

Supportive or Suggestive: Do Human Figure Drawings Help 5- to 7-Year-Old Children to Report Touch?

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The authors examined the accuracy of information elicited from seventy-nine 5- to 7-year-old children about a staged event that included physical contact—touching. Four to six weeks later, children’s recall for the event was assessed using an interview protocol analogous to those used in forensic investigations with children. Following the verbal interview, children were asked about touch when provided with human figure drawings (drawings only), following practice using the human figure drawings (drawings with instruction), or without drawings (verbal questions only). In this touch-inquiry phase of the interview, most children provided new information. Children in the drawings conditions reported more incorrect information than those in the verbal questions condition. Forensically relevant errors were infrequent and were rarely elaborated on. Although asking children to talk about innocuous touch may lead them to report unreliable information, especially when human figure drawings are used as aids, errors are reduced when open-ended prompts are used to elicit further information about reported touches.

Keywords: children, drawing, eyewitness testimony, forensic interviews, body maps

Many researchers have examined young children’s abilities to provide coherent and accurate accounts of their experiences. It is now well established that young children’s free-recall reports are generally highly accurate, but they are also likely to be brief, often providing scant information to those investigating their suspected victimization (for reviews, see Fivush, Peterson, & Schwarzmueller, 2002; Lamb, Orbach, Sternberg, Esplin, & Hershkowitz, 2002). This poses a dilemma for forensic investigators because specific information elicited using direct questions is less reliable

than information elicited using recall prompts (e.g., Bjorklund, Bjorklund, Brown, & Cassel, 1998; Greenstock & Pipe, 1996). As a result, interviewers often use other techniques, and we ask here whether human figure drawings help children provide complete reports of their experiences.

Although drawings are popular in clinical settings, few researchers have examined whether the amount and accuracy of information provided is affected when children are asked to indicate on human figure drawings what happened, where they have been touched, and by whom. However, several researchers have shown that, under ideal circumstances (e.g., when children are asked about true events using nonsuggestive questions), children provide more information verbally, without adverse effects on accuracy, when allowed to draw while talking (e.g., Butler, Gross, & Hayne, 1995; Gross & Hayne, 1998, 1999; Salmon, Roncolato, & Gleitzman, 2003; Wesson & Salmon, 2001). These positive effects may result from the generation of effective retrieval cues, reduction of the social demands of the interview, and/or the increased opportunities for retrieval and reporting while drawing. In other studies, however, drawing while talking has been associated with decreased accuracy, especially after a delay (Salmon & Pipe, 2000), and with no effects unless direct questions are asked (Butler et al., 1995). Moreover, drawing can also encourage children to report information about events that never occurred (e.g., Bruck, Melnyk, & Ceci, 2000; Gross, Hayne, & Poole, 2006; Strange, Garry, & Sutherland, 2003). Specific effects undoubtedly vary depending on

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the particular context, including the nature of the instructions, but little is known about optimal conditions for using child-initiated drawings in forensic contexts.

Presumably, interviewer-provided drawings, such as human figure diagrams, may help children to recount abusive experiences either because young children lack the necessary language skills or because the information is embarrassing and/or painful. Clinical and forensic psychologists interviewing allegedly abused children may thus use human figure drawings to identify body parts, aid the recall of specific information, or clarify verbal reports, in much the same way that anatomically detailed (AD) dolls have been used (Aldridge et al., 2004; Willcock, Morgan, & Hayne, 2006). The effects of AD dolls on the reliability of children's reports in forensic contexts remains controversial, in part because these dolls can be suggestive and have dual identity as both playthings and representations of the child or perpetrator (e.g., Thierry, Lamb, Orbach, & Pipe, 2005). Children's exploratory or fantasy play with such dolls may erroneously be interpreted as attempts to communicate about their experiences (Ceci & Bruck, 1995). DeLoache (2000, 2004) demonstrated that young children have difficulty appreciating the symbolic nature of models generally and that their ability to use dolls as representations of themselves emerges later than the ability to appreciate the representational nature of other scale models (DeLoache & Marzolf, 1995).

The symbolic nature of pictures is more easily appreciated by young children than that of dolls and scale models (DeLoache & Marzolf, 1992), but it is unclear how well children can use them to communicate their personal experiences. Although children as young as 2 or 3 years may appreciate the representational nature of pictures in search tasks (DeLoache, 2000, 2004), human figure drawings may pose additional challenges because the ability to use symbols of any kind varies with the context and nature of the task (DeLoache, 2004). In the forensic context, children are expected to indicate where they were touched, and with which parts of the alleged perpetrator's body. In addition, children are usually asked to report touches that occurred much earlier, introducing a memory component not hitherto examined experimentally. Thus, although 5- or 6-year-old children can use pictures as representations, we cannot assume that they will do so under conditions that mimic the forensic context (Salmon, 2001).

The few relevant studies of human figure drawings have produced mixed findings. According to Steward et al. (1996), 3- to 6-year-old children's free-recall reports of body touch during a pediatric examination were very accurate but incomplete. Of importance, when the children were directly questioned with dolls and drawings, they still failed to report many experienced touches, whereas reports of touches that had not occurred increased. Moreover, accuracy decreased as delays approached 6 months, with the drawings eventually eliciting some spontaneous but erroneous reports of genital touches.

In a field study, Aldridge et al. (2004) found that human figure drawings elicited additional information about alleged incidents of abuse. Following an exhaustive verbal interview, 4- to 13-year-old alleged victims were asked to show on a human figure drawing where previously reported touches had occurred and were then asked a series of direct questions about experienced touches. They were asked to elaborate about any reported touches. Many new forensically relevant details ($M = 86$) were reported during the human figure-drawing phase of the interviews; drawings appeared

to be particularly helpful for the youngest (4- to 7-year-old) children. Aldridge et al. cautioned that the elicited information may have been unreliable, however, because the specific questions that predominated are typically associated with lower accuracy, and the reliability of the information could not be evaluated directly.

In an analogue study, Willcock et al. (2006) reported that children's reports of innocuous touch during a scripted event tended to be inaccurate. In one experiment, 5- to 6-year-old children were interviewed 1 month after the event using a drawing of a clothed child (a "body map"). Ten of the 125 children reported no touches at all, and fewer than half of the touches were reported. Moreover, only half of the reported touches had actually occurred. Of particular concern, 11.3% of the children who reported touches indicated that they had been touched in the genital region, and 25.5% reported that their chest-breast area had been touched. In a second experiment, children were questioned using the body map immediately, 24 hr, or 1 month after the event. Reports of touch were again incomplete, although children interviewed immediately reported twice as many as those interviewed after delays. Children reported touches that did not occur even when interviewed immediately, and they incorrectly reported touches to the genital and breast-chest areas as often as children in the first experiment.

In sum, so few relevant studies have been conducted that this experiment was designed to address some of the most pressing questions that remain unanswered. First, we explored the accuracy of information about known touches by introducing human figure drawings after exhaustive verbal recall, with follow-up open-ended prompting and specific questions similar to those used by Aldridge et al. (2004). Second, we asked whether preinterview instruction and training enhanced children's ability to use drawings when reporting touches. The completeness and accuracy of children's verbal reports increases when children practice talking about the past (Sternberg et al., 1997) or are trained to report forensically relevant categories of information (Brown & Pipe, 2003a, 2003b; Saywitz & Snyder, 1996). Instructions and practice may similarly increase the reliability of information elicited using human figure drawings by enabling children to overcome possible metalinguistic deficits (Lamb & Brown, 2006), orienting them to the type of information required (i.e., what a touch was), and demonstrating how drawings can be used to communicate information about experienced touches.

Third, we included a control condition in which recall was assessed by simply asking children direct questions about possible touches. Studies demonstrating that children frequently report touches erroneously (e.g., Krackow & Lynn, 2003; Leippe, Romanczyk, & Manion, 1991; Saywitz, Goodman, Nicholas, & Moan, 1991; Steward et al., 1996) have not always included control conditions in which children are questioned in the absence of drawings. Verbal prompting for some categories of information (e.g., information about people, settings, actions, conversations, and affects), without training, can be just as effective as similar prompting after training (e.g., Brown & Pipe, 2003a), and this may be true with respect to reports of touching.

Fourth, we asked whether touches were as likely to be misreported as in Willcock et al.'s (2006) study when they were designed to be distinctive (although still innocuous) and not incidental (e.g., tickling the child's bare foot). Although these touches are not analogous to sexual abuse, they might nonetheless be more

memorable than “everyday” or incidental touches, such as touches to the shoulder while dressing. We also asked whether forensically troubling touches to the genital and breast area would be reported as often with unclothed human figure drawings typically used in clinical and forensic interviews rather than the clothed body maps used by Willcock et al. A drawing of an unclothed figure may allow greater precision when children indicate where they were touched. Children were also asked to elaborate on reports of touch.

Five- to 7-year-olds participated, individually, in a staged event involving touch. As children often appear relatively reticent, some professionals have recommended the use of human figure drawings or anatomical dolls when interviewing this age group about abuse (e.g., see Blahauvietz, 2005, for a description of the CornerHouse Rapport, Anatomy identification, Touch inquiry, Abuse scenario, and Closure Protocol; Everson & Boat, 1994, 2002), and we thus asked children to recall touch under one of three conditions. In two of these, children were shown human figure drawings, whereas in the third (control) condition, children were asked about touches without the drawings. Children in one of the drawing conditions first practiced (and received feedback) using the drawing to demonstrate touches, and we predicted that children in the two drawing conditions would report more information than children in the verbal questions condition if the drawings provided communicative support. Further, we predicted that practice with the drawings would be helpful in clarifying the nature of the task, thus overcoming any metalinguistic difficulties. With respect to our third (control) condition, our predictions were more exploratory because appropriate comparison groups have been absent in previous studies. The existing evidence suggests that verbal prompts as memory cues may be just as effective as pictorial cues (e.g., Brown & Pipe, 2003a), although human figure drawings may have an additional communicative function. However, drawings may distract children, increase implicit pressures to respond (even in the absence of memory), amplify task demands, or interfere with retrieval, leading to inflated error rates.

Method

Participants

Following approval from both the National Institutes of Health's and departmental research ethics committees, written consent was obtained from the parents of 79 children (35 boys, 44 girls) attending six local primary (i.e., elementary) schools. These schools were selected so that participants came from a range of social backgrounds. Permission to obtain data about individual children's ethnicity and social class was not obtained, but the authors' best estimate was that children were overwhelmingly of European or White British backgrounds (African Caribbean, 2; Asian, 6; Latin American, 1; White British or European, 70), and all spoke English as a first or joint language. Two schools were from predominantly lower socioeconomic groups (identified as “D” in the mosaic classification system), three were from middle and upper-middle socioeconomic groups (“C” classification), and one contained children from a range of social groups (“J” classification). The children were between the ages of 5 and 7 years (mean age = 73 months, range = 61–85 months, $SD = 6.7$ months). Verbal assent was obtained from each child prior to both the event and the interview. Each received a small novelty gift in thanks for his or her participation.

Procedure

Target event. Children participated, individually, in a staged event at their school that lasted approximately 15 min. A research assistant met the children in their class and took them to “meet the photographer” (a second researcher). The photographer invited the children to look at a book about pirates before dressing them in a pirate costume (boots, shirt, vest, earring, eye patch, hat, necktie, belt, sword) on top of their school clothes. Once the children were in costume, they sat on a small stepladder and were photographed. The photographer then dressed in a cowboy costume (denim shirt, necktie, hat, belt with holsters, and two toy guns), and two photographs were taken of the child with the photographer. A third research assistant then entered the room and briefly argued with the photographer about access to some equipment before agreeing to take spare equipment. Once costumes had been removed, the children were allowed to use the camera to take a picture of the photographer and then returned to class.

During the event, the photographer touched the children seven times: She (a) tickled their feet before putting the boots on, (b) wiggled their right ear before putting the earring on, (c) squeezed their wrist to check that the wristband was on correctly, (d) patted them on the left side of their waist to indicate where to hang the sword, (e) put her arm around their shoulder for the first photo together, (f) put her arm around their waist for the second photo together, and finally (g) patted them on the shoulder at the end of the event. At the conclusion of the event, the children returned to class accompanied by the research assistant.

Event interview. Children were interviewed at the university about their recall of the event after a delay of between 4 and 6 weeks by one of four research assistants, who had been trained to use the National Institute of Child Health and Human Development (NICHD) interview protocol. The presubstantive phase of the interview involved establishing the ground rules for the interview (including the importance of telling the truth, not guessing, saying “I don't know” when necessary, and correcting the interviewer when he or she made a mistake), establishing rapport using open-ended questions, and practicing the recall of a recent event using open-ended questions. Interviews about the target event began with a scripted prompt designed to orient the children to the photography session. Interviewers used open invitations (e.g., “Tell me more”) until children indicated they could recall no further information. Interviewers then encouraged the children to provide more details about aspects of the event they had already described, using their words to form cued invitations (e.g., “You mentioned there was a costume; tell me more about that costume”), and finally used focused prompts, as needed, to clarify conflicting or unclear information. When the interviewers felt that the children had described the event exhaustively, they took a short break and met with Deirdre A. Brown, who monitored all of the interviews, to discuss any further questioning that might be needed. All children (irrespective of condition) were interviewed in an identical manner up until this point; their reports of the event during the NICHD interview formed the basis for a separate study and are thus not discussed further here (with the exception of any information reported about touch). Immediately on completion of the NICHD event interview, the interviewers asked specifically about touches in the touch inquiry phase, in one of the three ways described below.

Touch Enquiry

Drawings only. Children in this condition were shown a human figure drawing and asked, "Did any part of the photographer's body touch any part of your body?" Children who responded affirmatively were asked to make a mark on the drawing where the photographer had touched them and were asked open-ended questions (e.g., "Tell me about that touching") to elicit episodic recall of the touch. When children indicated that they could recall no more information, they were asked six direct questions about touch to different parts of their bodies (face, chest, arms—hands, front genital region, bottom, legs—feet). Three of these areas had been touched (i.e., "yes" responses were correct), and three had not (i.e., "no" responses were correct). If children indicated that any of these regions had been touched, they were asked to mark the drawing and elaborate on their response, as with the open-ended questions. The procedure was then repeated using a new drawing, with the children asked whether they had touched any part of the photographer's body. "No" responses to all questions were correct because the children never touched the photographer.

Drawings with instruction. Children in this condition were given two drawings (the same human figure drawings used in the drawing-only condition): one representing them and one representing the interviewer. The interviewer touched the children on the elbow and then asked them to show on the drawing of themselves where the interviewer had touched them. If the children indicated incorrectly, the interviewer corrected them and demonstrated the correct response. The children were then asked to indicate on the drawing of the interviewer which part of her body had touched them. Feedback was again given. Just over half of the children (54%) required correction and additional explanation to complete the first trial successfully. After responding correctly on two trials (all children successfully completed the second trial), two additional blank drawings were presented to represent the child and the photographer. The interview regarding touch to the child was identical to that in the drawing-only condition. Two more blank drawings were then presented for the children to practice reporting touch that they initiated between themselves and the interviewer, and following two successful trials, children were asked to indicate on two new human figure drawings whether they had touched the photographer during the event, in response to open questions, before finally being asked the same direct questions, as in Condition 1.

Verbal questions. Children in this condition were not shown any drawings. As in the other two conditions, participants were first asked an introductory question about being touched by the photographer and encouraged to elaborate on any reports of touch in response to open questions. They were then asked six direct questions that paralleled those asked of children in the other conditions. Each question named the location of possible touch (e.g., "Did the photographer touch your feet?"); if children answered affirmatively, they were asked follow-up open questions to elicit further details, following which the next question was asked. Children who responded negatively to the first question were asked a second, more specific question referring to the action associated with the touching (e.g., "Did the photographer tickle your feet?"), in case they interpreted the word *touch* narrowly or had encoded the contact more specifically as a tickle (e.g.) rather than as a touch.

Coding

Coding procedure. After interviews were transcribed, we coded any unique information reported verbally or nonverbally (e.g., if a child demonstrated touch or pointed on his or her body) that was not previously mentioned in the event interview. Units of meaningful information were categorized as correct, incorrect, forensic, subjective—ambiguous, or unverifiable. Forensically relevant information was defined as information that might appear significant or worthy of follow-up in a forensic context (e.g., "She pulled my trousers up," "She kissed me and stroked me"). Subjective—ambiguous information referred to subjective opinions on the part of the child (e.g., "It was fun," "It felt nice") or information that could not be coded for accuracy (e.g., "It went in a round thing"). Unverifiable information could not be checked (e.g., because it referred to something invisible or inaudible).

The coders also noted whether the information involved meaningful episodic recall or simply specified the location of touch without any further elaboration. Information was scored as "touch-only" when there was no description of how or when the touch occurred (e.g., "She took my hand with her hand"). Information was scored as "touch + elaboration" if it included episodic—contextual details about how the touch occurred (e.g., "She touched my face . . . when she was putting the eye patch on"), or any additional action-based information associated with the event (e.g., "and a lady came in and wanted the stuff"). Information was scored as "elaborations in response to direct questions" if it was provided in response to a specific question. Information that elaborated on a "yes" response to a specific question, as well as any additional information about another touch (e.g., "She also touched my chest. . ."), was scored in this category.

Reliability. A second coder, blind to the research hypotheses, coded 20% of the transcripts. Interrater reliability (for the touch inquiry), calculated using kappa, was .86.

Results

Only 4 of the 79 children reported being touched during the event interview that preceded the touch inquiry. Two of the reports of touch were incorrect, and none of the 79 children mentioned any of the target touches. One child (in the drawings-only condition) incorrectly reported, "A builder came in and hit me on the head with his hammer." A 2nd child (in the drawing-with-instruction condition) incorrectly reported, "I hugged them both" (at the end of the event). A 3rd (in the verbal questions condition) correctly reported, "The lady [taking her to meet the photographer] took me and she holded my hand nicely." The 4th child (in the drawing-with-instruction condition) similarly reported, correctly, "She were holding my hand." None of these touches reported during the event interview were repeated during the touch inquiry phase. The following analyses assessed information reported during the touch inquiry only.

Preliminary analyses of the data obtained during the touch inquiry conducted using analyses of variance (ANOVAs) revealed no main effect of interviewer, school, or gender, and data were therefore collapsed across these variables for further analyses. Measures of the total amount of information, the number of correct and incorrect units, and the accuracy of information reported about touches to themselves or to the photographer, separately for open

and direct questions, were compared across conditions. Total information was calculated as the sum of all information reported verbally or nonverbally during the touch inquiry (i.e., touch only, touch + elaboration, elaborations in response to direct questions) collapsed across the codes of correct, incorrect, forensic, subjective-ambiguous, and unverifiable. Likewise, total correct information was the sum of all correct units (i.e., touch only, touch + elaboration, elaborations in response to direct questions) reported about touch collapsed across the coding categories, and total incorrect information was the sum of all incorrect units. Accuracy was calculated as total correct information/total information reported. Scores on several measures had high levels of skewness and/or kurtosis and were thus log transformed (as indicated throughout) before analysis (raw means and standard deviations are presented in Table 1).

Where measures were proportional, they were subjected to arcsine transformations. Effect sizes (η_p^2 ; V for chi-square analyses) are reported when tests were significant; a measure of observed power is reported when tests were not significant.

Children's Responsiveness to Open Questions About Touch

As reported by Aldridge et al. (2004), the majority of children reported new information when the drawings were presented, even though this followed exhaustive verbal interviews. Children who were simply asked about touch, without the drawings, were also able to report new information during the touch inquiry. Overall, 61% of children reported new information about experienced touches in response to open questions in the touch inquiry. Children in both the drawing-with-instruction (73%) and verbal questions (67%) conditions were nonsignificantly more likely to provide at least some new information than were children in the drawing-only condition (42%), $\chi^2(2, N = 79) = 5.76, p = .056$,

$V = .27$. More than half (58%) of the children asked to indicate on the drawing where they had been touched, in the absence of specific training and instructions, failed to report any touches, although they had been touched seven times.

Reports of Touch to the Child

Subsequent analyses explored the total amount and types of information about touch (see Table 1) provided in response to open questions during the touch inquiry by the 48 children who did report touch (drawing-only condition, $n = 11$; drawing with instruction, $n = 19$; verbal questions, $n = 18$).

Univariate tests of the total information (log transformed) reported revealed no significant effect for condition, $F(2, 45) = 1.72$, observed power = .34. Univariate tests of the mean amount of correct information (log transformed) reported revealed no significant condition differences, $F(2, 45) = 0.31$, observed power = .10. The mean amount of incorrect information (log transformed) was also explored. Univariate analysis revealed a significant difference in the amount of incorrect information reported by children in the three groups, $F(2, 45) = 3.45, p < .05$, $\eta_p^2 = .13$. Tukey tests showed that children in the drawing-with-instruction group reported more incorrect information than children in the verbal questions group. Children in the drawing-only group reported as many incorrect touches as those who had instruction, but because of variability in their responses, they did not differ significantly from those in the verbal recall group. The vast majority of errors were consistent with the activities that the children took part in (e.g., touch in the context of putting on costumes, greeting the photographer, walking to the experiment).

Mean amounts of subjective or ambiguous information and unverifiable information were not analyzed separately because the mean scores were so low. Analyses of forensically relevant information are presented in the following. The overall accuracy of the

Table 1

Mean Numbers of Details and 95% Confidence Intervals (CIs) Reported in Each Category During Open-Ended Questioning About Touch

Variable	Treatment condition											
	Drawing only			Drawing + instruction			Verbal questions			Overall		
	<i>M</i>	<i>SD</i>	CI	<i>M</i>	<i>SD</i>	CI	<i>M</i>	<i>SD</i>	CI	<i>M</i>	<i>SD</i>	
Touch to child ($n = 48$)												
Correct	4.36	3.32	2.13, 6.60	3.37	3.39	1.74, 5.00	3.94	4.43	1.74, 6.15	3.81	3.74	
Incorrect	8.73	9.62	2.26, 15.19	7.47	5.07	5.03, 9.92	4.33	5.74	1.48, 7.19	6.58	6.69	
Forensic	0.55	1.04	-0.15, 1.24	0.32	0.82	-0.08, -0.71	0.22	0.67	-0.10, 0.54	0.33	0.81	
Unverifiable	0.18	0.60	-0.22, 0.59	0.00	0.00	0	0.11	0.32	-0.05, -0.27	0.08	0.35	
Subjective-ambiguous	0.55	1.04	-0.15, 1.24	0.47	1.02	0.02, 0.97	0.44	0.86	0.02, 0.87	0.48	0.95	
Total information	13.82	9.84	7.21, 20.43	11.32	6.73	8.07, 14.56	8.83	6.75	5.48, 12.19	10.96	7.62	
Touch to photographer ($n = 28$)												
Correct	0.50	0.85	0.11, 1.11	1.00	1.80	-0.34, 2.14	0.14	0.38	-0.17, 0.42	0.58	1.21	
Incorrect	11.00	12.02	2.40, 19.60	7.30	4.69	3.94, 10.66	5.50	4.11	2.07, 8.93	8.11	8.08	
Forensic	0.40	0.70	-0.10, 0.90	1.56	3.24	-0.82, 3.62	0.43	1.13	-0.51, 1.26	0.81	2.04	
Unverifiable	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Subjective-ambiguous	0.40	0.97	-0.29, 1.09	0.89	1.83	-0.45, 2.05	0.00	0.00	0.00	0.46	1.24	
Total information	11.90	12.93	2.65, 21.15	9.00	6.68	4.22, 13.78	5.63	4.21	2.11, 9.14	9.07	9.04	

information about experienced touches (of child) reported in response to open questions was then expressed as a proportion of the information reported (correct information/total information reported). A univariate ANOVA revealed no significant difference by condition, $F(2, 45) = 1.73$, observed power = .34 (see Table 2).

Reports of Touch to the Photographer

The numbers of children reporting touch to the photographer did not differ by condition, $\chi^2(2, N = 79) = 0.61$; drawing only = 38%, drawing with instruction = 38%, verbal questions = 30%; observed power = .08. Children who did not report touching the photographer in response to open questions were excluded from analyses, resulting in a sample of only 28 (drawing-only, $n = 10$; drawing with instruction, $n = 10$; verbal questions, $n = 8$). Univariate analyses revealed no significant effects for condition with respect to the total amount of information (log transformed), $F(2, 25) = 1.43$, observed power = .28, nor the amount of incorrect information reported (log transformed), $F(2, 25) = 0.76$, observed power = .16 (see Table 1 for means and standard deviations). Mean numbers of correct, subjective-ambiguous, or unverifiable information were not analyzed separately because the mean scores were low. Analyses of forensically relevant information are presented below. There were no significant condition differences in the accuracy of information reported about touches to the photographer, $F(2, 28) = 0.58$, observed power = .14.

Children’s Responses to Direct Questions About Touch

Accuracy. Analyses of responses to the direct (“yes”/“no”) questions that followed the open questions about touch involved all participants. An ANOVA revealed that the accuracy of the children’s responses to direct questions about their own bodies varied by condition, $F(2, 76) = 4.22, p < .02, \eta_p^2 = .10$ (see Table 2). Tukey tests showed that children in both the verbal questions ($M = .58, SD = .11$) and drawing-with-instruction ($M = .58, SD = .15$) conditions were more accurate than children in the drawing-only condition ($M = .50, SD = .07$) but did not differ from each other. Univariate analysis of the accuracy of children’s

responses to the direct questions about touches to the photographer showed that the accuracy of children’s responses did not vary significantly by condition, $F(2, 74) = 1.43$, observed power = .30 (see Table 2).

Errors. The number of children making any errors of commission (incorrect “yes” responses to direct questions about touch to different body parts) and omission (incorrect “no” responses) were compared across conditions for touch to the children’s bodies and for errors of commission for touch to the photographer using chi-square analyses. There were no significant condition differences for numbers of children in each condition making errors of commission, $\chi^2(2, N = 79) = 3.55$; power = .25 (drawing only = 96%; drawing with instruction = 81%; verbal questions = 96%), or omission, $\chi^2(2, N = 79) = 5.16$; power = .35 (drawing only = 69%; drawing with instruction = 58%; verbal questions = 81%), regarding touch to their own bodies. As the photographer was never touched, errors of omission were not possible, and the number of children making errors of commission did not vary by condition, $\chi^2(2, N = 79) = 2.86$; power = .21 (drawing only = 23%; drawing with instruction = 35%; verbal questions = 15%). A mixed ANOVA, with condition as the between-subjects factor and type of error as the within-subjects factor, showed two main effects. Errors of omission ($M = .38, SD = .17$) were much more frequent than errors of commission ($M = .08, SD = .14$), $F(1, 76) = 73.39, p < .0001, \eta_p^2 = .49$. A main effect for condition, $F(2, 76) = 4.21, p < .05, \eta_p^2 = .10$, with Tukey tests, showed that children in the drawing-only condition made more errors overall ($M = .25, SD = .16$) than children in the other two conditions (drawing with instruction, $M = .21, SD = .18$; verbal questions, $M = .21, SD = .12$). The proportion of commission errors about touch to the photographer did not vary significantly by condition, $F(2, 74) = 0.51$, observed power = .08.

Elaborative Versus Nonelaborative Reports of Touch

A chi-square analysis revealed that significantly more children in the drawing-only (55%) condition than in the drawing-with-instruction (26%) and verbal questions (11%) conditions reported information about touches of either themselves or the photogra-

Table 2
Mean Accuracy and 95% Confidence Intervals (CIs) of Information Reported About Touch to Child and to Photographer in Open and Direct Question Phases of the Interview

Variable	Treatment condition											
	Drawing only			Drawing + instruction			Verbal questions			Total		
	M	SD	CI	M	SD	CI	M	SD	CI	M	SD	
Touch to child												
Open questions ($n = 48$)	.39	.32	.18, .61	.31	.31	.16, .46	.51	.39	.31, .70	.38	.33	
Direct questions ($n = 79$)	.50	.07 _a	.48, .54	.58	.15 _b	.52, .64	.58	.11 _b	.54, .62	.55	.12	
Touch to photographer												
Open questions ($n = 28$)	.13	.31	.10, .35	.12	.24	-.05, .29	.01	.04	-.02, .05	.09	.24	
Direct questions ($n = 77$)	.91	.15	.85, .98	.89	.16	.82, .95	.94	.16	.88, 1.01	.92	.16	

Note. Means in the same row that do not share subscripts differ significantly at $p < .05$.

pher without elaboration, $\chi^2(2, N = 48) = 6.53, p < .05, V = .37$. There were no condition differences in the numbers of children reporting elaborative information about touch, $\chi^2(2, N = 48) = .79, power = .12$.

Forensically Relevant Errors

Several children (17% of all children reporting touch) made reports of touch that might have aroused concern on the part of forensic interviewers. The numbers did not vary significantly by condition, $\chi^2(2, N = 48) = 2.64$ (drawing only = 36%, drawing with instruction = 21%, verbal questions = 11%; power = .30), although it is noteworthy that forensically relevant touches were more frequently reported by children in the drawing-only condition, and least frequently reported when only verbal questions were asked.

Following Willcock et al. (2006), we examined the frequency with which children reported touch to the genital, breast–chest, and buttocks areas. Genital touches were defined as those within a square centimeter of the genital region on the human figure drawings, touches to the breast were defined as those within a 1.5-cm radius around each nipple, excluding areas that were clearly on the arm or shoulder, and touches to the buttocks were defined as those within a 1.5-cm square over the buttocks (Willcock et al., 2006, did not include the back view in the body diagram and did not code touches to the buttocks).

Table 3 shows the numbers of touches of the child and photographer to each region, with the numbers of children reporting at least one such touch shown in parentheses. The table shows that relatively few touches to the genital area, and slightly more to the breast–chest area, were reported, but these numbers are still noteworthy because all such reports were erroneous.

We also examined whether these touches were elaborated on and whether this confirmed their forensic relevance. Three of the eight reported touches to the child's breast–chest area were elaborated on. Two were described in an innocuous way (e.g., clarification that the touch was actually on the shoulder). In one case, however, the elaboration further specified that the child's "nipple" was touched. Eight of the nine reported touches to the child's buttocks were elaborated on; three were confirmed as forensically relevant (e.g., "She got a photo of me and then she touched my bum with her hand"). Only one of the two reported touches of a child's genitals was elaborated on, and it made clear that the touch was innocuous.

None of the five reported touches to the photographer's breast–chest area were elaborated on. Three of the four reported touches of the photographer's genitals were described further; all were classified as innocuous contact to the leg area or stomach during the child's elaboration. Last, one of the seven reported touches of the photographer's bottom was clarified on elaboration as innocuous (a touch of thighs when bumping into the photographer).

Discussion

This study explored children's ability to accurately report touches that occurred several weeks earlier during a novel experience with an unfamiliar adult. During an exhaustive verbal interview preceding the touch inquiry, very few children reported any of the touches, but when asked open-ended (recall) questions about touch and specific questions requiring "yes"–"no" answers, many children (61%) reported some information. Aldridge et al. (2004) also found that human figure drawings introduced after an exhaustive verbal interview led alleged abuse victims to report a lot of new information. In the present study, the amount of new information produced during the touch inquiry was relatively small (an average of 11 details), possibly because the event was brief and a limited amount of touching had occurred. Whereas Aldridge et al. could not assess accuracy, we were able to determine that, across all conditions, more than half of the information reported in response to open questions about touch was inaccurate, although it tended to be plausible in the context of the event. Because touching is often a central component of sexual abuse, the inaccuracy of children's accounts of experienced touches should be of great interest to forensic interviewers as well as clinicians working with suspected victims.

Why did the children report touch so poorly? Two possible explanations stand out: the length of delay and the nature of the touches. First, the delay between the event and the touch inquiry was 6 weeks in order to match the kinds of time periods over which children would be asked for such details in forensic contexts. Over even shorter delays, the accuracy of children's reports is greater (Steward et al., 1996; Willcock et al., 2006), but it is clearly important that realistic time frames be studied if experimental findings are to be generalized to the real world. Second, the touches may not have been sufficiently salient to be encoded and stored. In analogue studies, touches must, of course, be innocuous, but we attempted to make them distinctive and unusual. The large number of incorrect rejections of the questions specifically assess-

Table 3
Total Number of Touches Reported on Drawings for Breast, Genital, and Buttocks Regions

Region of touch	Treatment condition				Total
	Drawing only		Drawing + instruction		
	Child	Photographer	Child	Photographer	
Breast	4 (3)	3 (2)	4 (3)	2 (1)	13 (9)
Genital	1 (1)	4 (2)	1 (1)	0 (0)	6 (4)
Buttocks	3 (3)	3 (3)	6 (4)	4 (3)	16 (13)
Total	8 (7)	10 (7)	11 (8)	6 (4)	35 (26)

Note. Numbers of children making at least one report of touch to each area are in parentheses.

ing recall of these experiences suggests they were not memorable. Steward et al. (1996) similarly found that children's reports of touch during a pediatric exam were poor and that different types were not all equally memorable, with children recalling instances of genital and anal touch more frequently and accurately than innocuous contact. However, even genital and anal touches may be poorly reported (Saywitz et al., 1991); not all abusive touches are painful, embarrassing, or otherwise salient (Ceci, Powell, & Principe, 2002); and young children, in particular, may not recognize the significance of abusive acts (Cederborg, Lamb, & Laurell, in press). If children need to report touches that were less salient, then techniques that help them to recall apparently innocuous (and not particularly memorable) contact would be very useful.

Do human figure drawings therefore help children to report touch, as is often assumed in clinical and forensic contexts, and does practice using the drawings further increase the accuracy of the information they help elicit? Drawings accompanied by open questions about touch did not affect the amount or accuracy of the information reported. On the contrary, drawings with or without instructions in their use both led to substantial increases in reports of touches that had not occurred (although not of forensically relevant touches, as discussed below). Open-ended questions may have elicited erroneous responses because children believed that they were expected to respond but did not remember the touching that had occurred (Ceci & Bruck, 1993), and the drawings may have exacerbated these demand characteristics.

The direct questions, by contrast, assessed children's recognition memories of touching that did and did not occur. As in previous studies, erroneous responses to the direct questions predominantly reflected false denials of experienced touches rather than false reports of touches that did not occur (e.g., Krackow & Lynn, 2003; Leippe et al., 1991; Saywitz et al., 1991; Steward et al., 1996). Children who were asked direct questions with the drawings present but without prior practice using them were less accurate than those who had had practice or were questioned verbally. Although the differences in accuracy were not large (58% vs. 50%), they suggest that, when drawings are used, practice using them should be provided even when children are clearly old enough to understand their representational nature.

In the present study, however, the instructions and practice had less impact than suggested by studies showing that brief opportunities for practice improve accuracy (e.g., Brown & Pipe, 2003b). However, none of the training studies involved reports of touch, and our instructions may not have adequately covered the types of touches (those occurring much earlier as part of wider activities) that the children were expected to report. The practice trials did not involve memories of distant events, and children often fail to generalize newly learned strategies from training to new tasks (Borkowski, Milstead, & Hale, 1988; Kurtz & Borkowski, 1984), particularly without practice over different sessions, settings, and tasks (Pressley, Forrest-Pressley, & Elliott-Faust, 1985). Some children may thus have had difficulty transferring what they had learned during the practice to talking about the staged event.

In contrast to the results typically obtained in studies of interviewing (reviewed by Fivush et al., 2002; Lamb et al., 2002), responses to open questions were more inaccurate (mean accuracy was 38%) than responses to direct questions (mean accuracy was 55%) across all conditions. Some researchers (e.g., Gee & Pipe, 1995; Greenstock & Pipe, 1996) have similarly found that children

may respond less accurately when required to generate a response (free recall) to a very specific question about something they remember poorly than when given options. In addition, the inaccuracy of responses to open questions includes many commission errors and is based only on those children reporting at least one touch. Another 31 of the 79 children failed to report any touches and thus likewise made no commission errors, which are of greatest concern in forensic contexts.

Willcock et al. (2006) reported many erroneous reports of touch to the genital (10%) and chest (25%) areas compared with 4% and 17%, respectively, of the children who reported any touches in the present study. One explanation for these higher rates may be that Willcock et al. used a clothed body map, on which it was more difficult to specify where touches occurred. Furthermore, children in the present study who reported touches were asked open-ended questions to elicit further elaboration. Their responses permitted quite different conclusions about the risks of providing children with human figure drawings when asking them about touch. It is interesting to note that children provided with drawings (without instruction) were least likely to elaborate on their reports of touch (45% of reported touches elaborated), whereas children asked verbal questions only were most likely (89% of reported touches elaborated) to provide such elaborations. Only 1 child provided elaboration consistent with a forensically relevant touch to the genital or breast-chest areas. Indeed, of the 2 children who indicated genital touch, 1 provided no detail, and the other clarified that the contact was innocuous. Of the 3 children who provided any elaborative detail about touch to the breast-chest area, 2 made it clear that the contact was innocuous (e.g., to the shoulder). Thus, taking account of elaborative information, only 2% of the sample (1 child) reporting touch elaborated in a way that maintained concern, although 4% of the children elaborated on reported touches to the buttocks (which were not assessed in the Willcock et al., 2006, study). Clearly, when children are asked about touches, with or without drawings, their responses must be probed using open-ended questioning so that the nature of the contact can be clarified. Without verbal elaboration, reports of touches using a body map may be inaccurate at least in part because children locate them imprecisely. At this age, children's own drawings are not realistic, and young children are generally not concerned with representational accuracy (Winner, 1985). They may thus not appreciate the importance of precision, even if capable under ideal conditions.

Of course, although rare, any erroneous reports that would have triggered suspicion in forensic contexts warrant concern. Erroneous reports of forensically relevant touches typically involved those that could have occurred, for example, while the photographer was putting costumes on the children, and thus appeared highly credible. Forensic interviewers and clinicians worried that their clients may have been abused should be cautious not to elicit, inadvertently, erroneous information consistent with scripts concerning the behavioral context being described.

Clinicians and interviewers should also note that touches, at least innocuous (if not routine) ones, are not readily and reliably reported by children in this age range. Indeed, about half of the children failed to report being touched when asked open-ended questions and did not report them even when directly questioned about specific touches. Errors of omission were far more common than errors of commission, and this is clearly problematic for

interviewers motivated to find out whether inappropriate touches occurred. The findings suggest that alternative (and currently unknown) techniques might be necessary to elicit such information.

Our findings also highlight the risks inherent in interpreting nonverbal responses, or simple verbal responses, without clarification. Several children indicated, either nonverbally or with a simple "yes"—"no" answer, that they had been touched in a way that could easily have been interpreted as inappropriate. Fortunately, requests for elaboration usually (though not always) elicited information that dispelled such concerns.

Of course, the study had several limitations that diminish the conclusiveness of the findings. First, ethical constraints made it necessary to study only innocuous touches, and therefore ones perhaps less memorable than the potentially distressing or traumatic touches explored in forensic and clinical interviews. However, studies involving painful medical procedures and genital examinations indicate that children seriously underreport even these kinds of touches, suggesting that our findings may not be anomalous. Of course, it is possible that the human figure drawings are more helpful in the context of reporting some kinds of touches than others or, indeed, that they be more helpful when used in interviews with older or younger children than those in the present study. Nevertheless, analogue studies in which the children's experiences are known are a necessary complement to field studies in which interviewers do not know what contact, if any, occurred. Indeed, it is the convergence of findings across field and analogue studies that will provide the strongest basis for recommendations as to practice in the field. Second, the conclusiveness of our findings was also affected by the small numbers of children studied. Many of the statistical tests involved only those children who reported touch, and the resulting small sample size ($n = 28$) reduced the likelihood that observed differences would be statistically significant. Third, our conclusions may only be relevant to interviews in which human figure drawings were used in this specific way—at the end of an exhaustive interview, albeit one in which most children had not previously reported being touched. We do not know whether the drawings might have been more useful, and less error inducing, if they had been introduced at the beginning of an interview, for example, to name body parts or to clarify verbal reports of touches as recommended by several professional and academic sources (e.g., American Professional Society on the Abuse of Children, 1990, 1997; Home Office, 2002; Poole & Lamb, 1998).

In sum, although our results suggest that it is risky to ask children to talk about touching that they have not reported "spontaneously" or in response to very nondirective cuing, they also clarify the risks associated with the use of human figure drawings. Direct questions about experienced touches elicited new information from most children, but the questions appeared to have a suggestive rather than supportive influence because children generally did not report the touches that had occurred, and they reported many that had not occurred. In the present study, the drawings themselves did not appear to be inherently suggestive, even though the figures were unclothed; they elicited few forensically relevant details, no more than when children were asked about touch without the drawings. Moreover, requests for clarification and elaboration typically resulted in either no response or information making it clear that the touches were innocuous.

Nonetheless, the human figure drawings did not elicit more information than the verbal questions, and they were not useful when introduced at the end of an otherwise exhaustive forensic interview to elicit information about touches that had not been reported spontaneously. The benefits of any forensic interview technique—helping children report more information—must be weighed against the disadvantages—the risk of eliciting inaccurate but forensically significant information. The current study suggests that, when introduced at the end of an interview to elicit new information, drawings and questions about touch at best do not substantially improve recall and at worst may elicit inaccurate information.

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