

Can misleading hand gestures influence eyewitness testimony?

testimony?

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> introduction

Forensic research has uncovered much about eyewitnesses' memories and their susceptibility to misleading questions (Loftus, 1975). Research has shown that ambiguous questioning can alter a witness's existing memories of an event (Loftus & Palmer, 1974), or even create an entirely new memory (Wright, Loftus & Hall (2001). However, while a lot of focus has been given to situations where misleading information is conveyed verbally, there are other, nonverbal, factors that play a significant role in communication and can convey (potentially misleading) information to listeners.

Gestures serve an important communicative, interpersonal function by expanding on information that is communicated verbally (Kendon, 1980). People produce more gestures when face-to-face with another person (Bavelas, Coates & Johnson, 2002) and listeners glean more information from speakers when they see them gesturing (Beattie & Shovelton, 1999; Graham & Arygle, 1975).

However, not only can gestures *support* speech, but they can also convey information *that is not stated in speech*. Consider, for instance, somebody telling a friend they "spoke to Sam yesterday". They might accompany this sentence with their hand held up against their face (indicating they spoke on the phone), holding out their palm in front of them (indicating text messaging), or by tapping on an imaginary keyboard (indicating they spoke online). Speakers may 'give away' important semantic information through their gestures which is not stated in speech. Research confirms that people 'pick up' on this extra information and combine it with information conveyed in speech (Kelly, Barr, Lynch & Church, 1999; Cassel, McCullough, McNeill, 1999).

Forensic research states that eyewitness are sensitive to (misleading) post-event information which can become integrated into their memory of the event. While research has focused on how misleading information is conveyed verbally, we propose that this post-event information could also be conveyed through gestures. Therefore, in this study, we asked participants questions about a crime scene they witnessed on video and accompanied these questions with misleading gestures (conveying false information about the scene) to see if this would distort their memory of the event they witnessed and lead them to believe something they did not. In addition, we also asked participants whether they were aware of these gestures and investigated whether they could identify that this is how information was conveyed to them.

> results

Did participants give a response that was consistent with the gesture they saw (target response) or another response (other response)? All 'don't know' responses were removed from the analysis. Figure 2 depicts the frequency of response by condition for each critical question.

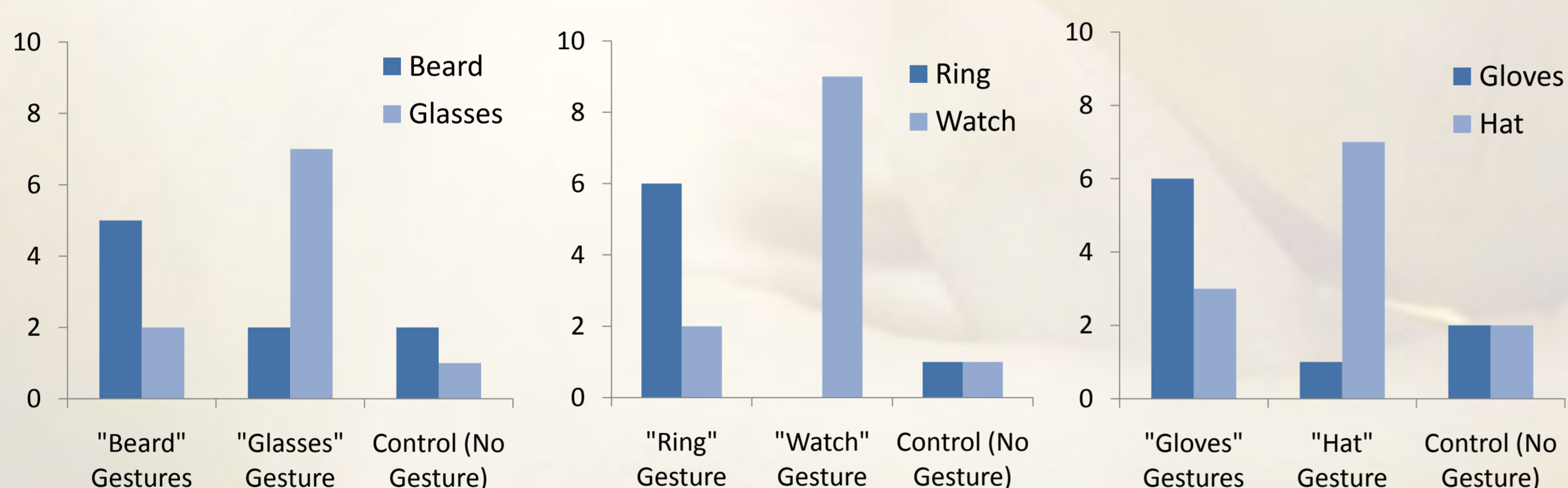


Figure 2: Frequency of responses by type of information conveyed in gesture (for all three critical questions)

Participants were more likely to claim seeing details that were conveyed to them through gesture. A 2x2 chi-square collapsed all critical questions into one data set to consider an association between gesture (saw critical gesture / not) and response (gave target response / not) and retrieved a significant effect, $\chi^2(1) = 7.90, p = .005$.

Afterwards, participants were asked which gestures they could remember seeing. On average, participants freely recalled gestures 20.83% of the time, and 67.36% participants were able to identify them from screenshots afterwards. To investigate participants' awareness of gesture influence, a further analysis considered an association between participants' response and recognition of gesture afterwards.

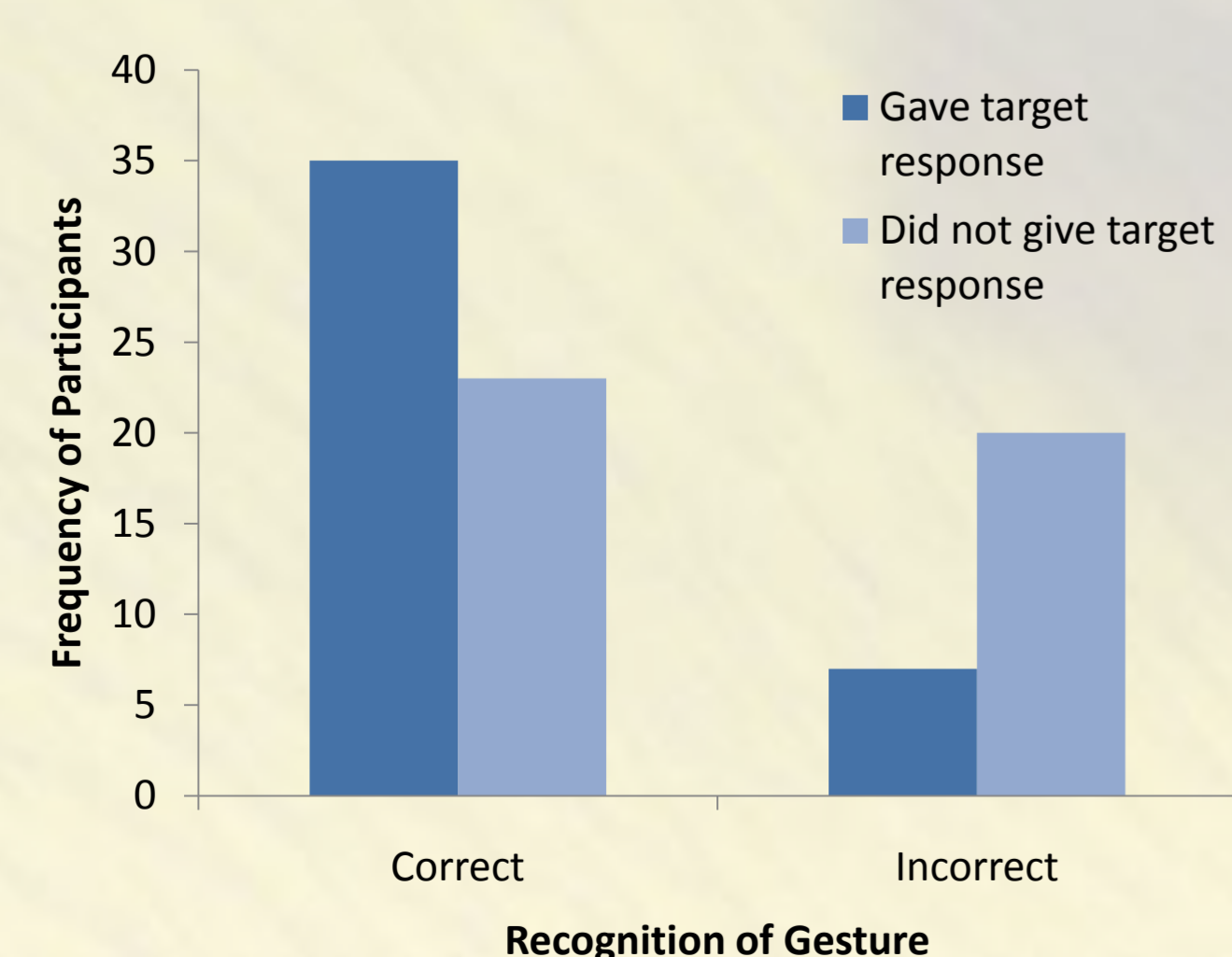


Figure 3: Accuracy of gesture recognition by response

The results of a 2x2 chi square revealed an association between gesture recognition (correct / incorrect) and response (gave target response / not); $\chi^2(1) = 8.73, p = .003$. While there was little difference in gesture recognition between those that gave other responses, participants that gave answers conveyed by gesture were more likely to identify the misleading gesture afterwards. Thus, those who gave an answer conveyed by the gesture were more likely to identify it afterwards.

> acknowledgements

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> method

Participants saw a piece of mock-up CCTV footage of a theft in an office and were questioned by an on-screen 'police' interviewer about the scene afterwards. During the questioning, the interviewer accompanied his questions with gestures conveying misleading information about the scene. Using a between measures design, 72 participants (age $M = 30.01, SD = 17.93$) saw the interviewer performing one of two different types of misleading gesture, or took part in the control group (saw no video, and only heard the interviewer's voice).



Figure 1: The "ring" and "watch" gestures. These 'over shoulder' camera angles were edited into the main questioning video

Participants in the experimental misleading groups heard the interviewer ask a question, such as "was the man wearing any jewellery?" and accompany this with a gesture conveying misleading information (either a 'touching finger' - 'ring' gesture, or a 'grasping wrist' - 'watch' gesture, as illustrated by figure 1.)

Other critical questions included "did you notice any distinguishing facial features?" (with either a 'stroking chin' - 'beard' gesture, or 'touching nose bridge' - 'glasses' gesture) and "did you notice any additional clothing?" (with either a 'grasping hand' - 'gloves' gesture, or a 'touching head' - 'hat' gesture). These critical questions were asked sequentially and were disguised amongst distracter questions; "how tall was the man?", "how old was the man?" and "what colour jacket was he wearing?"

In addition, participants were asked afterwards if they could remember seeing any gestures, or if they could recognise them from screenshots afterwards

> discussion

Previous research has shown that the manipulation of verbal information can affect the responses given by a witness (Loftus, 1975; Loftus & Zanni, 1975). In this study, we demonstrate that this effect also extends to information conveyed in hand gestures. Participants that saw the 'police' interviewer performing misleading hand gestures were more likely to report information that was conveyed through his gestures. As the critical detail reported by participants was only expressed in the interviewer's gesture (while his speech remained identical across all conditions) we can say with confidence that the interviewer's gestures affected the participant's responses. Thus, gestures can mislead eyewitnesses.

Whilst the effects of conveying misleading post-event information through gesture is similar to speech, the manner in which they do so is very different. Gestures are spontaneous, unplanned hand movements (McNeill, 1992) that are produced habitually (deRuiter, 2000) and may communicate information incidentally (Rauscher, et al., 1998). The 'semantic specificity hypothesis' states that 'praxic' objects (those which use the hands to function) are most likely to generate gestures (Pine, Gurney & Fletcher, 2010). Thus, gestures are effective communicators of visual information (Goldin-Meadow, 1999; Graham & Arygle, 1975). Since false memory creation is more likely when images are easy to imagine (Drivdahl & Zaragoza, 2001), the perceptual, visual detail offered by gestures may make false memory creation more likely.

This study has serious implications in regard to interviewing witnesses. At present, police interviews require only an audio recording (with no video surveillance). So, while any instances of verbal influence can be identified, any nonverbal influence from gestures would occur 'off the radar'. This new area of research highlights the importance of considering the risk that nonverbal information could mislead witnesses.

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