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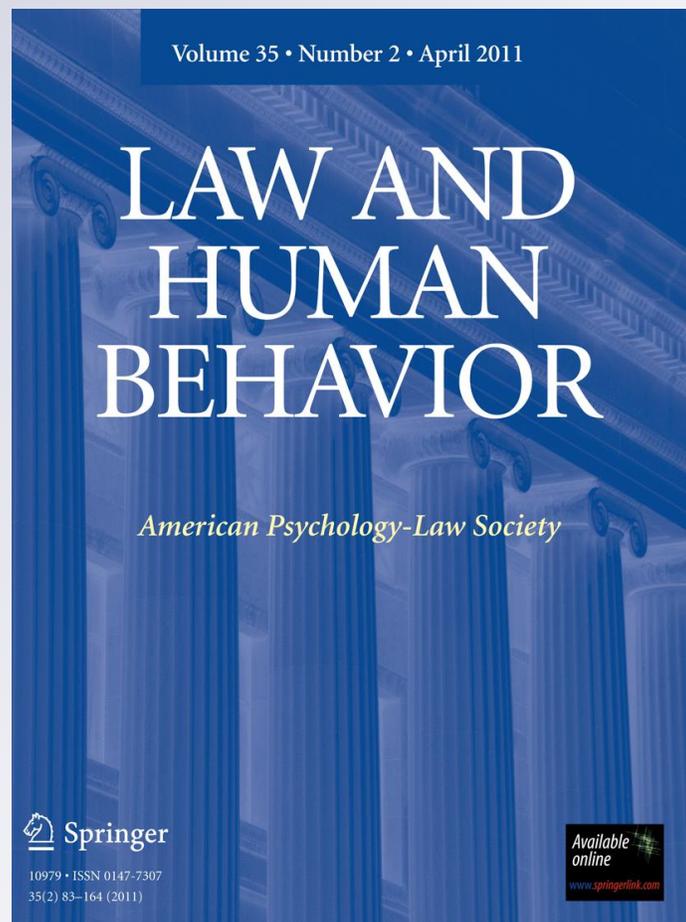
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Expert Testimony Regarding Child Witnesses: Does It Sensitize Jurors to Forensic Interview Quality?

Julie A. Buck · Kamala London · Daniel B. Wright

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Abstract Does expert testimony on forensic interviews with children help adults distinguish between poorly conducted and well-conducted interviews? This study evaluates the effects of social framework expert testimony regarding child witnesses in a case involving allegations of child sexual abuse. A 2 (Expert Testimony: present or absent) \times 3 (Child Forensic Interview Quality: poor, typical, or good) \times 2 (Child's Age: 4- or 10-year-old) factorial design was used to examine whether expert testimony is prejudicial or beneficial to jurors ($N = 463$). The results revealed that, without expert testimony, mock jurors did not consider the forensic interview quality when reaching a verdict. However, with expert testimony, mock jurors were more likely to render guilty verdicts if the interview quality was good versus poor. Further expert testimony increased mock jurors' knowledge about child witnesses. These findings suggest that expert testimony related to the impact of interview techniques on the reliability of children's reports may assist fact-finders in evaluating child abuse cases.

Keywords Expert testimony · Child witness · Child abuse · Memory · Interviewing · Suggestibility

Experimental psychologists often are called to testify about general empirical findings regarding factors that enhance or

distort children's reports of prior events (Groscup, Penrod, Studebaker, Huss, & O'Neil, 2002; McAuliff & Kovera, 2007; Quas, Thompson, & Clarke-Stewart, 2005; e.g., *United States v. Zanine*, 2007). In such testimony, termed *social framework evidence* (Monahan & Walker, 1988; Quas et al., 2005; Walker & Monahan, 1987), the expert does not conduct a clinical or forensic assessment of the child. Rather, the expert educates fact-finders about general scientific findings regarding the reliability of children's reports so they can use the information in weighing the evidence. Additionally, the expert sometimes offers their opinion on the extent to which a particular investigation adhered to best practice standards.

While psychologists frequently testify as expert witnesses in court (Groscup et al., 2002), there is substantial controversy about the use of such experts (e.g., see Levy, 1989; *State v. Sloan*, 1995; Underwager & Wakefield, 1992). For example, scholars in forensic psychology have argued that expert testimony may act to simply elevate skepticism toward children's testimony among already skeptical jurors (Lyon, 1999, 2002). That is, expert testimony may act to lower jurors' perceptions of child witness credibility, regardless of the actual facts in a particular case. Others have countered that expert testimony can assist fact-finders, arguing that developmental psychologists have spent many years conducting hundreds of studies to examine factors that enhance or distort children's reports, and there is no reason to expect that such knowledge is within the domain of laypeople (e.g., see Ceci & Friedman, 2000). Some courts have also expressed reluctance to admit social framework evidence (e.g., *People v. Timothy Johnston*, 2000; *Wright v. State*, 1998). However, other courts have ruled that expert testimony about child witnesses meets admissibility criteria (e.g., *Barlow v. State*, 1998; *State of Ohio v. Gersin*, 1996; *United States v. Zanine*, 2007).

J. A. Buck (✉)
Weber State University, Ogden, UT, USA
e-mail: juliebuck@weber.edu

K. London
University of Toledo, Toledo, OH, USA

D. B. Wright
Florida International University, Miami, FL, USA

At the federal level, legal precedent (e.g., *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 1993; *Frye v. United States*, 1923) and the Federal Rules of Evidence (2001, FRE) govern the admissibility of expert testimony. Many states have passed evidentiary rules that mirror the FRE (Laimon & Poole, 2008; McAuliff & Kovera, 2007). According to these guidelines, expert testimony should be based on sound scientific knowledge and should assist the trier of fact. Expert testimony should provide information that is beyond the ken of the jury. FRE 403 states that expert testimony may be excluded if its probative value is outweighed by its tendency to prejudice, confuse, or mislead fact-finders. FRE 702 states that expert testimony must assist jurors to understand the evidence or facts at hand in a case. In other words, expert testimony on forensic interview techniques should assist jurors in reaching a decision based on the facts in the particular case, rather than simply working to cause heightened jurors' skepticism of all child witnesses.

A number of studies have recently emerged to examine laypeople's knowledge about child witnesses and forensic interview factors affecting children's reports (e.g., Laimon & Poole, 2008; McAuliff & Kovera, 2007; Quas et al., 2005). These studies have begun to elucidate what information is and is not within the ken of the jury. However, the question remains of whether this information is useful, or perhaps harmful, to jurors. That is, while certain scientific findings might be outside of most jurors' knowledge, does expert testimony on these findings help jurors in reaching their decisions? Alternatively, does the testimony simply act to prejudice, confuse, or mislead the jurors?

Researchers have investigated juror sensitivity and juror skepticism produced by expert testimony on numerous topics (e.g., eyewitness identifications, child suggestibility, etc.). If expert testimony produces juror sensitivity, then jurors will apply the testimony to the specific facts of the case (Krauss & Sales, 2001). However, if the expert's testimony leads to juror skepticism, then jurors will "simply favor the side that has the expert" (Krauss & Sales, 2001, p. 5) instead of considering the case facts. Some studies have demonstrated the juror sensitization effect of expert testimony regarding factors influencing eyewitness identification accuracy (e.g., Cutler, Dexter, & Penrod, 1989). However, Levett and Kovera (2008) found that opposing expert testimony in child sexual abuse cases leads to mock jurors being skeptical of all expert witnesses, instead of sensitizing jurors to the specific issue addressed (i.e., the quality of the methodology of the presented research) (for similar findings, see Cutler et al., 1989). Another study (Kovera et al., 1997) found that expert testimony prejudiced the jury unless the expert witness made an explicit connection between the research and the case discussed. However, researchers have not explored jurors'

sensitivity or skepticism in response to expert testimony regarding the influence of different forensic interview techniques on children's accuracy. This study examines whether expert testimony on contextual factors affecting the quality of children's reports assists fact-finders in making more informed decisions. Specifically, does such expert testimony produce undue skepticism in jurors, or does it help jurors make more informed decisions regarding allegations of child sexual abuse?

Below, we first outline major findings in the scientific literature regarding questioning procedures that enhance and distort children's reports. Such findings are within the realm of probable social framework testimony in cases involving children. In the second section, we review studies examining laypeople's knowledge about child witnesses and reactions to expert testimony on interviewing children.

The Effect of Interviewing Techniques on Children's Reports

Through hundreds of experiments, researchers have gained an understanding of effective and ineffective ways of questioning children (see Lamb, Orbach, Warren, Esplin, & Hershkowitz, 2007; Orbach et al., 2000; Poole & Lamb, 1998; Quas, Goodman, Ghetti, & Redlich, 2000; Warren, Woodall, Hunt, & Perry, 1996, for reviews). Standardized forensic interview protocols are now available that offer empirically supported guidelines to forensic interviewers (e.g., see Lamb, Hershkowitz, Orbach, & Esplin, 2008; Memorandum of Good Practice, 1992; Orbach et al., 2000; Poole & Lamb, 1998; State of Michigan Forensic Interviewing Protocol, 1998–2004). Further, researchers have established that children often are quite capable of accurately reporting the primary events witnessed or experienced when questioned properly (see Lamb, Orbach, Hershkowitz, Esplin, & Horowitz, 2007).

To yield the most accurate information from a child, empirical findings indicate that the forensic interviewer should begin by establishing rapport with the child and setting the ground rules for the interview (Orbach et al., 2000; Warren et al., 1996). For example, the interviewer would explain that he or she was not present at the event in question and therefore does not know what happened. The interviewer would communicate that it is okay for the child to say "I don't know" in response to the interviewer's questions, and that the child should correct the interviewer if the interviewer says something that is inaccurate (see Lamb, Orbach, Hershkowitz et al., 2007).

After establishing the ground rules, ideally an interviewer would conduct a practice interview with the child (Warren et al., 1996). In this practice interview, the

interviewer would question the child about an innocuous event that the child recently experienced, such as a school outing. The practice interview not only allows the interviewer to establish rapport with the child, but also allows the child to get familiar with how the interview is conducted and to understand that he/she should give as much information as possible. After rapport and ground rules have been established, the interviewer should introduce the reason for the child's visit (i.e., to investigate a suspicion of child abuse) in a non-suggestive manner (e.g., "Tell me why you are here today."; Lamb et al., 2008; Poole & Lamb, 1998). Questioning should continue with the interviewer asking open-ended, non-leading questions and allowing the child to respond freely.

While these techniques generally have been shown to produce accurate reports from children, there are many other interview techniques that reduce the accuracy of child witnesses (see Garven, Wood, Malpass, & Shaw, 1998; Orbach et al., 2000, Warren et al., 1996; for a review see London & Kulkofsky, 2009). For example, interviewers should avoid asking forced choice and yes/no questions, as such questions limit the child's free report response (Poole & White, 1991). The use of anatomically detailed dolls and leading questions has also been shown to reduce the accuracy of children's responses (Bruck, Ceci, & Francoeur, 2000). The interviewer should avoid the following: repeating questions that the child has already answered, asking the child to imagine what "might" have happened, and introducing new information that the child has not previously disclosed to the interviewer. Further, to get the most accurate report from the child, the interviewer should avoid indicating that he/she already knows what happened.

While the findings regarding the best practices for interviewing children are quite consistent, in practice, forensic interviewers often fail to follow this format (see Sternberg, Lamb, Orbach, Esplin, & Mitchell, 2001; Warren et al., 1996). Most interviewers talk to children at the onset of the interview in efforts of establishing rapport, but few discuss ground rules or conduct practice interviews. In one study, Warren et al. (1996) found that more than half of interviewers introduced abuse in a suggestive manner. Further, most of the interviewers' questions were yes/no questions.

Taken together, this literature shows that an examination of the context under which abuse allegations arose is crucial in gauging the reliability of children's disclosures. That is, in a particular case, it is vital to evaluate the extent to which an interviewer practiced methods shown by scientific research to produce accurate versus inaccurate reports. In the following section, we turn to the issue of laypeople's knowledge about child witnesses in order to evaluate the question of whether expert testimony in this area might assist triers of fact.

Laypeople's Knowledge of and Reactions to Research on the Effect of Interviewing Techniques on Children's Reports

The helpfulness of expert testimony in cases involving child witnesses depends on laypeople's general knowledge and beliefs about child witnesses. As noted above, several recent studies have evaluated laypeople's and professionals' beliefs about and knowledge of the research on child witnesses¹ (Laimon & Poole, 2008; McAuliff & Kovera, 2007; Quas et al., 2005; Warren et al., 2007). In these studies, jurors, college students, psychologists, or legal professionals rated their views toward statements regarding child witnesses (e.g., children are more susceptible to suggestion than adults). These statements had research support for the correct answer. While there was substantial variability in accuracy across studies and questions (5–72% accuracy), most jurors and laypeople seem to understand that children can be accurate witnesses but also that their memories are suggestible. However, jurors and laypeople had far more difficulty understanding which interview techniques were problematic and which techniques may lead to inaccurate responses from the child. When asked about their beliefs regarding child witnesses and children's suggestibility, jurors and laypeople also inaccurately estimated the influence of suggestive interview techniques on children's accuracy. They underestimated the extent that different factors (e.g., age of child, event detail centrality, prestige of interviewer) influence suggestibility effects (McAuliff & Kovera, 2007). When Warren et al. (2007) compared college students to psychologists in their overall knowledge of interviewing children, psychologists significantly out-performed college students (73 vs. 23% correct, respectively), supporting the notion that experts are more knowledgeable than laypeople about interviewing children. Quas et al. (2005) also asked participants to estimate the results in four studies regarding children's suggestibility. Participants provided their estimates of the percentage of children who were susceptible to suggestion and made false reports in each of these results. For three out of the four studies participants overestimated the number of children who would make false reports.

Overall, these findings suggest that laypeople have some knowledge about children's abilities to accurately report on prior events but that laypeople sometimes overestimate and sometimes underestimate children's abilities to provide

¹ A number of earlier studies examined laypeople's and professionals' beliefs about behavioral and emotional reactions among children who have experienced sexual abuse (e.g., Corder & Whiteside, 1988; Kovera & Borgida, 1997; Morison & Greene, 1992). These studies are not included in the current review since they did not centrally examine beliefs about forensic interview practices and suggestibility.

reliable forensic reports. At first glance, these data appear to indicate that expert testimony on the impact of forensic interview techniques would be helpful to jurors. However, as Lyon (1999, 2002) cautioned, expert testimony on the influence of factors affecting children's reports might simply act to over sensitize jurors to the issue, causing them to be skeptical of all child witnesses regardless of the actual presence of suggestive influences. Thus, while extant data (Kovera, Borgida, Gresham, Swim, & Gray, 1993; McAuliff & Kovera, 2007; Quas et al., 2005; Warren et al., 2007) indicate that laypeople know less about factors that influence children's reports as compared to experts, a remaining question is whether such expert testimony would actually be useful in helping laypeople distinguish well-conducted from poorly conducted interviews. That is, from a legal admissibility perspective, does expert testimony on interview factors assist fact-finders, or does it prejudice, confuse, or mislead jurors?

Some research has examined the influence of expert testimony on jurors' decision making (e.g., Frazier & Borgida, 1988), with the general finding that expert testimony influences jurors' knowledge across a variety of topics (e.g., Kovera, Levy, Borgida, & Penrod, 1994; Leippe, 1995). However, findings have been less consistent regarding the most optimal mode of presentation of expert testimony. For example, some studies have found expert testimony to be more effective if given before the remaining case evidence, whereas others have found that the testimony more effective following other case evidence (e.g., Leippe, Eisenstadt, Rauch, & Seib, 2004). Specific to child witnesses, there were three studies from the early 1990s (before much of the research on interviewing factors was conducted). Two studies (Gabora, Spanos, & Joab, 1993; Kovera et al., 1994) found that mock jurors were more apt to convict when given pro-prosecution expert testimony on behavioral reactions to abuse, witnesses credibility, or anatomically detailed dolls (though see Crowley, O'Callaghan, & Ball, 1994). However, only one study to our knowledge has specifically examined the influence of expert testimony regarding the effects of different forensic interview techniques. Laimon and Poole (2008) found that expert testimony, when accompanied by a video of a child making a false disclosure, lessened college students' trust in children's statements resulting from less trustworthy questioning methods (yes/no question formats).

Overview

Taken together, past research on laypeople's general knowledge about child witnesses indicates that there are gaps in their knowledge, suggesting that some issues related to interviewing factors are outside the ken of the jury (McAuliff & Kovera, 2007; Quas et al., 2005; Warren

et al., 2007). Furthermore, as reviewed above, expert testimony has the potential to influence laypeople's knowledge on a variety of topics. In this study, we sought to examine whether expert testimony related to the effects of forensic interviewing factors on children's reports is useful to mock jurors. This study goes beyond past research in that the expert testimony addressed general interview practices (beyond just suggestibility), including question format and rapport building. Specifically, we examined whether expert testimony helps laypeople sort well-conducted from poorly conducted interviews, or whether expert testimony simply heightens skepticism and produces elevated guilty verdicts regardless of interview quality. Data were collected from two geographic regions (a Southern state and a Midwestern state) in the United States, in efforts to increase the generalizability of the findings.

Mock jurors read one of 12 versions of a written trial vignette that included a transcript from a forensic interview with a child. The forensic interview was conducted poorly, typically, or well. The child was described as either 4- or 10-year-old. This allowed us to determine whether expert testimony influenced jurors' perceptions of child witnesses of varying ages; some past research has found jurors' perceptions of child witnesses vary with age (e.g., McAuliff & Kovera, 2007; Nightingale, 1993; Wright, Hanoteau, Parkinson, & Tatham, in press). We selected these ages to give us a reasonably broad age range to determine whether our findings consistently apply across differing ages. A 4-year-old is old enough that the child could verbally report an event, but young enough that jurors may question her suggestibility. The age of 10-year-old was selected so that the child might be seen as more resistant to suggestion, but sexually naive. In this study, the expert stated that young children are particularly suggestible. However, age differences in suggestibility were not emphasized and were not the focus of the testimony. Therefore, we did not make any specific hypotheses regarding the effect of age in the current mock trial. Finally, half of the mock jurors were exposed to expert testimony regarding interviewing children, half were not.

We hypothesized that an interaction between expert testimony and forensic interview quality would emerge; compared with mock jurors receiving no expert testimony, we expected that expert testimony would sensitize jurors to interview quality, leading to fewer guilty verdicts with poorly conducted interviews and more guilty verdicts with well-conducted interviews. However, we hypothesized mock jurors' verdicts would not differ according to interview quality in the absence of expert testimony. This hypothesis was based on the literature reviewed above showing that, compared with experts, laypeople have limited knowledge about the impact of forensic interview techniques. An interaction between expert testimony and

interview quality would support a sensitization effect. On the other hand, if expert testimony leads to skepticism effects, we would expect a main effect of expert testimony, whereby verdicts do not differ based on interview quality. Rather, compared with no expert testimony, expert testimony would lead to low levels of guilty verdicts regardless of interview quality.

After reading the case materials and rendering their opinion in the case, mock jurors were asked a series of questions to evaluate their general knowledge of the research on interviewing children. We expected to find a main effect of expert testimony for these questions, with jurors who read the expert testimony out-performing jurors who did not read the expert testimony. Such a finding would support the informative/sensitivity effects of expert testimony on juror knowledge.

Methods

Design and Participants

In-between subjects, a 2 (Expert Testimony: present or absent) \times 3 (Interview Quality: poor, typical, or good) \times 2 (Child's Age: 4- or 10-year-old) factorial design was employed. Participants were randomly assigned to one of the 12 different experimental conditions. Consistent with the trial vignettes used in Buck, Warren, and Brigham (2004), the child was said to be female. The expert witness' gender was not defined. The expert was said to be a developmental psychologist, and the interviewer was identified as a counselor working for the Department of Human Services.

As research has consistently demonstrated few differences in the responses of college students versus community members (Bornstein, 1999) or experienced/eligible jurors (Cutler et al., 1989; McAuliff & Kovera, 2007; Quas et al., 2005), college students are used as our laypeople sample. A total of 463 undergraduates participated; 264 subjects were from a medium-sized Midwestern university and 199 were from a medium-sized Southern university. Preliminary analyses compared individuals by region on demographics and the central dependent variables. Since no differences arose, data were collapsed across sites. Participants ranged from 17 to 48-year-old ($M = 19.23$ years, $SD = 2.70$). Seventy percent of participants were Caucasian, 25% African American, 3% Asian American, and 2% other or unspecified.

Materials and Procedures

Testing took place in small groups in university classrooms. Participants completed all materials individually in sessions lasting 30–45 min. After completing the informed

consent, participants read a 10-page summary of a case involving allegations of child sexual abuse. The summary was adapted from the materials used by Buck et al. (2004), which included the charges, state law regarding sexual abuse of a child, a transcript of the interview with the child, the standard of proof, and prosecution and defense's arguments. The juror instructions used in this study (i.e., state law and standard of proof) were instructions used in actual criminal cases. In this case, the child states that her father sexually abused her on numerous occasions. The alleged sexual abuse involved digital penetration.

There were three different child forensic interview quality conditions. The original interview was created by adapting a typical interview from a sample of 132 transcripts of actual child sexual abuse interviews. The interview format (i.e., good, typical, or poor) along with some modifications based on the age of the child varied, but the content of the child's statements remained the same. The age of the child influenced the amount of information reported in response to the interviewer's prompts (e.g., the 4-year-old interview had more prompts than did the 10-year-old interview to obtain the same report). Further, the language of the child was consistent with the age of the child.

It should be noted that in an actual case, we would expect that interview quality would influence the accuracy and content of children's statements. However, as we were intending to determine if there is an interaction between interview quality and expert testimony, we held constant the content of the child's allegation.

The "typical" interviews were created using the research on how child sexual abuse interviews are generally conducted in the United States (see Sternberg et al., 2001; Warren et al., 1996, for typical interview practices) and by adapting a prototypical interview obtained from over a 100 transcripts of child sexual abuse interviews. Based on this research, the majority of interviewer utterances in the typical interview were either directives (43–44%) or option-posing (35–37%). Further the interviewer established rapport, but did not discuss ground rules or conduct a practice interview with the child. The "good" interview was developed by adapting the "typical" interview to make it consistent with the National Institute of Child Health and Human Development (NICHD) Protocol for Investigative Interviews of Alleged Sex-Abuse Victims. In the "good" interview most of the interviewer's utterances were invitations (68–80%). The interviewer established rapport, discussed ground rules, and conducted a practice interview in the "good" interview. Further, there were no suggestive questions in this interview.

Finally, the "poor" interview was created to be consistent with the practices used in the McMartin Preschool case, a child sexual abuse case that received major

criticism for the suggestive interview practices (Garven et al., 1998; Schreiber et al., 2006). In the “poor” interview, most interviewer utterances were either suggestive (33–38%) or option-posing (39–49%). The interviewer did not establish rapport, discuss ground rules, or conduct a practice interview. (For more information regarding how the interview quality and child’s age were manipulated and affected the content of the interview, see Buck et al., 2004.)

For half of the participants, the trial summary also included defense expert testimony. The expert testimony mapped perfectly onto the questioning techniques manipulated across the three different interview qualities, mentioning each of the seven interview practices on which the interviews differed. That is, the expert discussed the most unreliable practices, which were the practices used most in the poor interview quality condition (e.g., many leading questions). The most reliable practices mirrored those practices used in the good interview quality conditions (e.g., many open-ended questions). For example, the expert stated that open-ended questions produce more reliable reports compared with leading questions. The expert also provided testimony on children’s general abilities to remember and the role of event centrality. The expert did not give their opinion on the extent to which proper interview methods were followed in this particular case, but rather offered general statements about techniques that do or do not produce reliable statements. A transcript of the expert testimony (see Appendix) denotes how the expert’s statements map onto the seven different interview practices reviewed in the above paragraph. The expert testimony was based on one of the author’s (K.L.) experiences as an expert witness in numerous cases over the past decade.

Participants then completed a questionnaire which included demographic questions, verdict, 5 questions regarding the child’s honesty and competency, 3 questions about the quality of the interview with the child, and 11 true or false items regarding the research on interviewing children. The 11 true or false items were chosen from 19 items used in the Warren et al. (2007) study which measured students’, interviewers’, and psychologists’ knowledge of proper and improper interview techniques and children’s accuracy. The 11 questions we chose focused on proper interview techniques for questioning children in forensic settings. As discussed in the Warren et al. study, each item has research supporting a correct answer.

Results

These results are divided into four sections. First, we examine any main effects and interactions of the experimental manipulations on mock jurors’ verdicts. Then we present the data regarding perceptions of the credibility of

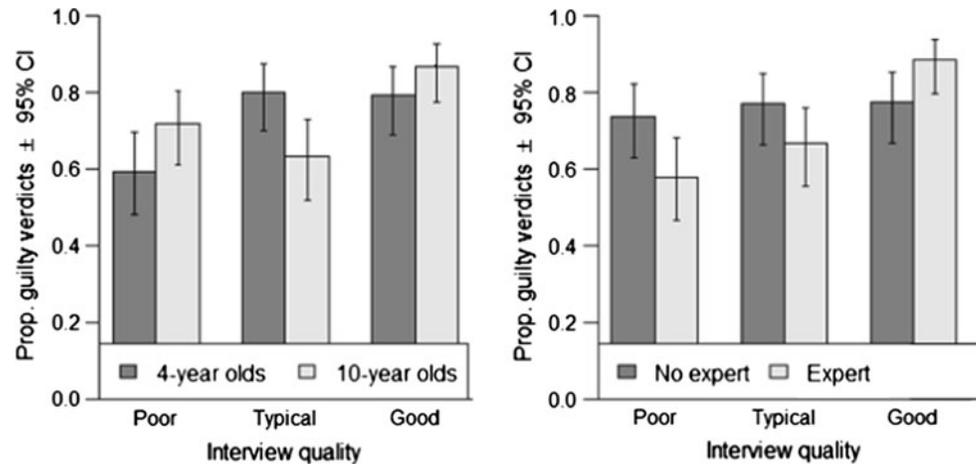
the child witness. Next, several questions were asked to measure participants’ knowledge of children’s memory as relevant to forensic interviews and we estimate a single latent variable for knowledge. In the final section, the relationship between the experimental manipulations and this knowledge variable are described. We test whether any of the effects observed in the first section are either partially mediated or completely mediated by the participants’ knowledge score. The analyses were done in R 2.9 and all code is available from the authors.

Predicting Verdict from the Experimental Manipulations

Participants rendered either a guilty or a not guilty verdict. As this is a binary response a logistic regression was conducted. We began with the model with all main effects and interactions. The 3-way interaction was non-significant, change in $\chi^2(2) = 3.25$, $p = .20$, and was removed. The 2-way interaction between child’s age and presence of expert testimony also was non-significant, change in $\chi^2(1) = .42$, $p = .52$, and was removed from the model. The 2-way interactions between interview quality and child’s age, change in $\chi^2(2) = 9.81$, $p = .01$, and between interview quality and expert presence, change in $\chi^2(2) = 8.29$, $p = .02$, were both statistically significant and were retained. These interactions are shown in Fig. 1. For the child’s age interaction, the interaction arises because in the typical interview condition the 4-year-old child produces more guilty verdicts than the 10-year-old child, 80 to 63%, $\chi^2(1) = 5.46$, $p = .02$, Cramér’s $V = .19$, 95% CI from .02 to .34. The 10-year-old child conditions had more guilty verdicts in the other two interview conditions, but their effects were non-significant.

The significant interaction between interview quality and the presence of expert testimony is the central focus of this article. When the interview was poor or typical, and therefore when most experts would believe the memory was less reliable, the expert testimony led to more acquittals than when there was no expert, 38 to 25%, $\chi^2(1) = 6.23$, $p = .01$, Cramér’s $V = .14$, 95% CI from .03 to .25. In the good interview the effect was in the opposite direction, $\chi^2(1) = 3.36$, $p = .07$, Cramér’s $V = .15$, 95% CI from .00 to .31. An alternative way to look at this interaction is that when no expert testimony was given the quality of the interview did not affect the verdict, 26, 23, and 23% not guilty verdicts for poor, typical, and good quality interviews, $\chi^2(2) = .33$, $p = .85$, Cramér’s $V = .04$, 95% CI from .00 to .13, whereas the effect of interview quality was large when the expert testimony was presented: 42, 33, and 12% not guilty verdicts for poor, typical, and good quality interviews, $\chi^2(2) = 18.95$, $p < .001$, Cramér’s $V = .28$, 95% CI from .15 to .41.

Fig. 1 The proportion of guilty verdicts in each condition. Confidence intervals are found with Wilson's method (for equation see Agresti, 2002, p. 16)



Overall, there were no main effects of child's age, $\chi^2(1) = .05, p = .82$, or of expert testimony, $\chi^2(1) = 1.51, p = .22$. There was a main effect of interview quality, $\chi^2(2) = 12.71, p = .002$, but as discussed above this was only observed when expert testimony was presented.

Beliefs About the Honesty and Competency of the Child Witness

Next we conducted two 2 (child's age) \times 3 (interview quality) \times 2 (expert testimony) multivariate analyses of variance (MANOVAs) to examine the influence of these predictor variables on two questions relating to the child's honesty (i.e., truthfulness and lying) and three questions relating to the overall competence of the child (i.e., believability, memory ability, and suggestibility). Contrary to our hypothesis, ratings on the honesty and competency of the child did not differ according to the presence of expert testimony (all p 's $> .05$). There was a significant interaction between Interview Quality and Age for the honesty of the child, Wilk's $\lambda = .97, F(4, 902) = 3.18, p = .01, \eta_p^2 = .01$, and the competency of the child, Wilk's $\lambda = .96, F(6, 900) = 2.74, p = .01, \eta_p^2 = .02$. Univariate tests were conducted to follow up these significant MANOVAs. The univariate tests revealed a significant interaction between interview quality and age for the truthfulness of the child, $F(2, 451) = 5.82, p = .003, \eta_p^2 = .03$, and a marginal significant interaction for the likelihood that the child was intentionally lying, $F(2, 451) = 2.85, p = .06, \eta_p^2 = .01$. Significant age differences were only present in the typical interview conditions. In the typical interview condition, the 4-year-old was seen as less likely to lie, $t(154) = 2.86, p = .016$, and more truthful, $t(154) = 2.15, p = .033$, than the 10-year-old. See Table 1 for means and standard deviations (collapsed across expert testimony condition since there were no significant effects in these analyses involving this variable).

The post hoc univariate tests for the child's believability, $F(2, 451) = 8.20, p = .001, \eta_p^2 = .04$, and memory ability, $F(2, 451) = 3.96, p = .02, \eta_p^2 = .02$, also revealed a significant interaction between interview quality and age. In the typical interview condition, the 4-year-old was rated as more believable, $t(154) = 53.26, p < .001$, than the 10-year-old. In the poor interview condition, the 4-year-old was seen as less believable, $t(152) = 2.25, p = .013$, and having a less accurate memory, $t(152) = 2.39, p = .009$, than the 10-year-old. Taken together with the analyses on verdict, expert testimony does not appear to be influencing mock jurors' ratings of the child's honesty and competency, though it is nonetheless influencing verdicts.

Estimating Mock Jurors' Knowledge of Child Witnesses

Eleven true/false questions were asked to measure participants' knowledge about children's memory as relevant to forensic interviews (see Table 2). There were 31 missing values ($< 1\%$) for these questions. The following analyses will be based on correlations from all available data. The questions were coded so that all had 0 for an errant answer and 1 for a correct answer. Cronbach's α for these was .475 (95% bootstrap CI based on 2,000 replications from .398 to .538). The pattern of responses for two questions (young children are more likely to change their answer and when asking leading questions, young children are as accurate as adults) stood out. For change the correlations with all the remaining questions were negative, and for leading four of the nine remaining correlations were negative. None of the other 36 correlations were negative. Cronbach's α without these two questions was .633 (95% CI from .576 to .680). The responses to the remaining nine questions will be used to construct a latent variable for knowledge.

There are several different ways in which these responses can be combined into a single latent variable. All

Table 1 Mean ratings on views regarding the child's honesty and competency by interview quality and child's age ($N = 463$)

| | 4-year-old | | | 10-year-old | | |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | Poor | Typical | Good | Poor | Typical | Good |
| Child's truthfulness | 4.63 (1.65) | 5.33 (1.22) | 5.88 (1.14) | 5.06 (1.45) | 4.71 (1.45) | 5.91 (1.18) |
| Likelihood child lied | 2.82 (1.55) | 2.43 (1.43) | 2.27 (1.40) | 2.60 (1.39) | 2.91 (1.35) | 2.13 (1.28) |
| Believability | 4.62 (1.60) | 5.49 (1.30) | 5.92 (1.14) | 5.17 (1.43) | 4.78 (1.46) | 5.96 (1.29) |
| Child's memory accuracy | 3.80 (1.61) | 4.31 (1.44) | 5.08 (1.30) | 4.41 (1.51) | 4.00 (1.50) | 5.18 (1.17) |
| Suggestibility | 5.01 (1.66) | 4.22 (1.51) | 3.75 (1.68) | 4.59 (1.70) | 4.61 (1.62) | 3.70 (1.89) |

Notes: Means and standard deviations (in parentheses) are based on a 7-point scale, with higher means indicating greater endorsement

Table 2 Percent endorsing true (and test statistics) on the true/false statements by testimony condition ($N = 463$)

| True/false statement | No expert | Expert | χ^2 p value ^a | Odds ratio |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------|------------------------------------|------------|
| 1. When asked open-ended questions, young children as accurate as adults | 28 | 60 | 48.50 <.001 | 3.85 |
| 2. Young children more likely to change their answers than old children or adults are | 76 | 85 | 6.07 <.02 | 1.79 |
| 3. It is necessary to ask leading questions because young children are too afraid or embarrassed to report it | 75 | 41 | 53.67 <.001 | 4.24 |
| 4. Okay for an interviewer to ask what <i>might</i> have happened or what they <i>think</i> happened | 52 | 42 | 4.73 <.03 | 1.50 |
| 5. Because sexual abuse is embarrassing to talk about, interviewer should praise them for providing information | 82 | 64 | 17.25 <.001 | 2.45 |
| 6. When asked leading questions, young children as accurate as adults | 55 | 30 | 30.44 <.001 | 2.90 |
| 7. If interviewer believes child abused despite denial, should keep interviewing until child discloses | 33 | 32 | .086 >.10 | 1.06 |
| 8. If interviewer believes abuse occurred, okay to ask suggestive questions | 68 | 39 | 37.45 <.001 | 3.26 |
| 9. Suggestive questioning okay once child has disclosed sexual abuse | 85 | 61 | 32.77 <.001 | 3.58 |
| 10. Interviewer should say things such as, "Don't be afraid to tell me what he/she did to you" or "You will feel better once you tell me." | 81 | 57 | 30.13 <.001 | 3.20 |
| 11. Children do not usually fully disclose sexual abuse during single interview; multiple interviews required | 71 | 53 | 15.79 <.001 | 2.18 |

Note: $N = 154$ males and 307 females. Participants answered whether or not they believed the statement was true or false

^a Chi-square and odds ratios testing for differences in proportion endorsing the different statements based on testimony condition. For each test, $df = 1$

the methods we explored revealed main effects for whether expert testimony was given and the interview quality. Other effects (a main effect for child's age and the interaction between expert testimony and interview quality) had p values from .03 to .33 depending on how knowledge was measured. Item response modeling (Bartholomew & Knott, 1999; Embretson & Reise, 2000) was used to examine the relationships among the variables. The R package ltm (Rizopoulos, 2006) was used. We compared latent trait models with one parameter (which allows items to vary in

difficulty), with two parameters (which additionally allows items to vary in how well they discriminate values on the latent trait), and with three parameters (which additionally allows items to vary in how easy it is to guess the correct responses). The two-parameter model fits significantly better than the one-parameter model, $\chi^2(8) = 62.52$, $p < .001$, and the three-parameter model fits significantly better than the two-parameter model, $\chi^2(9) = 20.74$, $p = .01$. We also examined a two-parameter two-latent trait model, which has the same degrees of freedom as the

three-parameter single-latent variable model, but it did not fit as well, $AIC = 5088$ vs. 5085 . A latent trait was calculated for the three-parameter model (which correlated $>.95$ with scores from other methods for constructing a knowledge variable, including just using the number correct) as a measure of participants' knowledge.

Experimental Variables' Effects on Knowledge

The means of the knowledge variable for the different conditions were compared using a $2 \times 2 \times 3$ factorial ANOVA. There were significant main effects for interview quality, $F(2, 451) = 6.77$, $p = .001$, $\eta_p = .17$, and for whether expert testimony was presented, $F(1, 451) = 113.04$, $p < .001$, $\eta_p = .45$. The knowledge variable has a standard deviation of $.72$. The means for interview quality were Poor interview = $.06$, Typical interview = $.14$, and Good interview = $.32$, so the largest difference is about a third of a standard deviation. When no expert testimony was presented the mean was $-.14$ compared with $.49$ when expert testimony was presented, so the standardized effect is about a standard deviation. None of the other effects were significant at $\alpha = .05$, though as mentioned above other methods of scoring knowledge produced marginally significant effects for the child's age (lower scores for those presented with the 4-year-old's testimony) and for an interaction between interview quality and expert testimony (the effect of expert being greatest in the typical interview condition). Given the instability of these effects and that with the best fitting measurement model they are non-significant even with a large sample size, we will assume that only the main effects of interview quality and expert testimony are sufficiently large to be worth discussing.

Knowledge predicted verdict, $\chi^2(1) = 14.72$, $p < .001$. The mean knowledge score was higher for those acquitting ($.39$, $SD = .73$) than for those convicting ($.10$, $SD = .70$). We then entered the experimental variables that were significant predictors of verdict. They remained significant (and of approximately the same size) after taking into account for knowledge. The interaction was statistically significant, $\chi^2(2) = 9.99$, $p = .01$. This effect was again due to no differences among the interview quality conditions when no expert testimony given, but large effects when expert testimony was given.

Discussion

Some legal scholars have expressed concern that expert testimony might act to reduce children's credibility or believability regardless of the actual quality of the interviews (Lyon, 1999, 2002). That is, perhaps by simply raising concerns about the reliability of children's

testimony, participants will doubt children's statements. Such findings would show that participants are not applying the expert testimony in order to evaluate the case specific evidence and that the prejudicial value of expert testimony may be outweighing its probative value.

The purpose of this study was to examine whether and how expert testimony regarding the effects of forensic interview characteristics on children's reports affects laypeople's decisions. Our findings revealed that expert testimony sensitized mock jurors to the impact of interview quality on the accuracy of child witnesses' reports. With no expert testimony, mock jurors failed to consider the quality of the forensic interview when reaching a verdict. However, we found that, when expert testimony was present, jurors applied the research on expert testimony to their verdicts. That is, jurors were more likely to convict when expert testimony was present if the interview quality was good. However, when the interview quality was poor, expert testimony led to fewer convictions. Therefore, our findings suggest that expert testimony on best practice interview methods may help laypeople to make more informed decisions about the reliability of children's reports. Further, expert testimony on proper forensic interview techniques may bolster the prosecution in cases where the child was interviewed in a high-quality manner.

One potential reason some jurisdictions fail to videotape their child forensic interviews is the concern that such evidence will systematically decrease jurors' perceptions of the child's credibility; instead, our findings suggest that, when the interviews are well-conducted, providing videotaped evidence may actually strengthen the case. Our findings support our prediction that, in the absence of expert testimony, laypeople may not consistently use interview quality when reaching a verdict. This hypothesis was driven by research (Laimon & Poole, 2008; McAuliff & Kovera, 2007, Quas et al., 2005; Warren et al. 2007), indicating that laypeople do not have a clear understanding of the research regarding child witnesses. However, our findings are not consistent with Buck et al.'s (2004) research. They found that interview quality can influence verdicts, with mock jurors being more likely to convict when a high-quality interview was used versus a poor or typical interview. Consistent with our findings, they found no differences in verdicts between poor and typical interviews. In this study, expert testimony was necessary for jurors to use differences in interview quality when reaching a verdict. Based on the currently available research, it appears that sometimes mock jurors are able to use interview quality to determine verdicts even without expert testimony, but other times they are not. The inconsistencies in these findings suggest that the ability of jurors to use interview quality when determining verdicts is variable.

Further support for the argument that expert testimony on child witnesses has probative value comes from our findings regarding the accuracy of jurors' knowledge of child witnesses and proper investigation techniques. Mock jurors were asked a series of questions regarding the empirical research on investigative interviewing and child witnesses. Mock jurors were significantly more knowledgeable about the research if they were exposed to expert testimony than if no expert was present. Importantly, expert testimony not only increased laypeople's knowledge about child witnesses and interview techniques, but mock jurors also used this knowledge when reaching a verdict; compared to no expert testimony, expert testimony led to fewer guilty verdicts in the poorer quality interviews and increased guilty verdicts with well-conducted interviews.

Expert testimony did not impact ratings of the child's competency or honesty. However, some age differences emerged on general ratings of the child's competency and honesty. These differences were fairly consistent with the two-factor model of child witness credibility (see Ross, Dunning, Togliani, & Ceci, 1989; Ross, Jurden, Lindsay, & Keeney, 2003). The two-factor model of child credibility suggests that jurors see children as less cognitively able (e.g., inferior memory ability and more suggestible), but more honest than adults. Therefore, the credibility of a child witness is likely to depend on which factor, cognitive ability or honesty, is more prominent in a given case. In support of this theory, our findings indicate that when a typical interview was used, the 4-year-old was seen as less likely to lie and more truthful than the 10-year-old. However, in the poor quality interview, mock jurors were more likely to question the competency of the younger child, perhaps because they believed that the poor interview techniques would have a larger negative impact on the 4-year-old than the 10-year-old. That is, in the typical interview, the 4-year-old was seen as more believable than the 10-year-old. However, when a lower quality interview was conducted, the 4-year-old was seen as less believable and as having a less accurate memory than the 10-year-old. These findings suggest that jurors may realize that younger children are more susceptible to highly suggestive practices than are older children, and that this susceptibility is not likely to decrease their honesty, but is likely to taint their ability to accurately testify and recall a given event.

Our findings support the idea that social framework expert testimony on interview factors that affect children's reports does assist fact-finders in making better decisions in cases involving child witnesses. However, as no other studies have evaluated this concept, it is important that future studies continue to explore this issue and that the results of this study be applied with caution. This study is an important initial step in evaluating the impact of expert testimony regarding interviewing children. Although

attempts were made to use ecologically valid materials representative of the "typical" child sexual abuse case (e.g., using an actual forensic interview), it is possible that some idiosyncrasies in our materials may limit the applicability of these findings. Further, a written summary of a case was used, and in an actual trial involving allegations of abuse, more information would be provided by both the prosecution and defense including an opposing expert witness (see Cutler et al., 1989; Levett & Kovera, 2008) and cross-examination of the expert witness (see Kovera, McAuliff, & Hebert, 1999). For example, if the expert was cross-examined regarding their qualifications and the generalizability of the research to a specific child sexual abuse case, then the impact of the expert may have been reduced. However, in an actual trial the expert's testimony would also likely be more extensive and may be referenced by the attorneys. Therefore, it is difficult to determine whether the impact of the expert's testimony would be lessened or heightened in an actual case. Further, due to the use of a written trial summary, information about the demeanor of the child and the expert were not present. The use of a highly simplified trial, without indications of demeanor, cross examination, and additional evidence, may limit the applicability of our findings to actual trials. At the same time, research evaluating the impact of different means of trial presentation (e.g., videotaped, live, or transcripts) have failed to find that trial media impacts trial results (see Bornstein, 1999 for a review of this literature).

Another limitation of this study is the use of undergraduate students as participants in place of jury eligible community member. However, past research has rarely found that these two groups significantly differ in their evaluations and reactions to trials (see Bornstein, 1999). Further, other researchers have specifically compared undergraduate students to community members in their knowledge of child witnesses and found that these two groups respond in a highly consistent manner (Kovera & Borgida, 1997; McAuliff & Kovera, 2007; Quas et al., 2005). This suggests that the college students are likely to be quite representative of jury eligible community members. One strength of the sampling method used in this study that bolsters our generalizability is that participants came from two separate U.S. regions (the Midwest and the South), and differences between these groups were not found.

While some legal scholars have argued that social framework expert testimony on child witnesses may make jurors hyper-skeptical of child witnesses, our results suggest that this is not the case. Expert testimony relating to child witnesses helped participants make more informed decisions and increased their knowledge about the research on child witnesses. Further, expert testimony consistently influenced verdicts regardless of the age of the child (4- vs. 10-year-old). The results of this study show that expert

testimony may even help to increase the child's credibility in cases where a high-quality interview was conducted. However, when a very poor interview is used, it appears that expert testimony adequately sensitizes jurors to issues that can reduce the reliability of children's reports. Taken together these findings provide preliminary, but optimistic, evidence that expert testimony regarding child witnesses sensitizes jurors to the issue of forensic interview quality and may help them make more informed decisions.

Appendix: Expert Testimony

After Dr. Hull was qualified as an expert the following testimony was given.

Dr. Hull testified:

Many studies have now shown that even very young children can give accurate reports of prior events when interviewed properly. Even after a delay, children can give details about central events. By central events, I mean the main aspects of the event. However, children do not remember peripheral details well, such as the color of someone's shirt.¹

For the past 20 years, psychologists have studied how to get the most accurate testimony from child witnesses. As a result of this research, experts have developed guidelines and manuals that should be followed when interviewing children. This research has shown that the way a child is interviewed can have a major impact on the accuracy of the child's report of an event.

First, interviewers should briefly discuss the difference between truths and lies with children and explain to the child that they should only tell the truth.² Next, the interviewer should *build rapport* with the child. What I mean by build rapport is that the interviewer should engage in small talk with the child, asking them about their school and family. When building rapport, interviewers should allow children to do as much of the talking as possible.³ For example, the interviewer could ask the child to tell everything he or she could remember about a recent vacation. This also helps children realize that it is their job to give information in their own word.⁴

Next, the interviewer should introduce the topic of abuse in a general way. For example, the interviewer could say, "Do you know why you are here to see me today?" In the majority of substantiated cases of child sexual abuse, this statement alone is enough to get the child talking. The interviewer should not start out with a leading question such as, "Someone touched your peepee, right?" This type of question implies the answer that the child should give.⁵

Throughout the interview, the interviewer should ask as many general open-ended questions as possible. Open-ended questions are questions that do not suggest clear

answers to the child. For example, "Tell me everything you can remember about that," or "What else happened?" The interviewer should not interrupt the child, but rather allow the child to report about the event in as many of his or her own words as possible.⁷ Only after asking multiple open-ended questions should the interviewer ask specific questions regarding the allegation. For example, the interviewer might ask, "Where were you when this happened." These are the techniques that have been shown to get the most accurate stories from child witnesses.⁵

Researchers have also identified a variety of techniques that can produce false statements from children. These are known as suggestive interview techniques. Suggestive interview techniques are questions that suggest the answer to the child or are confusing and misleading to the child. For example, suggestive questions include "What did he say when he pulled his pants down," when the child had not said anything yet about anyone taking clothes off. There are various suggestive interview techniques in addition to the misleading questions. For example, other suggestive techniques include re-asking questions that the child has already answered, interrupting or correcting the child, or asking the child mostly questions that can be answered with a single word (such as yes or no).^{5,6} The interviewer should be encouraging and supportive to the child throughout the interview and avoid only giving praise when the child reveals sexual information. The interviewer should indicate that she does not know what happened to the child, instead of suggested that she has already learned about what the child experienced from other people. For example, avoid statements such as "Another child told me that he..." The interviewer should not give the child the "answers" or "story" in any way but rather allow the child to give the information.^{5,6}

Research has shown that younger children, especially preschoolers, are particularly prone to suggestion. If these suggestive interviewing techniques were used during the forensic interview, the resulting statements from the child, especially coming from a younger child, cannot be trusted.⁵

If the child produces spontaneous statements in the absence of any known suggestive techniques,⁷ then the child's statements are generally quite accurate and reliable. It is important to determine if the child's first statements were made spontaneously to a neutral interviewer or if they were elicited by biased interviewers who used a range of suggestive interviewing techniques. Once children have been exposed to faulty interview techniques, the scientific evidence indicates that it is not possible to tell the difference between true and false reports.

Testimony topics: ¹children's memory/event centrality; ²establish ground rules; ³establish rapport; ⁴conduct a practice interview; ⁵question/utterance type (open-ended/general versus closed-ended/suggestive and misleading); ⁶multiple

questions; ⁷ new information introduced by interview versus child.

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