurors in the real world only view one account by one child (a report or a denial to a true or false event). In contrast, Saykaly and colleagues (2013) asked adults to view and rate either videos of four different children or various different testimonies by the same child. One last distinction between Saykaly et al.'s study and the present study is that in the first, adults watched children who were coached the answers to provide, whereas children in the present study spontaneously provided true and false responses to questions about secrecy and adult-initiated touch. In a real trial, it is possible that children may be coached on how to respond. However, children may also testify freely and spontaneously. For this reason, it is important to examine both.

Finally, this study addressed the lack of stimulus sampling found in previous research. Studies lack in stimulus sampling if they do not use multiple examples of each level of the independent variable to rule out the possibility that variations in these levels are driving the effects of the independent variable on the dependent variable (Wells & Windschitl, 1999). As a result, studies that only use one child in a video may not be able to rule out whether the results are confounded with particular characteristics of that specific child. Consequently, it is difficult to generalize results based on one child to a wider and more diverse population. This study included more (and qualitatively different) children (three per cell instead of one) to overcome this limitation.

Children's Perceived Credibility

Mock juror studies have varied in their findings with respect to credibility, showing that children are perceived as less, equally, or more credible than adults (Bottoms, Golding, Stevenson, Wiley, & Yozwiak, 2007). A wealth of research suggests that this variation occurs because children's credibility depends on two factors: perceived cognitive ability and perceived honesty (Ross, Jurden, Lindsay, & Keeney, 2003). In this two factor-model, children are generally perceived to be less competent in cognitive ability, but more honest compared to adults (Leippe & Romanczyk, 1989). Any variable that supports or limits either of these qualities may affect jurors' perceptions of children's credibility (Bottoms, 1993; Bottoms & Goodman, 1994; Ross et al., 2003).

Negative stereotypes of children as poor memory sources can affect children's perceived cognitive ability and by extension credibility. Such stereotypes may also be exacerbated by limited experience with children's testimony or general assumptions about their cognitive and communications skills (Leippe et al., 1993). Concern about children's memory suggestibility is not entirely unfounded, however, as some studies have shown that young children can be led to make false reports of entire events (Ceci & Bruck, 1993; Goodman, 1984). Moreover, adults realize that preschoolers are more suggestible than older children and adults, although they may underestimate or overestimate the size of these differences depending on the situation (Laimon & Poole, 2008; McAuliff & Kovera, 2007; Quas, Thompson, & Clarke-Stewart, 2005).

Case type can also affect perceived credibility. Cases that focus on cognitive ability may not favor children compared with adults, whereas cases that emphasize honesty may favor children, especially younger children, more than adults (Goodman,

Bottoms, Herscovici, & Shaver, 1989; Ross et al., 1990). Ross and colleagues (2003) found that in non-sexual abuse cases, perceived cognitive ability was a better determinant of credibility than honesty, whereas in sexual abuse cases, honesty alone predicted the verdict. Children's perceived honesty accounts for their credibility in sexual abuse cases because children are generally thought to have little knowledge of sex (Leippe et al., 1993). The assumption is that if children who allege abuse have this knowledge, it is probably because they have directly experienced some type of abuse.

One important moderator of children's perceived credibility is children's age. Generally, younger children are perceived as more honest but less cognitively capable than older children, and vice versa (Leippe & Romanczyk, 1989). Age is especially relevant in sexual abuse cases. For example, Nightingale (1993) asked participants to read a case summary about a 6- or 13-year-old girl who was attacked by a stranger on her way home from school. Participants were more likely to convict the defendant when the victim was younger rather than older. Nightingale concluded that older child age was associated with decreased sexual naiveté, increased ability to lie, and thus, decreased credibility in sexual abuse cases.

With respect to deception, children's understanding of what it means to lie or conceal information increases with age. Evidence from the theory of mind literature suggests that children as young as 3 years old are capable of misleading others, though the mechanism is not entirely clear (Ahern, Lyon & Quas, 2011). For example, Talwar and Lee (2008) proposed a lie-telling process children develop as they age. By 3 years of age, children developed the ability to make primary lies, which are deliberate untrue statements. Between ages 3 and 4, children have learned to make secondary lies, namely,

they have learned to conceal their own transgressions or the transgressions of others. Finally, children are believed to develop tertiary lies around 7-8 years of age. Tertiary lies consist of the ability to maintain lies consistently, making sure that future statements do not contradict previous lies (Talwar & Lee, 2008). This evidence suggested as children mature in their cognitive abilities their ability to deceive also improves. There is good reason to believe that children of various ages may understand and react differently to questions about secret-keeping. Children as young as four are able to keep secrets (Bottoms, Goodman, Schwartz-Kenny, & Thomas, 2002), but older children have developed a mechanism to better conceal their deception (Talwar & Lee, 2008). It is also possible children who deceive may exhibit different behavioral cues that affect adults' perceptions of them (Vrij, Akehurst, Soukara, & Bull, 2004). However, most of the research examining children's credibility and deception has focused on comparing children of wide age ranges (e.g., 6 versus 13 years old). While other studies, like Block and colleagues (2012), have not tested differences in adults' perceptions as a function of child age because of limited samples.

Additional research is needed regarding the way adults perceive children's credibility at different stages of development. The present study aimed to fill this gap in the literature by including video-clips of children from closer age groups: namely 5-6 years old and 7-8 years old. The rationale for the age division came from the expectations that children who have developed the ability to tell secondary lies may behave and be perceived differently than children who have learned to tell tertiary lies (Talwar & Lee, 2008).

Apart from age and event type, children's responses (report or denial) to true and false events may also affect whether children are perceived in a more positive or negative way. For example, adults tend to rate children in a more positive way when children deny versus report that events took place (Block et al., 2012). In some ways, this is surprising because adults are more accurate at distinguishing children's true reports (i.e., truth bias). However, this would be consistent with the findings that denials are overly believed by adults with respect to credibility, especially false denials (Block et al., 2012; Lyon, 1999). These findings are important as they suggest that denial bias is stronger than truth bias regarding positive perceptions of children. Additionally, adults rate children more negatively when they make false reports compared to all other types of reports (i.e., accurate reports, accurate and inaccurate denials; Block et al., 2012). Although adults are not very accurate when identifying false reports in children, they still rate false reports negatively in ratings of credibility, suggesting that they may experience some level of skepticism about the reports.

Nevertheless, adults are more likely to express doubts about children's memory reports on questionnaires more than on actual ratings of witness testimony (Luus, Wells, & Turtles, 1995; Ross, Dunning, Toglia, & Ceci, 1990). Even though adults have questions about children's cognitive capacities, these concerns do not often make adults discount the possibility that alleged events may have occurred, especially in cases involving touch and sexual abuse (Allison, Lindsay, & Merkel, 2001; Bottoms & Goodman, 1994).

Adults' perception of cognitive ability and honesty are strong predictors of verdict decisions in mock trials (Brigham, 1998; Orcutt, Goodman, Tobey, Batterman-Faunce, &

Thomas, 2001). It is therefore vital to examine how factors such as event type, response type, and age may affect children's credibility ratings. However, it should be noted here that adults' perceptions of cognitive ability and honesty have been tested using different methodologies. Whereas Ross and colleagues (2003) identified perceived cognitive ability and honesty as two separate factors in order to explain previous mixed findings, Block and colleagues (2012) combined these two factors into one that explained jurors' perceptions. In the Block et al. study, perceived accuracy (i.e., cognitive ability) and believability (i.e., honesty) made up one factor. The present study examined perceived cognitive ability and honesty using Ross and colleagues' two-factor approach.

Overview of the Present Study and Hypotheses

In the present study, jury-eligible community members viewed children's recorded interviews from an NIH-funded research protocol in which children spontaneously responded accurately or inaccurately to a question about secrecy and adult-initiated touch (McAuliff, 2013). Adults then rated the children on attributes related to their beliefs that children were asked to keep a secret, and perceived cognitive ability and honesty. Children's interview videos were divided into eight experimental conditions varying in event type (secret, no secret), child response (report, denial), and child age (5-6 years, 7-8 years).

Part I. Hypotheses about Adults' Beliefs that Children Were Asked to Keep a Secret

First, I predicted that there would be a main effect of Event Type (secret, no secret) on adults' beliefs that children were asked to keep a secret. Adults should be more likely to believe children were asked to keep a secret when children were than when they were not. This hypothesis was based on Block and colleagues' (2012) findings that adults

were more confident an event occurred when it did in fact occur. Children in this study's age groups (5-6, 7-8 years old) understand what it means to keep a secret and some of the social consequences of keeping it (Bottoms et al. 2002). For instance, they may understand that failing to keep a secret might result in them or someone else getting in trouble. Furthermore, like people who deceive, children asked to keep secrets may experience various cognitive, emotional, and behavioral control processes that may cause them to elicit changes in their non-verbal behavior which otherwise may not be seen in children who are not asked to keep secrets (Vrij, 2004). Adults may be sensitive to such behavioral changes.

Second, I predicted a main effect of Child Response (report, denial) such that adults would be more likely to believe children were asked to keep a secret when children reported as opposed to denied the secret. This is consistent with Block and colleagues' (2012) finding that adults were more confident that an event occurred when children made reports than denials. It is also consistent with Laimon and Poole's (2008) finding that adults have a tendency to believe children's "yes" disclosures.

Third, I predicted a two-way interaction between Event Type (secret, no secret) and Child Response (report, denial) on adults' beliefs that children were asked to keep a secret. For the Secret condition, adults would be more likely to believe children were asked to keep a secret if children reported (true report) as opposed to denied (false denial) the secret. Conversely for the No Secret condition, adults would be more likely to mistakenly believe children were asked to keep a secret if children reported (false report) than if they denied (true denial) the secret. This prediction is consistent with the findings

from Block and colleagues' study (2012) that adults are more likely to believe true reports over false denials, and false reports over accurate denials.

Fourth, I predicted a three-way interaction such that the pattern of effects for the Event Type x Child Response two-way interaction on adults' beliefs that children were asked to keep a secret would vary with Child Age (5-6 year olds, 7-8 year olds). I expected that adults would believe children were asked to keep a secret if children reported rather than denied, but that this effect would be greater for 7-8 year olds than 5-6 year olds. In other words, the pattern of means for the 2 x 2 interaction would be wider for older than younger children. As noted previously, 7-8 year olds may differ from 5-6 year olds in their ability to tell better lies and sound more consistent. It is possible that adults may expect older children to be more accurate than younger children as older children are generally perceived to rate higher in cognitive ability than younger children.

Part II. Predictions about Children's Perceived Credibility (i.e., Cognitive Ability and Honesty)

I advanced four hypotheses involving children's perceived credibility. First, I predicted a main effect of Child Response (report, denial) on adults' perceptions of honesty and cognitive ability. I expected adults to perceive children who denied as being more cognitively capable and honest than children who reported. Though adults in Block and colleagues (2012) felt more confident that an event occurred when children reported as opposed to denied, they also found children who reported to be less credible than children who denied. Specifically, children who denied received more positive credibility ratings from adults than children who reported. This suggests there may be a strong

denial bias regarding credibility. It seems that people who over-believed reports in terms of accuracy were likely to over-believe denials in terms of credibility.

Second, I predicted a main effect of Child Age on children's perceived cognitive ability and honesty. Research suggests that younger children are generally seen as more honest but less cognitively capable than older children, and increased age leads to decreased perceived honesty (Goodman et al., 1989; Ross et al., 1990). With respect to cognitive ability, I predicted that adults would perceive younger children as being less cognitively capable than older children. With respect to honesty, I predicted that adults would perceive younger children as being more honest than older children (Goodman et al., 1989; Ross, 1990).

For the third hypothesis, I predicted a two-way interaction between Event Type (secret, no secret) and Child Response (report, deny) on adults' perceptions of children's cognitive ability and honesty. For the Secret condition, I expected adults to perceive children who denied (false denial) as more cognitively capable and honest than children who reported (true report). For the No Secret condition, I expected adults to perceive children who denied (true denial) as more cognitively capable and honest than children who reported (false report) the secret. This is consistent with Block and colleagues' (2012) credibility findings that people found denials (both true and false) to be the most credible. Block and colleagues suggested that for credibility adults have a denial bias. If so, this may be in part driving the first dependent measure as well (belief that child was asked to keep a secret). Perhaps part of the reason why adults under-believed denials in Block's first dependent measure (confidence that an event occurred) was because they really found both types of the denials to be credible (denial bias).

Finally, for the fourth credibility hypothesis I predicted a three-way interaction in which the pattern of effects for the Event Type x Child Response two-way interaction would vary with Child Age (5-6 year olds, 7-8 year olds). This hypothesis is split into 4a with respect to cognitive ability and 4b with respect to honesty. With respect to cognitive ability (4a), I hypothesized that in the Secret condition, adults would rate children higher in cognitive ability if they denied as opposed to reported events and this denial bias would be greater for 7-8 year olds than 5-6 year olds. That is, adults would believe older children's denials even more than younger children's denials when it came to cognitive ability because they would believe older kids have better memory and cognitive capacity. Essentially, the differences between ratings of denials and reports would be greater for the older group than for the younger group. Additionally, in the No Secret condition, I predicted that adults would rate children who denied higher in cognitive ability than children who reported, and that this effect would be greater for 7-8 year olds than for 5-6 year olds. Such evidence would suggest that adults have some understanding of children's developmental strides (e.g., better memory) with respect to cognitive ability.

With respect to honesty (prediction 4b), I hypothesized a 3-way interaction but in the opposite direction than before. I expected adults to rate children higher in honesty who denied as opposed to reported, but this time adults would perceive 5-6 year olds as being more honest than 7-8 year olds. I predicted that in the Secret condition, adults would perceive 5-6 year olds as being more honest than the 7-8 year olds when they denied that an event occurred (as opposed to reported) because adults generally perceive younger children as more honest than older children. Similarly in the No Secret condition, I expected adults to perceive 5-6 year olds as being more honest than 7-8 year

olds when they denied as opposed to reported. Adults may believe younger children's denials because they are perceived to be more honest than older children and so less capable of hiding their transgressions.

CHAPTER III

METHOD

Sample

Participants were 329 adult community members (186 women) residing in the San Fernando Valley of Los Angeles, California ranging in age from 18 to 72 years old ($M = 35$ years). Community members were 26 % Caucasian, 35% Hispanic/Latino, 5% African American, 17 % Asian, 12 % were Armenian, and 5% were “other .” They were recruited through word of mouth by university students who were part of a psychology course. The principal investigator announced the study in class and offered extra credit for enlisting members of the community. Community members who were interested in the study and wished to participate received an email with a web link at psychsurveys.org. All participants stated they met the requirements for jury-eligibility in California: at least 18 years old, US citizens, California residents, English-speaking, and no felony convictions. Community members voluntarily participated in the experiment and did not receive payment. Fifty-five \$25 gift cards were raffled among students who helped recruit community members after data collection was complete.

Videotaped Stimuli

Video-clips of interviews from a subset of children who participated in a previous NIH-funded study (McAuliff, 2013) were used. In that study, 300 children ages 5-12 years old participated in a simulated medical exam memory event. Children came to see a confederate, Dr. Dan, and participated in activities designed to simulate abuse-related behavior such as adult/child contact, removing clothing (i.e., medical robe), and half of the children were asked to keep a secret about adult-initiated touch. Two weeks later, the

children and their parents were brought back for an interview with Dr. Dan's medical supervisor. Children answered a series of open-ended and direct questions in a mock courtroom in the presence of jurors and Dr. Dan. All interviews concluded with a direct question relevant to the secret ("Did Dr. Dan ask you to keep a secret?"). Video-cameras recorded Dr. Dan's medical examination as well as children's follow-up interviews two weeks later.

I selected children's interviews to conform to a 2 (Event Type: secret, no secret) X 2 (Child Response: report, denial) X 2 (Child Age: 5-6 years, 7-8 years) between subjects factorial design. In the Secret condition, children from each age group either correctly assented that they were asked to keep a secret (true report) or incorrectly denied the secret (false denial). For the No Secret condition, children from each age group either incorrectly assented to secret (false report) or correctly denied that they were asked to keep a secret (true denial). There were eight experimental conditions in total.

Each video-clip depicted approximately 3 minutes of the direct question portion of a child's interview (e.g., "Did Dr. Dan untie your medical robe?") that concluded with the question "Did Dr. Dan ask you to keep a secret?" Because the order of direct questions preceding the secret question was counterbalanced in McAuliff's (2013) experiment, not every child answered the same preceding direct questions in the edited video-clips, and accuracy across those questions varied. As such, it was important to ensure that each child's accuracy for the secret question was consistent with the child's average level of accuracy for the preceding questions (five total). Two video-clips (one boy, one girl) were randomly chosen per experimental cell from all possible video-clips that satisfied the accuracy criteria with one exception. Specifically, only two video-clips

of older children (2 boys) who provided false reports of bodily touch met the accuracy criteria, so they were all that could be used. One additional video-clip per experimental cell was included in which the child's accuracy for the five preceding questions "mismatched" his or her accuracy for the secret question to examine whether this variable affected participants' perceptions of the child differently than when the accuracy criteria were met. None of the older children of the age group 7-8 years old made a false report in McAuliff (2013) where the accuracy for the secret question mismatched the accuracy for the five preceding questions. Therefore, an additional video with mismatch criteria could not be included for that cell. Video-clips of two girls and five boys were included that "mismatched" the accuracy criteria. In total, 23 video-clips were selected across the eight experimental cells (9 girls, 14 boys).

Dependent Measures

I included a manipulation check question before the first primary dependent measure to ensure participants watched the video and were aware of the children's responses. The question asked "Did the child **tell the interviewer** that Dr. Dan asked him/her to keep a secret?" and participants answered by circling yes or no.

For the first primary dependent measure, participants were asked to rate their beliefs that the secret occurred: "Do you believe Dr. Dan asked the child to keep a secret?". Participants used series of 7-point, Likert-type scales (1 = *Not at all*, 4 = *Neutral*, 7 = *Absolutely*) to indicate whether they believed the child was asked to keep a secret.

The second and third dependent measures tapped adults' perceptions of children's credibility using composite scales of perceived cognitive ability and perceived honesty.

Participants used a series of 7-point, Likert-type scales (1 = *Not at all*, 4 = *Neutral*, 7 = *Extremely*) to rate their overall impression of children (19 items total). Afterwards, I created two composite scores from these scales based on their face validity, that is, the degree to which the items seemed to measure perceived cognitive ability and perceived honesty. I formed the composite measures by averaging across responses for the individual items. The cognitive ability composite measure consisted of 14 items (Cronbach's $\alpha = .88$): clear, convincing, certain, attentive, thoughtful, accurate, intelligent, capable of remembering a secret, unreliable*, unfocused*, uncooperative*, incompetent*, confused*. The honesty composite measure consisted of 5 items (Cronbach's $\alpha = .89$): truthful, sincere, credible, believable, dishonest*. Items with an asterisk were reverse-coded.

Adults concluded their participation by completing a series of demographic items on age, gender, and ethnicity.

Procedure

Interested community members clicked on a web link embedded in an email that directed them to the study via psychsurveys.org. Participants signed an informed consent form and bill of rights before they began the study. Upon providing consent, participants read a short paragraph about the video they were about to view. The paragraph stated that the child had participated in a memory exam at the university and they were about to watch a video of the child being interviewed by Dr. Dan's medical supervisor two weeks after the medical exam. Participants were told, "The interviewer is Dr. Dan's supervisor, Mrs. Wright, whose job is to make sure that Dr. Dan did everything he was supposed to do and didn't do anything wrong during the Wellness Exam." Participants then watched

the video. Each participant was randomly assigned to view a video-clip from one of the eight experimental cells varying in event type, child response, and child age.

After viewing the video-clip of a child's interview and indicating their perceptions of the child using the 7-point, Likert-type scales, participants read a debriefing form, were thanked for their time and encouraged to contact the principal investigator if they wanted a printed copy of the consent form or had additional questions about the study.

CHAPTER IV

RESULTS

A series of 2 (Event Type: secret, no secret) X 2 (Child Response: report, denial) X 2 (Child Age: 5-6 years, 7-8 years) analyses of variance (ANOVAs) are reported here with all variables as between-subject factors. I used ANOVAs to determine any significant differences in adult responses due to Event Type, Child Response, and Child Age, and an alpha level of .05 for all statistical tests.

Manipulation Checks and Preliminary Analyses

Participants indicated whether the child in the video told the interviewer that Dr. Dan asked him/her to keep a secret or not as a manipulation check. Chi square analyses indicated significant differences in the Child Response manipulation, $\chi^2 (1, N = 153) = 47.22, p < .001$ (see Table 2 for number of correct and incorrect responses). In the Report condition, participants were more likely to correctly report that children in the video had said Dr. Dan asked them to keep a secret (77.8%) than not (22.2%). In the Deny condition, participants were more likely to correctly report that Dr. Dan had not asked the child to keep a secret (93.2%) than that he had (6.8%). Significant results found in the sample that excluded the manipulation check ($N = 329$) were virtually the same as the results found in the sample with the manipulation check ($N = 283$). Nevertheless, only the effects for participants who passed the manipulation check are reported here.

Additional preliminary analyses also examined whether participants' responses on any of the dependent measures varied as a function of the matching accuracy criteria, participant gender, or child gender. Analyses of variance showed no significant main effects for Matching Accuracy Criteria on adults' beliefs that the child was asked to keep

a secret, $F(1, 281) = 0.00, p = .99, \eta_p^2 = .000$; perceived cognitive ability, $F(1, 281) = 1.38, p = .24, \eta_p^2 = .005$; or perceived honesty, $F(1, 281) = 0.06, p = .82, \eta_p^2 = .000$. Thus, the remaining analyses collapsed across Matching Accuracy Criteria.

Since there were theory-based reasons that participant and child gender might interact with the other main independent variables in this study (Bottoms et al., 2007), I conducted a series of four-way ANOVAs to examine whether the effects of the three independent variables Event Type, Child Response, and Child Age on each dependent measure varied as a function of the demographic items Participant Gender and Child Gender. First I analyzed adults' beliefs that the child was asked to keep a secret. Analyses of variance did not yield a significant main effect of Participant Gender on this first dependent measure, $F(1, 267) = 0.92, p = .34, \eta_p^2 = .003$. Nor did Participant Gender result in any significant interactions with any of the independent variables (Event Type, Child Response, or Child Age). Additionally, analyses of variance also did not reveal a significant main effect of Child Gender on adults' beliefs that the child was asked to keep a secret, $F(1, 268) = 0.01, p = .93, \eta_p^2 = .000$; or any significant interactions of Child Gender with the independent measures Event Type, Child Response, and Child Age.

A four-way ANOVA also tested for any main or interaction effects of Participant Gender and Child Gender on perceived cognitive ability. Analysis of variance did not reveal a main effect of Participant Gender on cognitive ability, $F(1, 267) = 1.71, p = .19, \eta_p^2 = .006$. Additionally, no significant interactions emerged between Participant Gender and Event Type, Child Response, and Child Age. Analyses of variance also did not reveal a main effect of Child Gender on cognitive ability $F(1, 268) = 0.24, p = 0.62, \eta_p^2 = .001$. Finally, none of the interactions between Child Gender and the variables of interest were

significant with the exception of one. There was a significant Child Response x Child Age x Child Gender interaction, $F(1, 268) = 4.02, p = 0.05, \eta_p^2 = .015$. This interaction was uninterpretable and not qualified by any other effects, and thus not considered further.

Lastly, a four-way analysis of variance tested for any possible effects of Participant Gender and Child Gender on the dependent measure perceived honesty. Analysis of variance did not reveal a main effect of Participant Gender on honesty, $F(1, 267) = 1.70, p = .19, \eta_p^2 = .006$. In addition, no significant interactions for Participant Gender emerged. Furthermore, there was no main effect of Child Gender on perceived honesty, $F(1, 268) = 0.24, p = .62, \eta_p^2 = .001$ or any significant interactions between Child Gender and the three independent variables.

No significant effects of theoretical importance were found upon examination of the variables matching criteria, Participant Gender and Child Gender. Therefore, all subsequent analyses were collapsed on these measures and are reported here as a series of 2 (Event Type: secret, no secret) X 2 (Child Response: report, denial) X 2 (Child Age: 5-6 years, 7-8 years) analyses of variance (ANOVAs).

Table 2

*Number of correct and incorrect responses to the question "Did the child **tell** the interviewer Dr. Dan asked him/her to keep a secret?"*

		CHILD TOLD	
		YES	NO
RESPONSE	REPORT	119	34
	DENY	12	164

Adults' Beliefs that Children Were Asked to Keep a Secret

The first main dependent measure was the mean ratings of adults' beliefs that children were asked to keep a secret. An ANOVA did not reveal a significant main effect of Event Type (secret, no secret), $F(1, 275) = .739$, $p = .39$, $\eta_p^2 = .003$. Adults rated children who were asked to keep a secret ($M = 4.11$) similarly neutral to children who were not asked to keep a secret ($M = 3.97$),

The main effect of Child Response was statistically significant, $F(1, 275) = 37.92$, $p < .001$, $\eta_p^2 = .121$. Adults were significantly more likely to believe that children were asked to keep a secret when children reported ($M = 4.95$) as opposed to denied ($M = 3.39$) the secret. This main effect was qualified by a significant Event Type X Child Response interaction on adults' beliefs that children were asked to keep a secret, $F(1, 275) = 4.17$, $p = .04$, $\eta_p^2 = .015$. For the Secret condition, adults were more likely to believe children were asked to keep a secret when children reported ($M = 5.26$) as opposed to denied ($M = 3.26$), $F(1, 151) = 38.18$, $p < .001$, $\eta_p^2 = .202$. Likewise, for the No Secret condition, adults were more likely to believe children were asked to keep a secret when children reported ($M = 4.57$) as opposed to denied ($M = 3.54$), $F(1, 128) = 7.75$, $p = .01$, $\eta_p^2 = .057$. Adults were significantly more likely to believe children were asked to keep secrets when children made true reports compared to false denials, and when children made false reports compared to true denials. These results are summarized in Table 3 and Figure 1.

There were no other significant effects for the first dependent measure. Analyses of variance did not reveal a significant main effect of Age (secret, no secret) on adults' beliefs that children were asked to keep a secret. Younger children ($M = 4.23$) were not significantly rated differently than older children ($M = 3.84$), $F(1, 275) = 1.721$, $p = .19$,

$\eta_p^2 = .006$. Finally, the Event Type X Child Response X Age interaction was not statistically significant, $F(1, 275) = 0.84, p = .36, \eta_p^2 = .003$.

Table 3

Event Type X Child Response Factorial ANOVA for Belief Event Occurred

Source	<i>df</i>	<i>F</i>	<i>p</i>	η_p^2
Event Type	1	.74	.39	.00
Child Response	1	37.92	.00*	.12
Event Type X Child Response	1	4.17	.04*	.02
Error (within groups)	275			

The asterisk (*) marks significant main and interaction effects

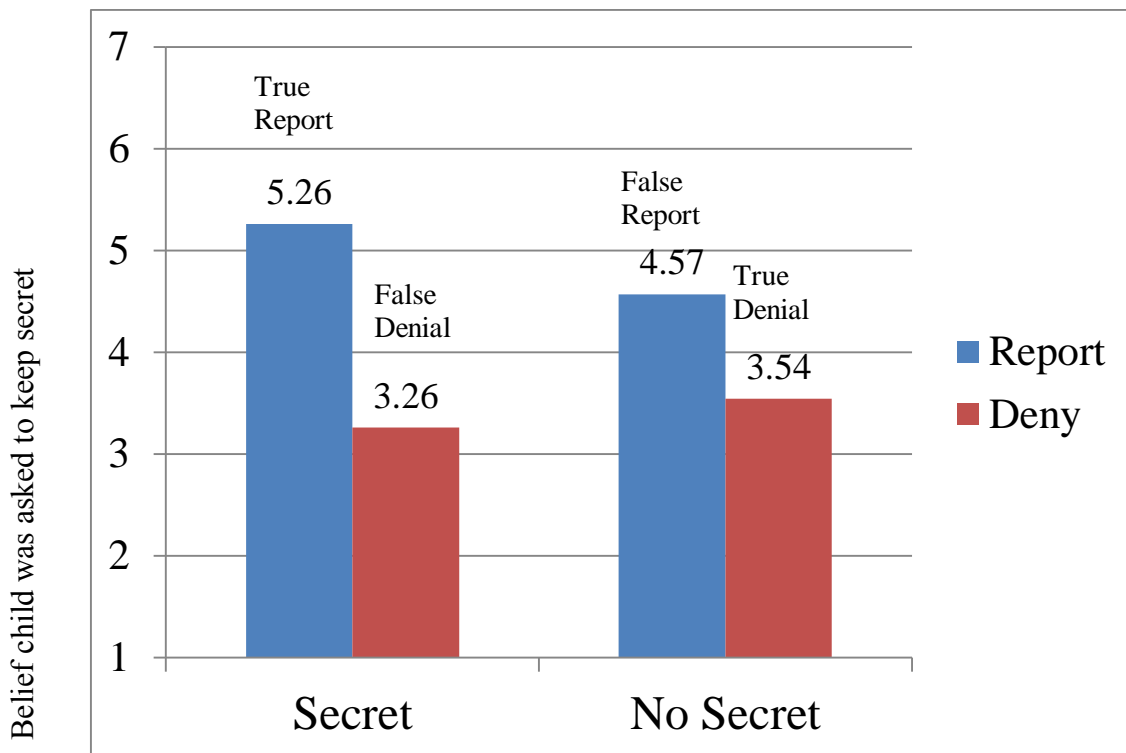


Figure 1. Event Type (secret, no secret) X Child Response (report, deny) interaction.

Children's Perceived Credibility: Cognitive Ability and Honesty

A series of three-way ANOVAs examined the effect of Event Type, Child Response, and Child Age on the mean composite measures of perceived cognitive ability and perceived honesty. Multivariate analyses of variance (MANOVA) were not conducted because the cognitive ability and honesty composites were strongly positively correlated, as measured by the Pearson product-moment correlation coefficient, $r(283) = 0.78, p < .001$.

Cognitive Ability

There were no significant main effects of Event Type, $F(1, 275) = 2.13, p = .15, \eta_p^2 = .01$; Child Response, $F(1, 275) = 0.16, p = .69, \eta_p^2 = .001$; or Child Age, $F(1, 275) = 0.38, p = .54, \eta_p^2 = .001$ on perceived cognitive ability. Furthermore, none of these independent variables resulted in significant interactions for cognitive ability. There was no significant Event Type X Child Response interaction, $F(1, 275) = 0.19, p = .66, \eta_p^2 = .001$; Event Type X Age interaction, $F(1, 275) = 0.79, p = .37, \eta_p^2 = .003$; Child Response X Age interaction, $F(1, 275) = 3.21, p = .07, \eta_p^2 = .012$; or Event Type X Child Response X Age interaction, $F(1, 275) = 3.52, p = .06, \eta_p^2 = .013$ on cognitive ability.

Honesty

A significant main effect of Event Type on children's perceived honesty emerged. Adults perceived children who were asked to keep a secret as more honest ($M = 4.51$) than children who were not asked to keep a secret ($M = 4.17$), $F(1, 275) = 4.47, p = .04, \eta_p^2 = .016$. This effect was not qualified by any significant interactions. There was no significant main effect of Child Response on perceived honesty, $F(1, 275) = 0.76, p =$

.39, $\eta_p^2 = .003$ and no significant main effect of Child Age on perceived honesty, $F(1, 275) = 0.09$, $p = .76$, $\eta_p^2 = .000$. Finally, there were no significant interaction effects between Event Type, Child Response, or Child Age on the composite perceived honesty. Specifically, there was no significant Event Type X Child Response interaction, $F(1, 275) = 0.29$, $p = .59$, $\eta_p^2 = .001$; Event Type X Age interaction, $F(1, 275) = 0.74$, $p = .39$, $\eta_p^2 = .003$; Child Response X Age interaction, $F(1, 275) = 0.39$, $p = .53$, $\eta_p^2 = .001$; or Event Type X Child Response X Age interaction, $F(1, 275) = 0.01$, $p = .93$, $\eta_p^2 = .000$ on the composite perceived honesty.

CHAPTER V

DISCUSSION

The purpose of this study was to examine whether adults were able to distinguish between children's true and false reports about a staged event involving a secret. I varied event type (whether the child was asked to keep a secret or not) and child response (whether the child reported or denied) to determine whether these four type of responses had an effect on adults' beliefs that children from two different age groups (5-6 year olds and 7-8 year olds) were asked to keep a secret and adults' perceptions of children's cognitive ability and honesty.

Adults' Beliefs that Children Were Asked to Keep a Secret

Contrary to my first hypothesis, adults did not significantly believe children were asked to keep a secret when children were than when children were not. This is surprising because Block and colleagues (2012) observed a significant difference between adults' confidence ratings for children who experienced an event versus children who did not. Furthermore, children of the age groups in the NIH study (McAuliff, 2013) understand what it means to keep secrets and the social consequences of revealing them (e.g., "getting in trouble") (Bottoms et al., 2012). Previous research has suggested that deceivers may experience various cognitive, emotional, or behavioral processes that can elicit non-verbal or physiological responses (e.g., faster eye-blink rate) that non-deceivers may not experience (Vrij, 2004; Zuckerman et al., 1981). The implication is that adults may be able to detect differences between children who were asked and not asked to keep a secret. This was not the case in the present study. However, the null effects observed were consistent with previous research demonstrating that adults' deception detection

rates are not very good (Vrij, 2002). Furthermore, the present results are also consistent with research demonstrating that adults are not capable of distinguishing between kids who concealed toy peeking (peeking occurred) and children who simply did not peek (no peeking occurred) (Lewis, Sullivan, Stanger & Weiss, 1989). Given this evidence, there may be reason to believe that adults cannot tell the difference between kids who were and were not asked to keep a secret.

The significant main effect of Child Response supported the second hypothesis that adults would be more likely to believe children were asked to keep a secret if children reported as opposed to denied. This finding is consistent with Block and colleagues' (2012) main effect that adults were more likely to be confident that an event occurred when children made reports as opposed to denials. The results are also consistent with research suggesting that adults have a tendency to believe the majority of children's "yes" disclosures (i.e., reports) (Laimon & Poole, 2008). Whereas Block and colleagues (2012) found this "truth bias" in adults' ratings of children 3-5 years old, the current study replicated this main effect in adults' ratings of children 5-8 years old; suggesting that such effects may be found across adults' ratings of pre-school and primary school children.

Interesting effects emerged from the Event Type X Child Response interaction. As predicted by the third hypothesis, adults in the Secret condition were more likely to believe children were asked to keep a secret if children reported (true report) as opposed to denied (false denial) the secret. Additionally, for the No Secret condition, adults were more likely to mistakenly believe children were asked to keep a secret when children reported (false report) than when they denied (true denial) the secret. This interaction

suggests that adults have difficulty in identifying children's false denials and false reports. These results are consistent with Block and colleagues' (2012) study where adults were more likely to believe true reports over false denials, and false reports over true denials. Ideally, adults would be able to detect these four responses with equal capacity but this was not the case in the present study. The interaction mirrors two important components of Block et al.'s (2012) results. On the one hand, adults under-believed false denials as opposed to true reports. These results are consistent with research that suggests adults are particularly fooled by false denials (Lyon, 1999). On the other hand, adults over-believed false reports as opposed to true denials. These findings are also consistent with previous research noting that adults are not good at identifying children's false reports (Leichtman & Ceci, 1995a).

There was no significant Event Type X Child Response X Child Age interaction supporting the fourth prediction. Essentially, the pattern of means for the two-way Event Type X Child Response interaction was no different for 5-6 year olds than 7-8 year olds. It was expected that adults would be more likely to believe an event occurred when children reported as opposed to denied in both the secret and no secret conditions (two-way interaction), and that adults' belief ratings would be higher with 7-8 year olds' reports compared to 5-6 year olds' reports. Seven to eight year olds are presumably able to tell better, more consistent lies as they possess higher cognitive ability than 5-6 year olds (Talwar & Lee, 2008). Basically, children at 7-8 years of age have a greater capacity to lie while making sure their other statements don't contradict the first lie, which is something that younger children struggle with more often (Talwar & Lee, 2008). For this reason, I expected that the mean differences in the two-way interaction for the older

children would be greater than that of the younger children. The results did not support this fourth hypothesis. It may be that the results failed to reach significance because the video-clips only included children providing yes or no answers. It is possible that giving children an opportunity to elaborate on their answers (open-ended reports) might give older children a better chance to demonstrate their cognitive abilities to adults. A simple yes/no answer may not be enough to show a difference in cognitive ability between 7-8 year olds and 5-6 year olds. Finally, it is also possible that the difference in age was not salient enough.

Adults' Ratings of Children's Cognitive Ability and Honesty

There were no predicted main effects for Event Type (secret, no secret) on cognitive ability or honesty. However, the results did reveal a significant main effect of Event Type on children's perceived honesty, suggesting that children who were asked to keep secrets were perceived as more honest than children who were not asked to keep secrets. This effect was not qualified by an interaction. I did not predict this main effect because children who are asked to keep secrets might simultaneously be perceived as more or less honest depending on age. I expected that the main effect would be washed out as this study included two different age groups of children. Block et al. (2012) did find a main effect of Event Type on children's credibility, but it was unclear whether this referred more precisely to perceived honesty or perceived cognitive ability because the researchers used a combined measure of credibility. Perhaps children who are asked to keep a secret do display different non-verbal cues that adults may be able to pick up on with respect to honesty, as opposed to children who are not asked to keep a secret (Vrij et al., 2004).

The results did not support the first prediction about a main effect of Child Response (report, deny) on cognitive ability and honesty. I expected children who denied to be rated as more cognitively capable and honest than children who reported. Adults in Block and colleagues' (2012) found children who denied to be more credible than kids who reported. This "denial bias" was not supported in the credibility results of this study. However, such difference may be because Block and colleagues measured credibility as one factor whereas the present study measured credibility separately as cognitive ability and honesty. The implications of such methodological differences are considered below.

No main effect of Child Age (5-6 years olds, 7-8 year olds) was found to support the second prediction that younger children would be perceived as more honest but less cognitively capable than older children. This was surprising as previous research has found that as age increases, perceived honesty decreases and perceived cognitive ability increases (Goodman et al., 1989; Ross et al., 1990). Research suggested that younger children are sometimes rated as more honest than older children, especially when adults believe children have suffered some type of abuse (Goodman, Batterman-Faunce, Schaaf, & Kenney, 2012). Though this study involved components of abuse such as adult-initiated touch, secrecy, and removal of clothing items, no child in the previous NIH-funded study (McAuliff, 2013) experienced actual abuse during the course of the study. Thus, even though this study attempted to mimic some components of abuse, the manipulation used in the previous NIH study may have not been realistic enough to result in a significant effect. Additionally, in Goodman et al. (2012), the researchers compared 7- and 10-year old children. Indeed, most credibility studies making these comparisons include children of wider age gaps (Nightingale, 1993; see also Bottoms et al., 2007). It is

possible that any interaction effects were undermined because the current study did not include children past 8 years of age. Widening the age range will likely increase the possibility of finding age effects and future studies should consider this possibility.

There were no significant Event Type X Child Response interactions on participants' perceptions of cognitive ability and honesty to support the third prediction under credibility. I expected adults to perceive children who denied as more cognitively capable and honest than children who reported on both secret and no secret conditions. This effect would have been consistent with Block and colleagues' (2012) credibility findings that overall, people found denials (both true and false) to be the most credible. No such effects were replicated in the present study. Again, I suspect it may be because the credibility variable was operationalized differently in Block's study as compared to the present study. Before concluding that event type and response type have no effect on either measure of credibility, replications using either or both of these methods are necessary.

There were no significant Event Type X Child Response X Age interactions supporting the fourth prediction that the pattern of means for the 2-way Event Type X Child Response interaction on cognitive ability and honesty would be different for 5-6 year olds than 7-8 year olds. With respect to cognitive ability (prediction4a), I expected that adults in the secret condition would believe older children's denials even more than younger children's denials when it came to cognitive ability because adults may think of older children as having better memory and cognitive abilities. Additionally, I predicted that in no secret conditions, adults would rate children higher in cognitive ability if they denied as opposed to reported and that this effect would also be greater for older children

than younger children. Such evidence would demonstrate adults' understanding of children's cognitive strides at that age. However, no significant interactions were noted. It may be that 7-8 year olds' developmental strides in cognitive ability are still not apparent enough to adults to support predicted differences

With respect to honesty (prediction 4b), I expected the opposite three-way interaction. Specifically, I expected that adults would rate children higher in honesty if they denied as opposed to reported but this time 5-6 year olds would be rated higher with respect to honesty than 7-8 year olds. Adults may be more skeptical of older children's denials because they are better liars than younger children, whereas they may believe younger children's denials because they are generally perceived as more honest. Nevertheless, no significant interactions emerged. As noted previously, it is possible that no age differences emerged because the present study did not actually involve any form of physical abuse.

Implications for Psychological Research and the Legal System

The present study improved on previous research in several ways. First, the study was high in ecological validity in so far as children in the video-clips were questioned about a staged event that incorporated abuse-related behaviors such as adult/child physical contact, having the child adjust and remove clothing items, and asking the children to keep a secret about adult-initiated touch. Additionally, whereas previous studies had adults watch videos of the same child giving different kinds of responses (Saykaly et al., 2013), adults in the present study watched a child give only one type of response (report, deny), which is more similar to what real jurors encounter when children testify in court.

This study also included the full range of children's responses to true and false event types, as opposed to the majority of past research where adults judge either true or false events only (Block et al., 2012 and Saykaly et al., 2013 being the only exceptions). The study's findings suggest that adults tend to believe reports (false, true) over denials (false, true). This tendency to believe reports may be due to a truth bias (Strömwall & Granhag, 2005) and/or desire to believe children's claims that the event did happen. A better understanding of jurors' and interviewers' motivations for believing reports may be needed in order to implement practices that prevent adults from over-believing reports. For instance, it may be the case that in addition to adults' tendency towards a truth bias, professionals in charge of interviewing children may be biased in what they believe their role to be. In their study examining the role of the National Institute of Child Health and Human Development (NICHD) investigative interview protocol, Hershkowitz and colleagues (2007) asserted that the goal of the designers of the NICHD protocol was "to help professionals assess children's statements, thereby promoting justice for abused children" (p. 107). As Herman (2009) later pointed out, the goal of forensic assessments should be to help interviewers evaluate the validity of reports in order to promote justice for both children and adults. Future research may do well to investigate forensic interviewers' motivations and other related factors during interrogations as to prevent interviewers' biases towards over-believing reports.

More importantly, the present study results replicated previous research by Block and colleagues (2012) suggesting that adults are led astray by false reports and false denials. This has several implications for the law. With respect to criminal law, it may be argued that a focus on false reports is more appropriate given that the United States legal

system was established under the belief that it is worse to imprison an innocent person than to let a guilty person free. Thus the problem of false reports has received moderately more attention than the problem of false denials (Ceci & Bruck, 1993). However, letting a guilty person go free may be just as dangerous to society as convicting an innocent person because guilty criminals can continue to subject children to maltreatment. As Block et al. (2012) suggested, false denials are not only important in the context of criminal cases but a wider variety of legal issues such as custody violations, medical malpractice and so forth. Overall, placing equal emphasis on false reports and false denials is important across many aspects of the legal system and should therefore be taken with serious consideration for future research.

Finally, the present study began to address problems in stimulus sampling that have proved problematic for other less ecologically valid studies. I included three different children varying in witness characteristics such as gender, and accuracy of responses per experimental condition. Though the number of videos depicting mismatched responses was limited, this study succeeded in using a more varied stimulus sampling, thereby increasing the possibility that the study findings may generalize to the larger population of interest.

Limitations

It is possible that a wider age sample of children may better shed light to questions of perceived credibility. This study only found a significant main effect of Event Type on perceived honesty but no interactions to qualify this effect, which may have been undermined by a sample of children who were too close in age. Though some developmental differences have been observed at these age cutoffs (5-6 , 7-8 years old),

specifically the ability to deceive more convincingly, adults may not yet be able to perceive any of these differences in cognitive ability. Most of the studies examining adults' ratings of children's credibility have compared children of more distinct gaps. For example, Nightingale (1993) compared 6 year olds to 13 year olds. Part of the motivation in the present study was to examine whether these differences could be detected in children of closer age gaps, but it is possible that more power is needed to test these smaller effects.

An underlying assumption in this study was that when children in the video-clips (McAuliff, 2013) responded incorrectly they were doing so deliberately (as they were not coached) and not as an honest mistake. It was not possible to determine whether children's incorrect responses were lies or honest mistakes. However, previous literature has shown that secret keeping develops between 4-6 years of age (Goodman et al., 2002). By the age of four children can tell a lie to conceal their own transgressions or the transgressions of others (Talwar et al., 2008). I cannot discount the possibility that some children may have made honest mistakes; however, there is good reason to believe that most if not all of the children in this study's age groups (i.e. 5-6, 7-8 years old) had full understanding of what it means to lie and keep a secret. Thus, it was most likely the case that children who responded incorrectly did so deliberately.

Another limitation may be a lack of vividness effect, which refers to the phenomenon where judges and jurors tend to be more persuaded by vivid rather than bland testimonies (Nisbett & Ross, 1980). Vivid information is emotionally interesting or provoking in a sensory, temporal or spatial ways (Nisbett & Ross, 1980). Some researchers have suggested that the way information is represented ("representation

modality”) such as in video, audio or text, may affect victims’ perceived emotional expressions and therefore their ratings of support and so forth (Ask & Landström, 2010). In the present study, adults watched videos of children’s interviews. It may be possible that being in the presence of children directly as opposed to watching them in videos may have a more vivid effect on adults. Yet Landström, Granhag, and Hartwig (2007) compared different modalities and found no differences in adults’ accuracy ratings when they viewed children’s live, videotaped, or closed circuit television (CCTV) statements about an experienced or imagined event. Nevertheless, with such technologies being increasingly used in research and legal courts, more research needs to be done to examine if any differences, albeit small, may significantly affect jurors’ expectancies or ratings of children’s reports.

In the present study, the issue of stimulus sampling was addressed to a certain extent by including three different videos of children in for each condition. However, because there had to be a consideration of matching criteria where the accuracy of the response to secret matched or mismatched the accuracy of the five questions preceding secret, a wider stimulus sample may have still been needed. The idea is to make sure characteristics specific to one child do not confound the effect of the independent measure on the dependent measure, and thus provide more confidence that the study findings can generalize to a wider population. Future studies should continue to consider stimulus sample considerations, especially studies that attempt to use more realistic-methodology in experimental conditions.

Directions for Future Research

One direction for future study in this area is to identify other individual and contextual factors that affect jurors' abilities to detect secrecy and deception in children. A continued examination of such factors is of vital importance to the fairness of legal trials. Whereas previous research has focused on adults' inability to detect false reports, the present study demonstrated that in addition to false reports, the incidence of false denials is equally relevant. Block and colleagues' (2012) study showed that out of all conditions, adults had the greatest difficulty in identifying false denials. Additionally, underreporting real abuse may occur more often than false reports (Finkelhor & Dzubia-Leatherman, 1994; Goodman, Emery, & Haugaard, 1998; Wyatt, 1985). Altogether these findings suggest that adults' inability to detect false denials in children may add to the already problematic issue of children being unwilling to report real abuse. Therefore, future studies may want to examine the factors affecting adults' ability to discern false denials more closely.

Nevertheless, both the implications of false reports and false denials are of arguably equal importance for the justice system. For this reason it is vital that research looking at jurors' perceptions of children's accuracy and credibility take into consideration the full range of answers that result from the different event types and response types. This study has attempted to shed some light into this problem by examining this range of responses like other researchers (Block et al., 2012; Saykaly et al., 2013). However, much more work is needed to better understand the effects of secrecy, child response, and age on children's cognitive ability and honesty ratings.

One useful approach in studying these response types may be to investigate situational variables that are under the control of experimenters as well as the criminal justice system such as interview techniques and so forth. Whereas this study examined variables that can affect juror testimony, how children's individual differences may affect perceptions of honesty and cognitive ability are things that cannot be changed in a trial. However, instructions given to interviewers, parents, and the like are variables that may be partially controlled by the criminal justice system (Kovera, 2014). If interest in doing this research relies so heavily on being able to apply it in order to aid judges, experts, and jurors, then an examination of such system variables may be useful in translating the scientific findings to the courtroom.

Finally, there is much needed evidence regarding the way adults perceived children's credibility as children develop. Although Ross and colleagues (2003) found that perceived honesty and cognitive ability varied with age depending on the type of case (sexual or non-sexual), the Block and colleagues (2012) study did not test for differences in adults' perceptions as a function of child age because their sample was limited, and Saykaly et al. (2013) found no child age-related differences in adults' perceptions of children's reports. The present study also did not yield any significant results of age on perceived cognitive ability and honesty. As previously noted, this may be due to varied methodological approaches in testing adults' perceptions of children. In the Block et al. study, cognitive ability and honesty constituted a single credibility factor composed of item ratings such as child's honesty, memory accuracy, ability to recall details, and other factors. In the present study, perceived cognitive ability and perceived honesty were examined as two separate factors. Perhaps these discrepancies in findings

could be illuminated by adopting a more standard way of measuring credibility. Comparisons across studies should make sure to operationalize and define the variables in the same manner. Before concluding that event type and response type have no effect on either measure of credibility, replications using similar methods are needed.

Conclusion

To truly understand what jurors in a court room are faced with when attempting to discern children's memory statements, studies must consider how the incidence of false reports and false denials may vary within different contexts and across different individuals. In the present study, adults over-believed children's reports as opposed to denials. Such truth bias can potentially undermine justice for both innocent adults and abused children in cases involving child witnesses. Though the United States justice system historically has emphasized preventing the kinds of threats imposed by false reports (namely convicting an innocent person of a false crime), the incidence of false denials is of equal importance given that convicting guilty criminals of actual abuse can stop maltreatment from happening to children at risk. Therefore, preventing the kinds of errors resulting from adults' tendencies to believe reports more than denials is a matter of practical importance for the ultimate well-being of our communities.

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