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Truth is at hand: How gesture adds information during investigative interviews

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Abstract

The accuracy of information obtained in forensic interviews is critically important to credibility in our legal system. Research has shown that the way interviewers frame questions influences the accuracy of witnesses' reports. A separate body of research has shown that speakers spontaneously gesture when they talk, and that these gestures can express information not found anywhere in the speaker's talk. This study of children interviewed about an event that they witnessed joins these two literatures and demonstrates that (1) interviewers' gestures serve as a source of information and, at times, misinformation that can lead witnesses to report incorrect details; (2) the gestures witnesses spontaneously produce during interviews convey substantive information that is often not conveyed anywhere in their speech, and thus would not appear in written transcripts of the proceedings. These findings underscore the need to attend to and document gestures produced in investigative interviews, particularly interviews conducted with children.

Consider the following interchange between an interviewer and child.

(a) Interviewer: "What was he wearing?"

Child: "A music hat."

An investigator examining a written transcript of this exchange would assume that the new information, the hat, was the child's idea. Now consider a second interchange.

(b) Interviewer: "What was he wearing?"

Child: (silence)

Interviewer: "Was he wearing glasses?"

This time the investigator would assume that the new information, the glasses, was the interviewer's idea.

Written transcripts are essential tools in our legal system, but they may be misleading. The two transcripts above misrepresent what actually happened during these interviews. In (a), the interviewer gestured *hat* (tipping fist to forehead as though donning a hat) while asking her question. In doing so, she silently encouraged the child to mention a hat when, in fact, no hat was worn. In (b), the child gestured *glasses* (two O-shaped hands held at eyes) during the silence. From the transcript, the glasses appeared to be the interviewer's idea when they were actually the child's. As is clear from these examples, considering only speech in an investigative interview may give an incomplete picture of the exchange.

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We explore here two ways in which gesture can have an impact, negative and positive, on investigative interviews: (1) An interviewer's gestures can convey information that the interviewer does not intend to express but that influences the witness nonetheless. (2) A witness' gestures can convey information that the witness knows but does not express in speech, thereby giving the interviewer a more complete picture of what actually happened.

Conducting forensic interviews with children is a sensitive process because children are prone to suggestive influences and are often not verbally fluent (Bruck & Ceci, 1999; Ceci & Bruck, 1993; Poole & Lindsay, 2002). Interviewers are cautioned against asking leading questions precisely because questions of this type encourage witnesses to report incorrect details (Poole & Lamb, 1998). However, even when told to avoid suggestive questions, interviewers often use them (Poole & Lamb, 1998) and have difficulty suppressing preconceived notions (Ceci & Bruck, 1993).

Interviewers are never told to monitor gesture. But gesture is ubiquitous in interpersonal communication (Kendon 1980; McNeill, 1992), appearing along with talk even in congenitally blind individuals who have never seen anyone gesture (Iverson & Goldin-Meadow, 1998). And gesture is not just hand waving – it can convey substantive information not found in the speech it accompanies (Goldin-Meadow, 2003; Goldin-Meadow, Alibali, & Church, 1993). In some situations, as in example (b), gesture bears the entire communicative burden.

Moreover, even though gesture is pervasive in communication, speakers and listeners are typically not consciously aware of gesture. Nevertheless, listeners incorporate information conveyed in a speaker's gestures into their understanding of the speaker's message (Alibali, Flevares, & Goldin-Meadow, 1997; Goldin-Meadow & Sandhofer, 1999; Goldin-Meadow, Wein, & Chang, 1992; Kelly & Church, 1998; McNeill, Cassell, & McCullough, 1994; Thompson & Massaro, 1994). In addition, when speech is accompanied by iconic gestures, memory for verbal content is facilitated (Church, Garber, & Rogalski, 2007; Feyereisen, 2006), so an interlocutor is more likely to remember parts of an exchange that are accompanied by gesture than those that are presented in speech alone.

The need to attain as complete and accurate an account of an event as possible in an investigative interview led us to ask whether gesture might be playing a role in the interview process. Can an interviewer's gesture influence what children report about a witnessed event? Can paying explicit attention to children's gesture provide an additional window onto their memory for an event? To address these questions, we explored the role that gestures play in investigative interviews with children, as both a source of suggestibility and a way for children to communicate ideas more completely.

Method

Participants

We conducted interviews with 39 children (22 female), ages 5;0–6;11, $M=6;01$ (years; months). Children were recruited from preschool or kindergarten classes and received stickers for their participation. Preschoolers and kindergarteners were studied because prior research had shown that children ages 3–9 are particularly susceptible to suggestive questioning in investigative interviews (Poole & Lamb, 1998); 5-6-year-olds are the middle of this range.

Procedure

Children watched a live demonstration by a professional musician in their classrooms. The musician followed the same script for all seven classrooms, which involved playing several

instruments, wearing particular items of clothing, and performing actions not directly related to the demonstration (e.g., knocking over a water bottle with his foot). The demonstrations were videotaped for later verification that the scripted events had occurred; the same musician performed for each classroom.

To simulate the repeated interviews that child-witnesses typically experience, we had children participate in four scripted interviews and one open-ended interview over a 10–12 week period. These five interviews occurred every 2 weeks, with the first interview occurring approximately 2 weeks after the musician's classroom visit. Each child was asked the same 24 questions during each scripted interview. The questions were counter-balanced across three dimensions – *occurring* versus *non-occurring* details; *specific* questions (designed to elicit a particular response) versus *open-ended* questions (designed to elicit a range of responses); and questions asked in *speech-alone* versus *speech-plus-gesture* – for a total of eight question types (Fig. 1). Children received three questions of each type (i.e., 24 questions). The gestures in a *specific* question reinforced or elaborated on the information conveyed in speech. The gestures in an *open-ended* question added new information to the information conveyed in speech; if processed by the child-witness, the additional information conveyed in gesture effectively turns an open-ended question into a specific question. For the non-occurring events, neither the specific event conveyed in speech nor the detail conveyed in gesture had actually taken place.

Two scripts were used, counter-balanced so that a question asked in speech-alone in one script was asked in speech-plus-gesture in the other. Children were randomly assigned to one of the two scripts, which they heard throughout the four interviews. A fifth, open-ended interview, in which only general questions were asked (e.g., “Tell me everything you remember about the musician's visit”), assessed ultimate memory of the visit. The same interviewer, who was not present at the demonstrations, conducted all interviews. The interviews were videotaped and transcribed for speech and gesture, using an established coding system (McNeill, 1992). Children's responses were coded as affirming when they included the specific target the question was designed to elicit. For example, a response to either the speech-alone or speech-plus-gesture open-ended question about the musician wearing a hat, an event that did not happen, was counted as affirming only if it referenced a hat. Responses to the speech-alone question thus provided a baseline for how likely children were to mention a hat when nothing in the question hinted at this particular response. Statistical analyses were conducted with $\alpha=.05$.

Results

No differences were found in the pattern of responses children gave to the eight question types (cf., Fig. 1) across either the two script versions or the four scripted interview sessions. Data were therefore collapsed across scripts and interview sessions. We found a main effect of *event* type (more affirming responses for questions about occurring than nonoccurring events, $M=1.50[SD=0.36]$ vs. $M=0.77[SD=0.41]$), $F(1,38)=96.71$, $p<.001$, $\eta^2_{\text{partial}}=0.72$; a main effect of *question* type (more affirming responses for specific than open-ended questions, $M=1.64[SD=0.38]$ vs. $M=0.63[SD=0.30]$), $F(1,38)=438.36$, $p<.001$, $\eta^2_{\text{partial}}=0.92$; and a main effect of *gesture* (more affirming responses for speech-plus-gesture than speech-alone questions, $M=1.43[SD=0.41]$ vs. $M=0.84[SD=0.29]$), $F(1,38)=111.74$, $p<.001$, $\eta^2_{\text{partial}}=0.75$; as well as interactions between question type and gesture, $F(1,38)=18.83$, $p<.001$, $\eta^2_{\text{partial}}=0.33$, and between question type and event type, $F(1,38)=61.65$, $p<.001$, $\eta^2_{\text{partial}}=0.62$.

We focus our specific probes (using planned comparisons) on responses to nonoccurring events, precisely because affirming responses to these events reflect reports of events that

did not happen. Affirming responses to open-ended speech-alone questions provide a baseline for how often details are mentioned when they are not suggested in the interviewer's question. The fact that children produced more affirming responses about non-occurring events to *specific* speech-alone questions in the scripted interviews ("Was he wearing a hat?" Fig. 2, top, bar 7) than to *open-ended* speech-alone questions ("What else was he wearing?" bar 5), $p < .001$, indicates the well-recognized fact that children are susceptible to interviewer suggestion in speech.

What happened when gesture was added? Children noticed gesture, as evidenced by their spontaneous reproductions of the experimenter's gestures (examples in Fig. S1, online supporting information). They also altered their responses to questions about non-occurring events as a function of the experimenter's gestures. They gave more affirming responses about non-occurring events in response to open-ended questions ("What else was he wearing?") with gesture (HAT, bar 6) than without gesture (bar 5, the baseline for how often these particular details are mentioned in the absence of suggestion), $p < .001$, and as many affirming responses as they gave to *specific* questions ("Was he wearing a hat?") without gesture (bar 7, the traditional index of susceptibility), $p = .78$. Apparently, when an open-ended question is produced with gesture, it is transformed into a specific question – complete with all of its potential to mislead. This effect was robust: 30 of 39 children (76%) affirmed at least one untrue suggestion made in open-ended speech-plus-gesture questions.

Children's pattern of responses in free-recall was identical to their pattern in scripted interviews. We found a main effect of event type ($M_{\text{occurring}} = 1.03 [SD = 0.44]$ vs. $M_{\text{non-occurring}} = 0.37 [SD = 0.33]$), $F(1, 38) = 79.68$, $p < .001$, $\eta^2_{\text{partial}} = .68$; question type ($M_{\text{specific}} = 1.03 [SD = 0.46]$ vs. $M_{\text{open-ended}} = 0.37 [SD = 0.29]$), $F(1, 38) = 91.14$, $p < .001$, $\eta^2_{\text{partial}} = .71$; gesture ($M_{\text{speech-plus-gesture}} = 0.82 [SD = 0.46]$ vs. $M_{\text{speech-alone}} = 0.58 [SD = 0.31]$), $F(1, 38) = 11.63$, $p < .01$, $\eta^2_{\text{partial}} = .23$; and interactions between question type and gesture, $F(1, 38) = 8.03$, $p < .01$, $\eta^2_{\text{partial}} = .17$, and between question type and event type, $F(1, 38) = 18.45$, $p < .001$, $\eta^2_{\text{partial}} = .33$.

Most importantly, details that had been asked about non-occurring events in open-ended *speech-plus-gesture* questions during the scripted interviews (Fig. 2, bottom, bar 6) were more likely to be mentioned in unprompted free-recall than details that had been asked about in open-ended *speech-alone* questions (bar 5, the baseline for how often these particular details are mentioned in the absence of suggestion), $p = .02$. In fact, these details were mentioned as often as details that had been asked about in *specific speech-alone* questions (bar 7, the traditional measure of susceptibility), $p = .91$. Thus, misleading gesture influences interviews in the same way, and to the same extent, that misleading speech does.

Gesture can also influence interviews by revealing to interviewers information that witnesses know but do not report in speech. We found that, in response to the interviewer's questions during free recall, 28 of 39 children (72%) spontaneously produced iconic gestures, averaging 5.93 gestures per child. More importantly, 11 of the 28 children who gestured referred to at least one target item uniquely in gesture, or in gesture prior to referring to that item in speech. In these instances, an interviewer who had access only to a written transcript would not be able to tell when the child *first* referred to the items. Moreover, 79% of the details children conveyed in their gestures were *never* found in their speech – written transcripts would provide no access to this information at all.

Discussion

Children incorporated into their verbal reports information that was conveyed uniquely in an interviewer's gestures, even when that information was misleading. Importantly, gesture's

misleading effects carried over to subsequent interviews, and thus had a long-lasting impact. Misleading verbal input has previously been shown to have continuing effects on children's testimony (Fivush, Hamond, Harsch, & Singer, 1991; Loftus, 2003). Ours is the first study to show that misleading *gesture* can have long-term effects on the veracity of children's reports. Our findings thus demonstrate that gesture is an aspect of forensically-relevant conversations that deserves serious consideration.

The gestures we incorporated into the interviewer's questions are not experimental anomalies. These same gestures crop up when adults are asked to interview another adult who witnessed the musician's visit on videotape (examples in Fig. S1, online supporting information). But our mock investigative interviews are likely to be an underestimate of how often children are actually exposed to gesture during interviews, as investigative interviews with children are typically challenging, frequently requiring repeated questioning and multiple interviews to obtain a complete picture of the event (Fivush et al., 1991). Interviewers are likely to increase their gesture rate when faced with an inarticulate child, particularly since children glean more from adult speech when it is produced with gesture than without it (Goldin-Meadow & Singer, 2003).

In actual forensic interviews, interviewers often have preconceptions based on previous interview reports or background information available prior to the interview. Even if an interviewer is trying to avoid making suggestions, preconceptions often make their way into interviews (Ceci, Hembrooke, & Bruck, 1997). We suggest that gesture is one route through which these preconceptions can be (unintentionally) communicated and reinforced. In addition, children are often interviewed informally by parents, teachers, police, and others before they engage in more structured interviews with professionals, and gesture is likely to be present in those early conversations. Our findings suggest that adults who conduct interviews with children – parents, teachers, physicians, researchers, therapists, social workers, police officers, researchers – should be made aware of gesture's potential to mislead (as well as its potential to inform).

Our findings also have implications for the structure of formal investigative interviews. We make two suggestions. First, interviewers should monitor their gestures as well as their speech. On the basis of the eyewitness testimony literature, interviewers are currently advised to use open-ended questions to minimize suggestibility effects (Wardlow-Lane, Groisman, & Ferreira, 2006). But our results indicate that when gesture is produced along with an openended question, children respond to that question as though it were specific, that is, as though the interviewer had made the misleading suggestion in speech. Gestures can thus convey an interviewer's preconceptions to a witness as effectively as can words. Moreover, an interviewer's preconceptions may be particularly likely to crop up in gesture since trying to suppress a fact often makes that fact more salient to the speaker (Wardlow-Lane, et al., 2006) and may lead to its appearance in gesture.

Second, while others have suggested that interviews should be videotaped, we suggest that the videotaping needs to be arranged so that *both* interviewer and witness are visible on camera. We need to know if and when an adult-interviewer has augmented an open-ended spoken question with misleading information in gesture. We also need to know if and when child-witnesses have conveyed information in their gestures and not their speech. Children do use gestures when describing events they have personally witnessed (Miller, Cho, & Bracey, 2005), and those gestures often convey information not found in their speech (Goldin-Meadow, 2003; Goldin-Meadow et al., 1993). If an interviewer picks up on this silent information and incorporates it into later questioning, it is important for us to know that it was the child (and not the interviewer) who first introduced the information into testimony. Although it is unrealistic to expect investigators to review videotapes of entire

interviews, it should be possible to check videotapes for nonverbal cues whenever a key fact is first mentioned. Such procedures are needed to ascertain whether the interviewer or witness first introduces a fact into testimony.

The goal of investigative interviews is to obtain a complete and accurate account of events. If gesture is not recognized as having both a positive and negative influence on the process, this goal may be compromised.

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Type of Event	Type of Question	Speech-Alone Questions	Speech-plus-Gesture Questions
Occurring Event (the musician played a whistle)	Open-Ended Question	(1) "What else did he do?"	(2) "What else did he do?" plus PLAY-WHISTLE gesture
Occurring Event (the musician played a guitar)	Specific Question	(3) "Did he play an instrument like a guitar?"	(4) "Did he play an instrument like a guitar?" plus STRUM-GUITAR gesture
Non-occurring Event (the musician did not wear a hat)	Open-Ended Question	(5) "What else was he wearing?"	(6) "What else was he wearing?" plus PUT-ON-HAT gesture
Non-occurring Event (the musician did not hurt himself)	Specific Question	(7) "Where did he hurt himself?"	(8) "Where did he hurt himself?" plus PAT-HIP gesture

Figure 1. Examples of the types of questions used in the scripted interviews. Numbers refer to the 8 types of questions asked.

Figure 2.

Mean number of event details children affirmed during the four scripted interviews (top) and the final free-recall interview (bottom), categorized according to type of question asked in the scripted interview. The number beneath each bar corresponds to the numbered examples of the 8 question types in Figure 1.