



ELSEVIER

Contents lists available at SciVerse ScienceDirect

Developmental Review

journal homepage: www.elsevier.com/locate/dr



Divining testimony? The impact of interviewing props on children's reports of touching

Debra Ann Poole^{a,*}, Maggie Bruck^b

^a Department of Psychology, 231 Sloan Hall, Central Michigan University, Mt. Pleasant, MI 48859, United States

^b Division of Child and Adolescent Psychiatry, Johns Hopkins University, United States

ARTICLE INFO

Article history:

Available online 4 July 2012

Keywords:

Forensic interviewing
Sexual abuse
Interviewing props

ABSTRACT

There is a long-held assumption that objects help bridge the gap between what children know and what they can (or are willing to) explain. In this review, we present research on the extent to which two types of objects used as props in investigative interviews of children, anatomical dolls and body (human figure) diagrams, actually help children report accurate information about autobiographical events. We explain why available research does not instill confidence that props are the best solution to interviewing challenges, and we consider practitioners' and policy-makers responses to this evidence. Finally, we discuss the types of developmental research that are necessary to advance the field of evidence-based interviewing of children.

© 2012 Elsevier Inc. All rights reserved.

Introduction

Authorities have always had faith that special techniques would help them investigate crimes. For thousands of years, divination with objects was a widespread phenomenon that persisted in some regions despite frequent ridicule and bans on its use (e.g., Beard, North, & Price, 1998). In one form of the practice, an inquisitor asked a young child to stare at an object, which presumably allowed only the child to receive information from spirits about thieves or other pressing issues. To summon "the princes of the oil," adults prepared a shiny surface and then instructed the child to look for the beings who revealed society's secrets (Bilu, 1981).

Most forms of scrying (divination by gazing at objects) involved young boys or virgin girls because their purity presumably gave them "unparalleled abilities of revelation and divination" (Bilu, 1981, p.

* Corresponding author. Fax: +1 989 774 2553.

E-mail address: poole1da@cmich.edu (D.A. Poole).

275). Although authorities assumed only children could provide details of crimes, adults had a critical role in guiding the process (Trachtenberg, 1939). As one scholar explained, “the child would describe in great detail what he saw in the oil—a demon dressed in a certain manner having a certain identifying mark. Often the sorcerer would instruct the child to send that demon back and ask another one to come, until the *right* demon appeared” (Dan, 1980, p. 28, emphasis ours).

If we replace “demons” with “memory,” ancient divination techniques are eerily similar to the use of interviewing props when questioning children about suspected abuse. In both cases, adults believe children can describe crimes but that special procedures are likely necessary to obtain reports. Both traditions involve highly scripted instructions that increase interviewers’ confidence in the validity of the process, and authorities trust that children’s innocence makes them unlikely to invent false reports. Most important, interviewers focus children’s attention on objects while delivering specific—sometimes suggestive—prompts.

Of course, authorities no longer claim that children have special abilities to connect with supernatural forces, and no investigators use the shiny objects and incantations that characterized past practice. Nonetheless, the parallels between ancient divination techniques and some current practices raises an interesting question: If the confluence of children, objects, and questions has unanticipated consequences, are some professionals still, in a sense, divining testimony?

Uses of objects in investigative interviews

Play materials such as crayons and paper, dolls, model houses, and sand boxes have been the staples of psychodynamically oriented play therapy with children since the turn of the 20th century. Later their use was extended to help children understand medical procedures, to show areas of pain on their body, and for teaching purposes (e.g., to explain self-care practices). The idea that objects help bridge the gap between what children know and what they can (or are willing to) explain is based on the assumption that props help concrete thinkers grasp the point of conversations, increase the completeness of reports by allowing children to respond without verbalizing embarrassing information, and provide effective retrieval cues (Russell, 2008). For all of these reasons, many professionals added props to their toolbox for investigative interviews of children (e.g., Hewitt, 1999; Jones & McQuiston, 1988; Morgan, 1995; for a brief history of protocols, see Poole & Dickinson, *in press*).

Throughout the 1980s and 1990s, many interviewers, interviewing centers, and some jurisdictions had locally-developed scripts for when and how to use props.¹ But due to concerns about children’s suggestibility, since the early 1990s there have been many attempts to collect normative data on how sexually abused and nonabused children behave with props and to examine the consequences of using objects to elicit event reports.

In this paper, we explore whether two commonly used props, anatomical dolls and body (human figure) diagrams, do have “special powers” to help children add important information to their autobiographical reports. For each prop, we consider practitioners’ and policy makers’ responses to this evidence and the degree to which evidence is currently being used to craft best practice guidelines. We conclude by discussing the types of developmental research that are necessary to advance the field of evidence-based interviewing.

Dolls

Anatomically detailed (AD) dolls were created in the mid 1970s by three members of an inter-agency rape team project (Morgan, 1995). The props quickly gained popularity and were one of the major tools used to evaluate sexual abuse in preschool children, as reflected in a series of prominent day care cases (e.g., the McMartin preschool trial, *State of New Jersey v. Margaret Kelly Michaels*; e.g.,

¹ Today, the dozens of interviewing protocols guiding practice can be organized along a dimension anchored by opposing philosophies regarding the value of props: One instructs interviewers to display props early in conversations to help elicit abuse reports (Anderson et al., 2010), whereas the other recommends techniques for encouraging verbal reports without props (Lamb, Hershkowitz, Orbach, & Esplin, 2008). In between lies typical practice, in which interviewers encourage verbal reports but sometimes introduce props to clarify children’s reports or to probe for additional disclosures.

see Rosenthal, 1995). According to an early review (Ceci & Bruck, 1993, p. 425), transcripts of therapy sessions documented a disturbing array of practices, including “naming the dolls after defendants, berating the dolls for alleged abuse against the children, assuming the role of fantasy characters in doll play, and creating a persistent atmosphere of accusation”. There was little doubt that some evaluators used AD dolls in ways that divined testimony.

Outside the widely publicized cases, interviewers were using dolls for a multitude of purposes that were summarized by Boat and Everson (1996): as an icebreaker (i.e., to convey that it was acceptable to talk about sexual knowledge and experiences), to assess children’s names for body parts, as a diagnostic “screen” (to observe whether children’s interactions with dolls elicited statements or concerning behavior that could then be explored), and to encourage children to demonstrate what happened after they had provided verbal reports of abuse.

Regardless of the intended function of the dolls, there was an undocumented concern that some children strayed into exploration and play with dolls during interviews. A parallel concern was that interviewers became more suggestive when dolls were available, often bypassing open-ended questioning and relying more heavily on specific questions paired with the dolls. The research that followed to explore these issues fell into four broad categories: comparing how abused and nonabused children interacted with AD dolls, evaluating how children reported documented experiences with and without dolls, analyzing reports obtained by standard and doll-assisted investigative interviews, and observing the impact of dolls on interviewers’ behavior. We now provide an overview of the findings of this research.

Research findings

Normative data on how abused and nonabused children interacted with dolls during free play addressed the important issue of whether dolls could be used to screen children who were likely abused. Children’s interactions with AD dolls could be diagnostically useful if (a) sexualized handling was much more common among children who had experienced abuse and (b) procedures for screening out unfounded concerns were sufficiently accurate for forensic purposes. Such information is critical if play patterns thought to identify abused children, such as manipulating the dolls in sexually explicit ways and showing reticence or avoidance when presented with dolls, also occurred in samples of nonabused children (see Ceci & Bruck, 1995, for a review).

Early evidence suggested that the diagnostic value of dolls was limited because many abused children do not interact sexually with dolls, but dolls provide “affordances” (i.e., object features permitting certain behavior) that could generate inaccuracies among both abused and nonabused children. For example, dolls afford fondling genitalia out of curiosity, putting fingers in holes (think of what children do with stuffed olives), and using the dolls as aggressive action figures. Findings regarding how often children displayed these behaviors were varied yet coherent when aggregated: Fingering genitalia and inserting fingers into holes were so common that some authors did not even code such behaviors as sexual (e.g., Jampole & Weber, 1987; also see data from Cohn, 1991), children with no known history of abuse infrequently displayed explicit sexual activity (e.g., intercourse) in the presence of adults (e.g., 4% of a combined sample of 550+ children, Everson & Boat, 1997), some demographic groups were more prone to this behavior (e.g., 27% of low SES black males in Everson & Boat, 1990), and rates of sexualized behavior increased across demographic groups when adults left the room (Everson & Boat, 1990).

Some doll supporters countered that the unexpected sexual behavior observed in studies could be traced to pornography or other sources of sexual information (Dawson, Geddie, & Wagner, 1996), but the fact that abused children may also have these experiences complicates the task of screening out children whose knowledge stems only from these influences. Although there are still some dissenters, the idea that spontaneous behavior with dolls has sufficient sensitivity and specificity to serve a diagnostic function was the first concerning practice to lose widespread support: As early as 1990, the *American Professional Society on the Abuse of Children* advised that AD dolls “should not be considered a diagnostic test” (p. 5).

The second line of research on AD dolls was the most highly controlled: Children experienced scripted touching in medical settings (e.g., genital examinations, annual check-ups, urological

procedures) or laboratory events, and interviewers asked them to show what had happened with dolls. Most important, their responses were sometimes compared to those of children interviewed without the dolls or to children who were not touched. The resulting data could determine if dolls helped children report actual physical contact without encouraging reports of target behavior that had not occurred (e.g., genital touching or hitting), and also whether dolls added important accurate information over and above what children related when merely asked questions without dolls.

Saywitz, Goodman, Nicholas, and Moan (1991) conducted one of the first studies using this paradigm. Girls (ages 5 and 7 years) were questioned about a previous check-up in which some of the girls had received a genital–anal examination whereas others had received a scoliosis examination. Direct questions (“Did that doctor touch you there?”) paired with a doll greatly increased true reports of vaginal touching without a similar increase in false reports (i.e., only 3% of children who had not experienced vaginal touching falsely said that they had).

But results were not encouraging for younger boys and girls. In one pair of studies, 3-year-olds (Bruck, Ceci, Francoeur, & Renick, 1995) and 4-year-olds (Bruck, Ceci, & Francoeur, 2000) received annual medical check-ups by their pediatrician in which half the children experienced anal–genital exams. Immediately after the physical exam, interviewers presented anatomical dolls along with miniaturized versions of the nonmedical props, asked children to name the body parts, and then asked specific questions about whether the doctor had touched various body parts. There were no age differences in accuracy: Summing across age groups (see Bruck et al., 2000), 27% of the nontouched children falsely claimed that the doctor had touched their genitalia/buttocks and 51% of the touched children falsely denied being touched. When interviewers behaved more suggestively by asking children to show on the doll how the doctor had touched their genitals and anal areas, 36% of the nontouched children falsely showed touching. Even children who were touched made errors: 37% of all their errors involved over-touching responses, such as inserting fingers into anal or genital cavities, depicting experiences that had not occurred. These findings countered the prevailing wisdom that it would be difficult to induce children to make false reports of genital touching.

There are several explanations for the discrepant findings of the Saywitz et al. and Bruck et al. studies. The most obvious is age: As we discuss shortly, dolls pose greater risks to children younger than 5 years. Another possibility concerns an important procedural difference. Bruck et al. asked the children to name body parts on the dolls, including the genitals and anal area, which is a common procedure in prop-assisted interviews. Saywitz et al. did not follow this procedure—they merely showed each child the doll, which was then undressed to reveal all the body parts. Because body part labeling suggests (or at least primes) possible answers, this may be an important procedural difference that explains why, in some contexts, props elicit a concerning rate of false reports.

Another study illustrates the need for nuanced discussions that acknowledge how the risks and benefits of props shift as a function of children’s ages, their prior experiences, and interviewer practices. Steward and Steward (1996) repeatedly interviewed children (3–6 years) about medical examinations in which some had received genital and anal touches whereas others had not. Major analyses compared children interviewed with verbal questions alone and those interviewed with props (combining over doll and body diagram conditions).

This design, spanning ages and interviewing practices represented in the Bruck et al. and Saywitz et al. studies, confirmed their collective results: Props increased accurate reports of embarrassing touches among touched children—but at a cost. Specifically, the presence of props increased the percentage of children who falsely reported forensically-meaningful touches, with the most errors occurring when interviewers asked direct questions about touching to specific body parts. During a second interview, for example, no child in the verbal condition falsely reported touching to the anal area, but 22% of the children interviewed with dolls did so when the prop accompanied initial questions, and 30% did so when interviewers asked “Were you touched there?” while pointing to the doll. (See Steward & Steward, p. 95, for the discussion that separates doll and diagram conditions.) Surprisingly, forensically-relevant commission errors sometimes involved school-aged children.

Before leaving this influential study, we caution readers that although these analog studies document the benefits and risks of various interviewing techniques, they do not help policy makers weigh these two types of results. This is because low rates of accurate disclosures in response to questions alone were a predictable consequence of the fact that the children were not expecting

discussions about touching and did not participate in interviews stacked with techniques to encourage verbal reports (e.g., see pp. 163–166 in [Steward and Steward, 1996](#)). At the same time, the untouched children were not in an atmosphere of concern about touching that would increase false report rates. Together, these design features maximized the extent to which cuing with dolls (or props in general) would increase true reports while providing lower-bound estimates on the frequency of false reports. Results, therefore, do not speak to the ratio of benefits to risks when dolls are added to front-line interviews, especially when the control condition (no dolls) represents current best-practice standards.

The third type of study remedies these limitations by situating dolls in an investigative context. For instance, [Thierry, Lamb, Orbach, and Pipe \(2005\)](#) examined forensic interviews of 3–12-year-old alleged victims of sexual abuse who were provided with dolls at different parts of the interview. In response to open-ended invitations, children interviewed with and without dolls reported equal amounts of information, which bolsters confidence that interviewers had not introduced dolls only for reticent children. Results showed that dolls served the desired memory function for older children (7–12-year-olds), often triggering them to verbally report more information and to narrate while demonstrating. The 3–6-year-olds, however, were more likely only to enact events. Thierry et al. expressed concern about this “language-substitution” function because prior research found enactments to be less accurate than the verbal reports that accompany dolls ([Salmon, Bidrose, & Pipe, 1995](#)). Also, the young children sometimes played suggestively and provided more inconsistent details with dolls than the older children did, and both age groups produced more fantastic details with dolls. The team concluded that older children are better than younger children at reproducing reported information with dolls and that, overall, doll use did not improve the amount or quality of information provided by young children (see also [Lamb, Hershkowitz, Sternberg, Boat, & Everson, 1996](#); [Lindberg, Chapman, Samsoc, Thomas, & Lindberg, 2003](#); [Pipe & Salmon, 2009](#)).

A laboratory paradigm, which provided more control over how interviewers used dolls, found converging evidence on the limited advantages of dolls. [Salmon, Pipe, Malloy, and MacKay \(2012, Experiment 2\)](#) questioned 5–7-year-old children 1 week after they experienced an event involving bodily contact. Whenever children reported having been touched, interviewers asked them to elaborate either with a doll or using only the verbal prompts. There was no increase in errors associated with dolls, but dolls did not elicit more information than questions alone. (For comparable findings, see verbal response results in [Goodman & Aman, 1990](#), and elaborative detail results in [Gordon et al., 1993](#).)

The final category of research centered on how interviewers use dolls. Two findings stood out in one analysis of concerning practices ([Boat & Everson, 1996](#)). First, interviewers who introduced dolls as a demonstration aid often did so prematurely, bringing dolls out for children who were not confused or reticent, or saying such things as, “You don’t need to tell me—just show me” (p. 99; see also [Thierry et al., 2005](#)). In other words, the availability of dolls led interviewers to terminate open-ended questioning sooner. This point is important because doll advocates sometimes cite studies showing that children provide additional details after introduction of dolls, but this finding is not informative if the studies did not address what children would have reported had interviewers continued a line of developmentally-appropriate questioning (i.e., when there was no control group involving an alternative practice). Relatedly, another study found that interviewers spoke more when they were relying on dolls compared to other portions of the interview, indicating that dolls can shift control of interviews from children to adults ([Santtila, Korkman, & Sandnabba, 2004](#); see [Dickinson, Poole, & Bruck, 2005](#), for an overview of concerns about AD dolls).

Another problem revealed in [Boat and Everson’s \(1996\)](#) analysis involved interviewers who used dolls as a diagnostic screen. Not infrequently (e.g., 17% of interviews in which dolls were used as a diagnostic screen with 2–5-year-olds), interviewers overinterpreted children’s behavior without asking clarification questions (e.g., “Oh, that’s what happened to you”; p. 100). In light of the problems with dolls, many investigators have concluded that research and clinical efforts should focus on ways to encourage verbal reports that do not involve object cues, such as building sufficient rapport and including a warm-up phase before the actual interview to encourage children to talk (e.g., [Thierry et al., 2005](#)).

The mismatch between AD dolls, interviewers' intent, and children's minds

Given that children and interviewers seem to enjoy dolls, why have findings on the benefits of dolls been disappointing? First, the results of basic developmental research, conducted years after the dolls were introduced into forensic interviews, cast doubt on the feasibility of using dolls with very young children. A prerequisite for conveying information about oneself with a doll is representational insight, which is awareness that a doll is simultaneously an object *and* a symbol of a particular person. Because young children find it difficult to grasp symbol-referent relations (DeLoache, 1991; DeLoache, 2000; DeLoache, 2005), DeLoache and her colleagues thought they might also have difficulty using dolls as symbols of themselves and others. In one of these studies (DeLoache & Marzolf, 1995), assistants put stickers on children during a storybook activity and asked each child to show on a doll where the stickers were placed. The youngest children (averaging 2.5 and 3.5 years) made many errors, even though they were still wearing large stickers (59% and 29% of the placements were incorrect, respectively); by 4 years of age, children made fewer errors (8% of the placements were incorrect).

But the fact that dolls are cognitively challenging for most children younger than 4 years does not imply that older children always have the cognitive fundamentals to reenact events with dolls. The ages-of-acquisition mentioned in research articles and reviews refer to the typical performance of study volunteers, but there are older children with some impairment. In DeLoache and Marzolf's (1995) study, for example, 12.5% of 4-year-olds failed to accurately place at least three out of four stickers on a doll. Clearly, this error rate is too high for forensic purposes. Performance on a second task, in which children were touched during a Simon Says game, was more concerning: When interviewers asked children who had just verbally reported an experienced touch to demonstrate on a doll, the 4-year-olds erred 19% of the time. (Error rates for 2.5- and 3.5-year-olds who had just accurately described a touch were 47% and 33%, respectively). In another study, DeLoache, Anderson, and Smith (cited in Uttal et al., 1998) asked preschool teachers to record whenever someone did something to a child that was emotionally upsetting. When the children were asked about these incidents either with or without dolls (using a fixed set of questions), dolls produced no increase in the amount of information reported.

A largely silent issue is the special challenge of interviewing children with disabilities, which is a group comprising about 16% of the victims involved in child protective services investigations (US Department of Health, Administration for Children, Administration on Children, & Families, 2011). One study of adults with mild and moderate mental retardation (Valenti-Hein, 2002) illustrates why norms based on the typical children who participate in university research projects may lead policy makers to overestimate the developmental appropriateness of props. When these adults placed stickers on themselves in the same places that stickers were visible on a model, they were more accurate when the target stickers appeared on a live model than on a doll or body diagram. For example, the adults with moderate cognitive impairment accurately matched sticker placements from a live model to themselves almost 80% of the time, but they were successful less than 65% of the time when mapping between a doll and themselves. (See DeLoache & Smith, 1999, for similar findings with preschoolers.)

There is another reason why basic developmental research cannot set a fixed age when dolls are safe for investigative interviews: Although representational insight is a necessary skill for competent use of dolls, an array of other factors is involved in translating memories into accurate reports (Poole, Bruck, & Pipe, 2011). As described earlier, interviewers sometimes combine props with questions that elicit high rates of inaccurate information in laboratory studies, props make it easy to respond thoughtlessly (e.g., by pointing or touching), and props are distracters that can lead children to lose attention to the topic of questioning (e.g. Bruck et al., 2000; Thierry et al., 2005). As a result, there is no basis for the claims that "dolls can be used with any child who can make the representational shift" and are safe for most children "by the age of 5" (American Prosecutor's Research Institute, 2004, p. 40).

Current practices and concerns

While the use of dolls was declining amongst growing criticism, some policy groups kept the door open for limited use of dolls, creating ambiguities that allowed doll-assisted interviewing to thrive. In

1991, a committee of the American Psychological Association acknowledged that “neither the dolls nor their use are standardized or accompanied by normative data” yet concluded that dolls could be used (Fox, 1991, p. 722). A working group later cautioned, however, that particular care should be taken when interpreting results from children younger than 5 years (Koocher et al., 1995). Similarly, the American Professional Society on the Abuse of Children (2002) concluded that AD dolls “can be an excellent communication/clarification tool, if used appropriately” (p. 6).

Today, the RATA^C procedure (which is permitted for use in child advocacy centers in the US) allows introduction of dolls in the interview after a report of abuse for clarification purposes, to demonstrate consistency, to help children convey how touching occurred without using their own bodies (i.e., distancing), and to assist them in communicating information they cannot or do not want to verbalize (Anderson et al., 2010). These uses are authorized with the caveat that interviewers use dolls only with children who can make the representational shift (as indicated by such things as successfully choosing the doll that looks most like themselves and demonstrating on the doll rather than themselves) and that interviewers avoid leading or suggestive questioning with dolls (Anderson et al., 2010; Holmes, 2000). The continuing popularity of dolls despite the scientific findings cited above is illustrated by a recent case review in which 49% of RATA^C interviews used dolls (Hlavka, Olinger, & Lashley, 2010).

On the surface, it may seem innocuous to introduce dolls after children have already reported inappropriate touching. But consider how the assumptions behind this practice pertain to two groups of children: one who was touched inappropriately and one who was not. For children who were touched, accuracy rests on their ability to keep the immediate topic in mind throughout the doll episode (e.g., touching by a particular individual rather than other touches they have received), their skill in reproducing received touches onto the doll without straying into overtouching responses, their ability to refrain from irrelevant responses (intrusions) due to affordances provided by the doll, and the extent to which responses mean the same to the child and observers.

In terms of the last requirement, this means that observers must accurately categorize doll-directed behavior. This is not an easy task: In one study, two coders of children’s spontaneous behavior with dolls disagreed 22% of the time about whether or not children were demonstrating sexual interactions (Dawson et al., 1996). The difficulty of making such decisions is also consistent with the experience of those who transcribe videotapes of interviews with children: Even with a full camera view, it is sometimes very difficult to determine the actions performed with dolls. Consequently, even for abused children, clarification with the dolls may not always remedy the ambiguities and misunderstandings that can occur when adults talk to children.

What about children who were not touched? To understand why developmental researchers want proof that dolls improve decision-making compared to other well-researched techniques, we first need to explain how allegations are sometimes elicited. In one style of prop-assisted questioning, interviewers ask children to label parts on a body diagram (including sexual body parts) prior to asking a specific question about whether anyone has touched them in any places on the diagram. When children respond “yes” (which is the only accurate answer, since all children have frequently been touched in those places), interviewers ask them to point to where they were touched prior to another specific question (such as “Who touched you there?”). In essence, then, this is a “suggest-prime-point” procedure, one in which interviewers suggest sexual themes early in the interview (by displaying a naked child), prime possible answers (by asking the child to label body parts that include desired answers), open with a yes–no question (which young children answer unreliably in many contexts), and then invite the child to respond by pointing. When interviewers bring dolls out for clarification, one can assume they do so more frequently when children fail to provide coherent verbal narratives. These circumstances should be common among those who were not abused but merely acquiesced to questions due to thoughtlessness or exposure to prior conversations about abuse concerns.

The cognitive task for nonabused children does not involve mapping abusive events onto the dolls, so reversing the course of the interview after dolls are brought out requires children to inhibit the urge to respond due to a general tendency to take turns in conversations—a turn they may take, as some children have done in laboratory studies, by demonstrating events that did not occur. The task is especially challenging for children who must distinguish between memories of experienced events and memories of prior conversations with concerned adults—that is, when memory source monitoring

is key. From a cognitive perspective, it seems unlikely that adding objects that cue nonexperienced events would facilitate source monitoring for age groups that frequently fail to spontaneously monitor source (see Poole & Lindsay, 2001; Poole & Lindsay, 2002; Schacter, Kagan, & Leichtman, 1995).

Body diagrams

When prosecutors began facing challenges to doll-assisted interviews in court, some interviewers reacted by substituting body diagrams. Diagrams come in different forms but typically are simple line drawings of male and female children and adults. Some are clothed, some are naked, some graphically depict male and female body parts, and some are gender neutral. Today, interviewers use body diagrams for a variety of purposes, including learning the names children use for body parts, facilitating discussions of good and bad touches, eliciting initial disclosures (when paired with questions such as, “Has anyone touched you in any of these places?”), and to help children provide more or clearer information about abuse (e.g., “Show me where you were touched.”). Thus diagrams sometimes serve a central role, as when interviewers display them early in interviews to elicit abuse disclosures (e.g., the RATA[®] protocol; Anderson et al., 2010), whereas other times interviewers display them later in interviews to help clarify reports (and, sometimes, to probe for additional disclosures).

Interest in body diagrams increased after an interviewer training initiative in the U.S. (Finding Words; Walters, Holmes, Bauer, & Vieth, 2003) selected a prop-focused procedure, the RATA[®] protocol (aka the CornerHouse protocol), for widespread distribution.² Despite the fact that RATA[®] was developed in the late 1980s, until recently there was little scientific research on the benefits, risks, and incremental validity of diagram-assisted questioning. Nonetheless, diagrams were thought to be safer than dolls because two-dimensional props lack orifices that can be penetrated out of curiosity. Also, some argued that children find it easier to use drawings to represent themselves than dolls. The idea was that children have extensive experience with pictorial representations, but also that line drawings are less salient as objects, which could improve children’s ability to use them as symbols (Russell, 2008). In addition to the assumption that diagrams are more developmentally appropriate than dolls, another reason for their widespread popularity is that RATA[®] promoters claimed their protocol was evidence-based (Anderson et al., 2010). We discuss children’s reactions to body diagrams and concerns first, and then turn to the required criteria for claiming that a protocol is evidence-based.

Children’s performance with body diagrams

Is it true that the representational task is easier with body diagrams than dolls, resulting in more accurate demonstrations of touching? Consider data from an in-progress study (Ladd, London, & Bruck, 2011). A research assistant asked each child to identify body parts on a clothed body diagram, a doll, and themselves (e.g., “The doll has a hand. Can you point to the doll’s hand?”). Next, she placed a large sticker on one of the child’s body parts and asked the child to place a similar but smaller sticker on the doll, the body diagram, or the assistant. Each sticker remained on the child throughout the response and was then removed.

Results confirmed previous findings that 3-year-olds are flummoxed by such tasks: This group was correct only 66% of the time with dolls and 45% of the time with body diagrams. Five-year-olds performed well, making accurate placements 99% of the time on dolls and 95% of the time on diagrams. As expected, 4-year-olds were a transitional group; their accuracy rate was 84% in the doll condition and 79% in the body diagram condition. Several points are forensically relevant. First, the stickers were still visible, so this task may be easier than mapping information that resides only in memory (e.g., compare sticker task and Simon Says results from DeLoache & Marzolf, 1995). Therefore, the relative success of the 5-year-olds should not be taken to mean that props are appropriate when this age group performs a pure memory task. Second, performance was worse with body diagrams, not better. In the aforementioned study of adults with cognitive impairments (Valenti-Hein, 2002), there was also no consistent benefit of diagrams over dolls. Thus this study does not support the claim that children are more successful at mapping body touches on line drawings than dolls.

² This initiative continues today as ChildFirst™ (National Child Protection Training Center, 2012).

A pair of studies by Brown and colleagues (Brown, Pipe, Lewis, Lamb, & Orbach, 2007; Brown, Pipe, Lewis, Lamb, & Orbach, 2011) confirmed that even 5–7-year-olds find it cognitive challenging to report events on body diagrams. To help the children understand the purpose of the body diagram, interviewers delivered practice instructions: They touched children on the elbow and then asked them to show on the diagram where they were touched. Although no child was under 5 years of age in this study, 54% of the children required correction and additional explanation to successfully complete a trial.

These alarming results raise an obvious question: Why did body diagrams become popular before basic safety testing had been conducted? Perhaps because diagrams elicit reports of touching, which is very rewarding to interviewers. Consider two studies that analyzed investigative interviews of alleged abuse victims conducted with the NICHD protocol, a procedure that encourages verbal reports through rapport-building, a practice interview, and open-ended questions that invite children to do most of the talking (Aldridge et al., 2004; Teoh, Yang, Lamb, & Larsson, 2010). After interviewers believed they could elicit no more information using the protocol, they asked questions referring to unclothed, gender-neutral diagrams, including specific yes–no questions (e.g., “Did s/he touch this part?”) followed by open-ended prompts that invited children to elaborate. In both studies, adding diagram-assisted questioning led children to recall additional information, including elaborations of bodily contact, and this was particularly the case for younger children.

Two caveats are important in interpreting these results. First, the accuracy of information is usually unknown in field studies, leading to the possibility that the added information produced by body diagrams and specific questions included false information that decreased the overall accuracy of reports. In fact, this is exactly what a laboratory study that mimicked the design of the field studies found (Otgaar, Horselenberg, van Kampen, & Lalleman, 2011). Second, children and adults alike tend to provide more information with additional recall attempts, so these studies do not reveal what children would have reported had interviewers shifted gears in some other way (for example, by taking a break or turning briefly to neutral topics) before asking additional questions. The value of these studies is to document that children often provide more information when questioning continues, even after an extensive interview, but the results do not speak to the forensic value of diagram-assisted questioning.

Recognizing the inherent limitations of field studies (specifically the inability to establish children’s accuracy), researchers turned to more controlled situations in which children were touched during scripted events and then asked to recall where they had been touched either with or without body diagrams. In a set of studies we mentioned earlier, Brown and colleagues studied 5–7-year-old children who were touched seven times by a photographer and then were asked to recall 1 month (Brown et al., 2007) and 7 months (Brown et al., 2011) after the event. The children were questioned extensively using a structured verbal protocol and then randomized to one of three conditions: verbal questions only (an initial question about touching followed by open-ended inquiry and then specific yes–no questions), verbal questions with body diagrams, and verbal questions with diagrams preceded by practice instructions. At both the 1 month and 7 month interviews, children recalled very little information about touching, regardless of condition. In the 1 month interview, the major finding was that the addition of the diagrams did not promote additional accurate details beyond what children in the nondiagram condition achieved; however, the children made more errors in the body diagram conditions. At the 7-month follow-up, children remained in their original groups and were questioned in the same ways as before. Accuracy rates were strikingly different for children who produced any correct information during both interviews: 70% of the information elicited in the verbal questions only condition was accurate at the 7-month interview, compared to only 23% in the diagram with instruction condition and 22% in the diagram only condition.

Bruck (2009) conducted similar studies but included younger children (3–7 years) and manipulated the placement of the body diagram inquiry viz a viz the verbal inquiry: Half the children received a verbal interview followed by a body diagram interview containing the same questions as in Brown et al., and half the children received the body diagram interview first, followed by the verbal-only interview. Given the poor levels of recall in the Brown et al. study at 1 month, children were questioned 1 week after a touching activity with a magician for Study 1, and immediately after that scripted activity for Study 2. In both studies and in both interviewing conditions, children recalled few touches in response to prompts about touching, and diagrams did not increase accurate recall.

However, diagrams did increase error rates when interviewers presented them after the verbal interviews.

Clearly, these studies did not find incremental validity from adding diagrams to the interview. Additional evidence is provided by Salmon et al. (2012), who also found that adding diagrams to questions did not elicit additional elaboration or clarification of details. Given these findings, the potential for false reports provided by diagrams is even more concerning. That is, just as anatomical dolls permit children to inspect genitals and insert fingers in holes, body diagrams make it easy for children to point to body parts that were not touched during target experiences. This is true not only for very young children but, in the study we describe next, for school-aged children as well.

To embed diagrams in realistic investigative protocols, Poole and Dickinson (2011) watched actual prop-assisted interviews and then modeled the instructions to create a body-diagram-focused procedure (i.e., one in which interviewers used diagrams to elicit initial reports of touching). The comparison condition in this study (the standard condition) included the same warm-up questions used in the diagram-assisted procedure (only delivered with no interviewing aids), followed by open-ended and then more focused questions (still with no specific mention of touching). Half the children (age 4–9 years) had experienced touching (which involved mishaps to make the touches more memorable); the other half only heard about these events through a story their parents read to them that described nonexperienced touching. Therefore, this study compared the number of true and false reports of touching across two procedures, including a popular way of using diagrams in prop-assisted forensic interviews.

Poole and Dickinson (2011) found that no child disclosed experienced touching during open-ended questioning in the standard condition, whereas pairing body diagrams with specific questions about touching did elicit disclosures in a minority of children.³ However, there was no significant advantage of body diagram interviews after interviewers in the standard condition progressed to more focused questions, such as “Did Mr. Science give you anything in the science room?” and “Tell me all about (something the child mentioned). What happened with/when (the child’s words)?” In addition, body diagram questioning elicited more false reports of suggested touches than did open-ended questioning in the standard condition, and only body diagram questioning prompted intrusions (spontaneous false reports that were not suggested, which was a type of error found across all ages). Thus, embedding diagrams in a research protocol similar to those used in the field returned the same results discussed earlier: Specific questions with diagrams yielded more true reports than open-ended questioning did, but with an increase in the number of false reports. Importantly, this study underscores two ways in which diagram-assisted questioning about touching increases errors: by permitting thoughtless pointing (i.e., spontaneous intrusions) and by drawing out more suggested touches than open-ended questions delivered without a diagram. Poole and Dickinson concluded that body diagrams paired with yes–no questions are more risky than yes–no questions alone because “yes–no questions rarely prompt children to describe events that are unrelated to information embedded in the questions” (p. 668).

Some practitioners are critical of the analog research described thus far because (a) children do not regularly make forensically relevant errors about touching, (b) the studies did not include questions about inappropriate genital or anal touching, and (c) interviewers did not question children who had already disclosed (which is common in forensic settings). Perhaps under these circumstances, risk-benefit ratios associated with diagrams would be more favorable.

In terms of the first two issues, it should be noted that although forensically-relevant errors (i.e., false reports of touch to the genitals, breasts, or anal area) are low in analog studies, they do occur (for example, see Brown et al., 2007). Their infrequency does not speak to ability of diagrams to help children report events, however, because the diagrams in many analog studies did not depict sexual parts and the children were not in an atmosphere of concern about sexual touching.

³ There are a number of reasons why children who have not previously disclosed touching sometimes show low rates of disclosure in response to direct questions about touching: Some children may be reluctant to talk about touching, the word “touch” may not be a good memory cue (Poole et al., 2011), questions with the word “any” (as in “Did anyone touch you in any ...”) are notorious for returning “no” responses (Walker, 1999), and booting up one or two instances of touching into memory may temporarily inhibit retrieval of other instances.

In terms of the third issue, efforts to explore whether previous disclosures shift findings are still in the infancy phase, but a procedure is under development. Recently, Dickinson and Poole (2011) created a new paradigm, Mr. Science—Germ Detective! This procedure capitalizes on the fact that even young children have strong emotional and behavioral reactions to contamination. For example, 2- and 3-year-olds usually fail appearance-reality tests but do well when the hidden attribute is moldy bread (Siegal & Share, 1990), and even 2-year-olds frequently refuse to touch contaminated objects (Stevenson, Oaten, Case, Repacholi, & Wagland, 2010; see also Curtis & Biran, 2001). As a result, innocuous laboratory touches can be converted into highly memorable touches by telling children these touches are potentially contaminating.

In a pilot study, assistants instructed 26 4–8-year-olds that Mr. Science was not allowed to touch children's skin (because this is how germs spread), which provided opportunities for inappropriate, memorable touching. When Mr. Science twice attempted to break "the germ rule" during a set of fun activities about germs, more than a third of the children blocked a skin touch from occurring, more than a quarter spontaneously reported touching to a parent, and almost half of the nondisclosers reported a target touch when a researcher spoke to children on the phone prior to final interviews (Dickinson & Poole, 2011). Clearly, these laboratory touches (or attempted touches) were salient.

All children participated in the same interviewing condition in which interviewers began with open-ended questions and progressed through phases representing increasingly focused questions about touching that included body diagrams. Although final results await completion of a multi-site study, preliminary findings confirmed the feasibility of using this paradigm to investigate children's reports of memorable touches. First, children's disclosure histories (i.e., whether children told a parent or researcher prior to the interview or not) predicted disclosure during the formal interview: The majority of children who previously disclosed inappropriate touching did so during the follow-up interview, whereas only a minority of the nondisclosers did. This is an important finding because it mimics patterns from case reviews (see Hershkowitz, Horowitz, & Lamb, 2005; London, Bruck, Ceci, & Shuman, 2007).

A second finding confirmed results from previous studies reported in this paper: Some children falsely said "yes" to specific questions paired with diagrams, and reports of nonexperienced touches were as frequent as new accurate reports when interviewers progressed to diagram-assisted questions. What is striking is the consistent finding across paradigms that some young children have difficulty resisting specific questions about touching paired with body diagrams (also see Steward and Steward, 1996).

In sum, body diagrams are not developmentally more appropriate than dolls: Young children often find it challenging to accurately reproduce events on diagrams, diagrams do not consistently increase reports of experienced touches beyond what can be achieved with verbal questions alone, and diagram-assisted questioning increases false reports. Although no studies have compared the consequences of preceding questions about touching with body part labeling, the increase in errors associated with body diagrams has occurred even when procedures did not include this preliminary phase (e.g., Brown et al., 2007).

Beliefs maintaining diagram-focused procedures

Why have diagram-focused procedures survived for over 20 years while protocols based on memory and interviewing research were available without cost and were widely distributed during this same time period? (For examples of research on alternative approaches, see Holliday, 2003; Holliday & Albon, 2004; Köhnken, Milne, Memon, & Bull, 1999; and Lamb et al., 2008.) We think the reasons involve practical as well as ideological issues. On the practical side, it is difficult to train interviewers, but diagram-focused procedures are straightforward and appealing to interviewers and trainers alike. Also, these procedures have been used in thousands of adjudicated cases, which circuitously has been used to justify their value. Supporters defend that value by saying that (a) young children have limited attention spans and problems with memory recall that justify getting to the point early in interviews by cuing touch reports (because this will increase sensitivity—the detection of true cases of abuse), and (b) good investigative practices will screen out the few false reports elicited by cuing (so specificity is not a problem).

As intuitively appealing as these claims are, there is no evidence to support them. Young children do have short attention spans, but this does not mean that raising sensitive issues early in conversations with unfamiliar adults increases disclosures compared to alternative procedures. Regarding specificity, there is evidence that research-based protocols improve credibility assessments (Hershkowitz et al., 2007), but we know of no evidence on the accuracy of professional assessments of disclosures elicited by prop-based cuing.

Beliefs notwithstanding, prop-assisted interviewing will only be elevated to evidence-based practice when particular uses of objects have passed the tests society typically requires to market interventions. Consider next how props fit into this process.

What is evidence in evidence-based interviewing?

The most striking feature of current debates over interviewing props involves the concept of “scientifically based”: Those who distribute prop-based protocols claim these approaches are grounded in research (e.g., Anderson et al., 2010), whereas critics claim they are not (Poole et al., 2011). As confusing as this discrepancy may be to policy makers and the courts, the issues involved have already been hashed out in medicine and clinical psychology, where similar assessment and intervention goals guide practice. Briefly, the gold standard of evidence is reviews (including meta-analyses) of randomized controlled trials (e.g., *Cochrane Database of Systematic Reviews*) that consider the statistical and clinical significance of interventions (among other issues; e.g., generalizability across individuals and environments with various characteristics). However, the “best research evidence” at one point in time may lie anywhere along a continuum of evidence (American Psychological Association, 2005; Stuart & Lilienfeld, 2007).

The structure of this continuum can be illustrated by considering the phases of testing that occur before drugs come to market. After sufficient preclinical research (basic research) justifies the approach promised by a drug, Phase I (human microdosing) studies begin to assess the drug’s safety and efficacy through the administration of limited dosages to small numbers of healthy volunteers. This is followed by subsequent testing with larger samples of non-patient volunteers and patients (Phases II through IV; US Department of Health & National Institutes of Health, 2007). Unlike earlier phases, later phases compare the drug to existing treatments and evaluate the drug’s performance in the environments in which it will be used. In intervention research more broadly, it is well understood that lower-phase studies are necessary steps that should not be bypassed. In other words, even if researchers could jump directly to a randomized-control field trial, it would be imprudent to do so because this research provides inadequate information about how and why results are occurring (Rogers, 2009).

To protect the public, nonmedical interventions should also require a systematic approach to safety and efficacy testing. The danger of marketing interventions without sufficient evidence is illustrated by the numerous psychological therapies that inadvertently caused harm, and this can occur even when the children and adults who receive interventions appear to be helped. For example, without adequate control conditions we do not know if people would have fared as well or even better had they received a different intervention or no intervention at all (see Lilienfeld, 2007, for a selective review).

How do the phases of intervention research apply to the field of investigative interviewing? First, basic research involves information about whether a technique is within the competence of children in specific age ranges. These foundational safety tests include studies of whether children have the cognitive ability to represent events with objects (considering, as part of the package, their ability to understand the questions accompanying props). Because many factors influence performance and shift results from study to study, extrapolations from basic research are best made to help interviewers choose the most efficacious and least risky procedure *from a pool of possible procedures*. Thus interviewing protocols that were built from the ground up (that is, by starting with basic research on language and cognitive development and then considering studies of eyewitness testimony) are evidence based because their originators looked at a variety of findings and chose techniques associated with the highest success rates across all ages (Poole & Dickinson, in press).

Regarding props, the basic research reviewed here shows that objects should not be used as symbols with 3-year-olds, that error rates among 4-year-olds are high for forensic purposes, and that even older children sometimes have difficulty with basic representational tasks. In the future, these types of studies should be reproduced with groups of children who more closely resemble those involved in maltreatment investigations, and data reporting should include the percentage of children who are accurate across several trials.

The analog studies we reviewed represent the next stage of research (Phase I). Here props are tested on nonabused (non-patient) samples to begin to identify benefits and risks in tasks containing more challenges of memory testing (which is not possible with alleged victims because actual experiences are unknown). One unexpected finding from these studies is the lack of consistent evidence that props increase disclosures beyond what can be obtained from verbal questions alone. In-progress research is trying to identify situations where props might be justified through paradigms that better mimic forensic realities and by embedding props in interviews resembling front-line practices.

If results emerge to support some uses of props, the next step should be controlled trials with alleged victims. Because the instruments are to be used for diagnostic purposes, these trials would explore the sensitivity and specificity of the major approaches by including cases where there is strong evidence of abuse as well as cases deemed unlikely to be true. After comparing protocols to determine what is “best in town,” the final studies would also observe how well interviewers use the techniques and retain fidelity over time. Ultimately, only controlled comparisons of techniques with and without props will move the field beyond long-held assumptions and into evidence-based practice.

Concluding comments and a call for innovation

Giving children a voice means interviewing them in ways that are developmentally sensitive: This includes front-loading interviews with techniques that encourage sensitive disclosures, using words and questions they understand, and realizing how easily children drift off topic so precautions are followed to avoid misunderstandings. Before adding props to this difficult process, the field of maltreatment investigation needs to establish that responses with props are at least as good a reflection of event memories as responses to verbal questions alone—both for children who have experienced abuse and for those who have not.

The idea of presenting “developmentally sensitive” or “engaging” techniques to draw children into an interview does, on the surface, seem promising. After more than two decades of research, however, we are learning that children have different ideas than adults about what that entails. To date, the available evidence does not instill confidence that props are the best solution to the challenges of interviewing children. Recall that immediately after interviewers touched children’s elbows, the majority of 5–7-year-olds could not accurately touch a body diagram to reproduce this event (Brown et al., 2007; Brown et al., 2011), young children who experienced genital touching sometimes strayed into overtouching responses when handling AD dolls (Bruck et al., 1995; Bruck et al., 2000), and there is no clear evidence that props provide benefits that cannot be gained from verbal questioning alone. Although props are especially worrisome when used with preschool children, even school-aged children sometimes respond off topic when interviewers add props to direct questions (Poole & Dickinson, 2011).

The research presented here does not imply that dolls and diagrams are intrinsically evil. Rather, as with scrying, some characteristics of children, when combined with practices that divert attention from internal cognitions to external objects and adult speech, shift the focus of control away from children and onto objects and adults. A challenge for the future is to understand how each of these components—mere attention to objects, the features of objects, and the instructions from adults—promote accurate and inaccurate disclosures for children with different event and recall histories. As some researchers pursue these questions, we hope others will investigate novel approaches for helping children explain their experiences—approaches that move beyond long held assumptions so we can improve our development and delivery of developmentally sensitive interviews.

Acknowledgments

Preparation of this article, and some research summarized in it, was supported by the National Science Foundation, under Grant Nos. SES-0718889 and SES-1121873 (DP), and the Institute of Child Health and Human Development under Grant No. 5R01HD52034 (MB).

References

- Aldridge, J., Lamb, M. E., Sternberg, K. J., Orbach, Y., Esplin, P. W., & Bowler, L. (2004). Using a human figure drawing to elicit information from alleged victims of child sexual abuse. *Journal of Consulting and Clinical Psychology, 72*, 304–316.
- American Professional Society on the Abuse of Children (1990). *Guidelines for psychosocial evaluation of suspected sexual abuse in young children*. Author.
- American Professional Society on the Abuse of Children (2002). *Practice guidelines: Investigative interviewing in cases of alleged child abuse*. Author.
- American Prosecutors Research Institute, National Center for the Prosecution of Child Abuse (2004). *Investigation and prosecution of child abuse*. Thousand Oaks, CA: Sage.
- American Psychological Association (2005). *Policy statement of evidence-based practice in psychology*. <<http://www.apa.org/practice/resources/evidence/evidence-based-statement.pdf>>.
- Anderson, J., Ellefson, J., Lashley, J., Miller, A. L., Olinger, S., Russell, A., et al (2010). The CornerHouse forensic interview protocol: RATA^C. *Thomas M. Cooley Journal of Practical and Clinical Law, 12*, 193–331.
- Beard, M., North, J. A., & Price, S. R. F. (1998). *Religions of Rome: A history*. Cambridge: Cambridge University Press.
- Bilu, Y. (1981). Pondering "The Princes of the Oil": New light on an old phenomenon. *Journal of Anthropological Research, 37*, 269–278.
- Boat, B. W., & Everson, M. D. (1996). Concerning practices of interviewers when using anatomical dolls in child protective services investigations. *Child Maltreatment, 1*, 96–104.
- Brown, D. A., Pipe, M.-E., Lewis, C., Lamb, M. E., & Orbach, Y. (2011). How do body diagrams affect the accuracy and consistency of children's reports of bodily touch across repeated interviews? *Applied Cognitive Psychology*.
- Brown, D. A., Pipe, M.-E., Lewis, C., Lamb, M. E., & Orbach, Y. (2007). Supportive or suggestive: Do human figure drawings help 5–7-year-old children to report touch? *Journal of Consulting and Clinical Psychology, 75*, 33–42.
- Bruck, M. (2009). Human figure drawings and children's recall of touching. *Journal of Experimental Psychology: Applied, 15*, 361–374.
- Bruck, M., Ceci, S. J., & Francoeur, E. (2000). Children's use of anatomically detailed dolls to report genital touching in a medical examination: Developmental and gender comparisons. *Journal of Experimental Psychology: Applied, 6*, 74–83.
- Bruck, M., Ceci, S. J., Francoeur, E., & Renick, A. (1995). Anatomically detailed dolls do not facilitate preschoolers' reports of a pediatric examination involving genital touching. *Journal of Experimental Psychology: Applied, 1*, 95–109.
- Ceci, S. J., & Bruck, M. (1993). Suggestibility of the child witness: A historical review and synthesis. *Psychological Bulletin, 113*, 403–439.
- Ceci, S. J., & Bruck, M. (1995). *Jeopardy in the courtroom: A scientific analysis of children's testimony*. Washington, DC: American Psychological Association.
- Cohn, D. S. (1991). Anatomical doll play of preschoolers referred for sexual abuse and those not referred. *Child Abuse & Neglect, 15*, 455–466.
- Curtis, V., & Biran, A. (2001). Dirt, disgust, and disease: Is hygiene in our genes? *Perspectives in Biology and Medicine, 44*, 17–31.
- Dan, J. (1980). Samael, Lilith, and the concept of evil in early Kabbalah. *Association for Jewish Studies Review, 5*, 17–40.
- Dawson, B., Geddies, L., & Wagner, W. (1996). Low-income preschoolers' behavior with anatomically detailed dolls. *Journal of Family Violence, 11*, 363–378.
- DeLoache, J. S. (1991). Symbolic functioning in very young children: Understanding of pictures and models. *Child Development, 62*, 736–752.
- DeLoache, J. S. (2000). Dual representation and young children's use of scale models. *Child Development, 71*, 329–338.
- DeLoache, J. S. (2005). Mindful of symbols. *Scientific American, 293*, 72–77.
- DeLoache, J. S., & Marzolf, D. P. (1995). The use of dolls to interview young children: Issues of symbolic representation. *Journal of Experimental Child Psychology, 60*, 155–173.
- DeLoache, J. S., & Smith, C. M. (1999). Early symbolic representation. In I. E. Sigel & I. E. Sigel (Eds.), *Development of mental representation: Theories and applications* (pp. 61–86). Mahwah, NJ: Lawrence Erlbaum.
- Dickinson, J. J., & Poole, D. A. (2011). Mr. Science—Germ Detective! A novel paradigm for manipulating disclosure histories for research on children's eyewitness testimony. In *Paper presented at the 4th Conference of the International Investigative Interviewing Research Group (IIRG)*. Dundee, Scotland, June.
- Dickinson, J. J., Poole, D. A., & Bruck, M. (2005). Back to the future: A comment on the use of anatomical dolls in forensic interviews. *Journal of Forensic Psychology Practice, 5*, 63–74.
- Everson, M. D., & Boat, B. W. (1990). Sexualized doll play among young children: Implications for the use of anatomical dolls in sexual abuse evaluations. *Journal of the American Academy of Child and Adolescent Psychiatry, 29*, 736–742.
- Everson, M. D., & Boat, B. W. (1997). Anatomical dolls in child sexual abuse assessments: A call for forensically relevant research. *Applied Cognitive Psychology, 11*, S55–S74.
- Fox, R. E. (1991). Proceedings of the American Psychological Association, incorporated, for the year 1990: Minutes of the annual meeting of the Council of Representatives. *American Psychologist, 46*, 689–726.
- Goodman, G. S., & Aman, C. (1990). Children's use of anatomically detailed dolls to recount an event. *Child Development, 61*, 1859–1871.
- Gordon, B. N., Ornstein, P. A., Nida, R. E., Follmer, A., Crenshaw, M. C., & Albert, G. (1993). Does the use of dolls facilitate children's memory of visits to the doctor? *Applied Cognitive Psychology, 7*, 459–474.

- Hershkowitz, I., Fisher, S., Lamb, M. E., & Horowitz, D. (2007). Improving credibility assessment in child sexual abuse allegations: The role of the NICHHD investigative interview protocol. *Child Abuse & Neglect*, 31, 99–110.
- Hershkowitz, I., Horowitz, D., & Lamb, M. E. (2005). Trends in children's disclosure of abuse in Israel: A national study. *Child Abuse & Neglect*, 29, 1203–1214.
- Hewitt, S. K. (1999). *Assessing allegations of sexual abuse in preschool children: Understanding small voices*. Thousand Oaks, CA: Sage.
- Hlavka, H. R., Olinger, S. D., & Lashley, J. L. (2010). The use of anatomical dolls as a demonstration aid in child sexual abuse interviews: A study of forensic interviewers' perceptions. *Journal of Child Sexual Abuse*, 19, 519–553.
- Holliday, R. E. (2003). Reducing misinformation effects in children with cognitive interviews: Dissociating recollection and familiarity. *Child Development*, 74, 728–751.
- Holliday, R. E., & Albon, A. (2004). Minimising misinformation effects in young children with cognitive interview mnemonics. *Applied Cognitive Psychology*, 18, 263–281.
- Holmes, L. S. (2000). Using anatomical dolls in child sexual abuse forensic interviews. *Update*, 13 (8). <www.ndaa.org/publications/newsletters/update_volume_13_number_8_2000.html>.
- Jampole, L., & Weber, M. K. (1987). An assessment of the behavior of sexually abused and nonsexually abused children with anatomically correct dolls. *Child Abuse & Neglect*, 11, 187–192.
- Jones, D. P. H., & McQuiston, M. G. (1988). *Interviewing the sexually abused child*. London: Gaskell.
- Köhnken, G., Milne, R., Memon, A., & Bull, R. (1999). The cognitive interview: A meta-analysis. *Psychology, Crime & Law*, 5, 3–27.
- Koocher, G. P., Goodman, G. S., White, C. S., Friedrich, W. N., Sivan, A. B., & Reynolds, C. R. (1995). Psychological science and the use of anatomically detailed dolls in child sexual-abuse assessments. *Psychological Bulletin*, 118, 199–222.
- Ladd, N. E., London, K., & Bruck, M. (2011). *Children's developing understanding of dolls and drawings as symbols to map body touch*. In Paper presented at the meeting of the American Psychology-Law Society, Miami, FL, March.
- Lamb, M. E., Hershkowitz, I., Orbach, Y., & Esplin, P. W. (2008). *Tell me what happened: Structured investigative interviews of child victims and witnesses*. West Sussex, England: Wiley.
- Lamb, M. E., Hershkowitz, I., Sternberg, K. J., Boat, B., & Everson, M. D. (1996). Investigative interviews of alleged sexual abuse victims with and without anatomical dolls. *Child Abuse & Neglect*, 20, 1251–1259.
- Lilienfeld, S. O. (2007). Psychological treatments that cause harm. *Perspectives on Psychological Science*, 2, 53–70.
- Lindberg, M. A., Chapman, M. T., Samsoc, D., Thomas, S. W., & Lindberg, A. W. (2003). Comparisons of three different investigative interview techniques with young children. *Journal of Genetic Psychology*, 164, 5–28.
- London, K., Bruck, M., Ceci, S. J., & Shuman, D. W. (2007). Disclosure of child sexual abuse: A review of the contemporary empirical literature. In M.-E. Pipe, M. E. Lamb, Y. Orbach, & A.-C. Cederborg (Eds.), *Child sexual abuse: Disclosure, delay, and denial* (pp. 11–39). New York: Routledge.
- Morgan, M. (with Edwards, V.) (1995). *How to interview sexual abuse victims*. Thousand Oaks, CA: Sage.
- National Child Protection Training Center (2012). *ChildFirst™ states & countries*. <http://www.ncptc.org/index.asp?Type=B_BASIC&SEC={7CA574E4-313D-4231-8FD5-CE29969ED967}>.
- Otgaar, H., Horselenberg, R., van Kampen, R., & Lalleman, K. (2011). Clothed and unclothed human figure drawings lead to more correct and incorrect reports of touch in children. *Psychology, Crime, & Law*.
- Pipe, M.-E., & Salmon, K. (2009). Dolls, drawings, body diagrams, and other props: Role of props in investigative interviews. In K. Kuehne & M. Connell (Eds.), *The evaluation of child sexual abuse allegations: A comprehensive guide to assessment and testimony* (pp. 365–395). Hoboken, NJ: Wiley.
- Poole, D. A., & Dickinson, J. J. (in press). Investigative interviews of children. In R. Holliday & T. Marche (Eds.), *Child forensic psychology*. Houndmills, Basingstoke, Hampshire: Palgrave Macmillan.
- Poole, D. A., Bruck, M., & Pipe, M.-E. (2011). Forensic interviewing aids: Do props help children answer questions about touching? *Current Directions in Psychological Science*, 20, 11–15.
- Poole, D. A., & Dickinson, J. J. (2011). Evidence supporting restrictions on uses of body diagrams in forensic interviews. *Child Abuse & Neglect*, 35, 654–669.
- Poole, D. A., & Lindsay, D. S. (2001). Children's eyewitness reports after exposure to misinformation from parents. *Journal of Experimental Psychology: Applied*, 7, 27–50.
- Poole, D. A., & Lindsay, D. S. (2002). Reducing child witnesses' false reports of misinformation from parents. *Journal of Experimental Child Psychology*, 81, 117–140.
- Rogers, M. A. (2009). What are the phases of intervention research? *Access Academics and Research*. <<http://asha.org/academic/questions/PhasesClinicalResearch/>>, June.
- Rosenthal, R. (1995). State of New Jersey v. Margaret Kelly Michaels: An overview. *Psychology, Public Policy, and Law*, 1, 246–271.
- Russell, A. (2008). Out of the woods: A case for using anatomical diagrams in forensic interviews. *Update*, 21 (1), 2–6. <http://www.ndaa.org/publications/newsletters/update_index.html>.
- Salmon, K., Bidrose, S., & Pipe, M.-E. (1995). Providing props to facilitate children's event reports: A comparison of toys and real items. *Journal of Experimental Child Psychology*, 60, 174–194.
- Salmon, K., Pipe, M.-E., Malloy, A., & MacKay, K. (2012). Do non-verbal aids increase the effectiveness of 'best practice' verbal interview techniques? An experimental study. *Applied Cognitive Psychology*, 26, 370–380.
- Santtila, P., Korkman, J., & Sandnabba, N. K. (2004). Effects of interview phase, repeated interviewing, presence of a support person, and anatomically detailed dolls on child sexual abuse interviews. *Psychology, Crime & Law*, 10, 21–35.
- Saywitz, K. J., Goodman, G. S., Nicholas, E., & Moan, S. F. (1991). Children's memories of a physical examination involving genital touch: Implications for reports of child sexual abuse. *Journal of Consulting and Clinical Psychology*, 59, 682–691.
- Schacter, D. L., Kagan, J., & Leichtman, M. D. (1995). True and false memories in children and adults: A cognitive neuroscience perspective. *Psychology, Public Policy, and Law*, 1, 411–428.
- Siegel, M., & Share, D. L. (1990). Contamination sensitivity in young children. *Developmental Psychology*, 26, 455–458.
- Stevenson, R. J., Oaten, M. J., Case, T. I., Repacholi, B. M., & Wagland, P. (2010). Children's response to adult disgust elicitors: Development and acquisition. *Developmental Psychology*, 46, 165–177.

- Steward, M. S. & Steward, D. S. (with Farquhar, L., Myers, J. E. B., Reinhart, M., Welker, J., Joye, N., Driskill J., & Morgan, J.) (1996). Interviewing young children about body touch and handling. *Monograph of the Society for Research in Child Development*, 61 (4–5, Serial No. 248).
- Stuart, R. B., & Liliensfeld, S. O. (2007). The evidence missing from evidence-based practice. *American Psychologist*, 62, 615–616.
- Teoh, Y.-S., Yang, P.-J., Lamb, M. E., & Larsson, A. S. (2010). Do human figure diagrams help alleged victims of sexual abuse provide elaborate and clear accounts of physical contact with alleged perpetrators? *Applied Cognitive Psychology*, 24, 287–300.
- Thierry, K. L., Lamb, M. E., Orbach, Y., & Pipe, M.-E. (2005). Developmental differences in the function and use of anatomical dolls during interviews with alleged sexual abuse victims. *Journal of Consulting and Clinical Psychology*, 73, 1125–1134.
- Trachtenberg, J. (1939). *Jewish magic and superstition: A study in folk religion*. New York: Behrman's Jewish Book House.
- US Department of Health and Human Services, National Institutes of Health (2007). *Understanding clinical trials*. <<http://clinicaltrials.gov/ct2/info/understand>>.
- US Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth, and Families, Children's Bureau (2011). *Child maltreatment 2010*. <<http://www.acf.hhs.gov/programs/cb/pubs/cm10/index.htm>>.
- Uttal, D. H., Marzolk, D. P., Pierroutsakos, S. L., Smith, C. M., Troseth, G. L., Scudder, K. V., et al (1998). Seeing through symbols: The developmental of children's understanding of symbolic relations. In O. N. Saracho & B. Spodek (Eds.), *Multiple perspectives on play in early childhood education* (pp. 59–79). Albany, NY: State University of New York Press.
- Valenti-Hein, D. (2002). Use of visual tools to report sexual abuse for adults with mental retardation. *Mental Retardation*, 40, 297–303.
- Walker, A. G. (1999). *Handbook on questioning children: A linguistic perspective* (2nd ed.). Washington, DC: American Bar Association Center on Children and the Law.
- Walters, S., Holmes, L., Bauer, G., & Vieth, V. (2003). *Finding words: Half a nation by 2010*. Alexandria, VA: American Prosecutors Research Institute. <http://www.ndaa.org/pdf/finding_words_2003.pdf>.