Week of April 19, 2003; Vol. 163, No. 16 , p. 250

Words Get in the Way

Talk is cheap, but it can tax your memory

Bruce Bower

Law-enforcement officials typically solicit descriptions of criminals from eyewitnesses, often just after an offense has occurred. It stands to reason that thorough accounts by those who saw what happened will help investigators round up the likeliest suspects. Eyewitnesses can then pick the criminals out of a lineup. When crime-scene interviewing had its first brush with memory research in 1990, however, the results proved disturbing. A series of laboratory studies found that memories for a mock criminal's face were much poorer among eyewitnesses who had described what the perpetrator looked like shortly after seeing him, compared with those who hadn't.

WORDLESS RECALL. Eyewitnesses may remember a criminal's features more accurately if they don't immediately try to describe them.

Psychologist Jonathan W. Schooler of the University of Pittsburgh, who directed the studies, dubbed this effect "verbal overshadowing of visual memories." His paper's subtitle put it more bluntly: "Some things are better left unsaid." Not among scientists, though. Discussion generated by Schooler's results ushered in a wave of research examining how eyewitnesses can find themselves, as he later quipped, "at a loss from words." Studies have confirmed that, at least under certain circumstances, verbal descriptions impair memories for faces and other hard-to-describe perceptions, such as the taste of a fine wine or the sound of a person's voice.

Recent investigations, described in the December 2002 *Applied Cognitive Psychology*, extend what's known about verbal overshadowing and offer potential tactics for counteracting this memory-sapping effect. However, no one yet knows the full range of perceptions subject to verbal overshadowing or its implications for various eyewitness-interviewing techniques.

"Verbal overshadowing is a genuine and reliable phenomenon," says psychologist Christian A. Meissner of Florida International University in Miami. "However, conclusions as to the mechanisms responsible for it appear [to be] complex and elusive."

Memory shift

Research into verbal-memory theft began with a staged felony. Schooler and a colleague showed volunteers a 30-second video depicting a man robbing a bank. Participants then spent 20 minutes on an unrelated task. At that point, a randomly chosen half of the group was asked to write a detailed description of the robber's face. These volunteers were encouraged to focus on each of the criminal's facial features and to use all of the allotted 5 minutes to jot down their memories. The rest spent 5 minutes tackling a second task unrelated to the video.

Each participant then tried to identify the robber's face from an

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array of eight photographs, only one of which showed the criminal impersonator. About one-third of those who wrote a description picked out the correct face, compared with two-thirds of those who didn't.

At first, Schooler suspected that errors in participants' verbal descriptions had altered the man's visual appearance in their mind's eye. This still-current theory holds that a person asked to describe a face inevitably makes errors in finding words for the ineffable quality of what another person looks like. Memory of the face then changes to accommodate the verbal depiction, which hinders the witness' later recognition of the face.

Schooler has since adopted a contrasting explanation, which posits that the act of describing a face replaces unconscious perceptual operations with word-based, largely conscious thinking. Ensuing attempts to identify the face visually refer back to the verbal account, creating confusion and mistakes. An accurate perceptual memory of the face theoretically remains intact, but people have trouble dipping back into that knowledge, Schooler proposes.

For instance, in a 1995 study, Schooler reported that verbal descriptions disrupted white volunteers' memories for the faces of white but not black individuals. He proposed that thanks to their extensive experience in looking at white faces, white volunteers used rapid, nonverbal perception to evaluate each such face as a unified entity. In contrast, volunteers spent more time studying individual features of the less-familiar black faces. Subsequent written descriptions were more consistent with the features that white participants remembered about the black faces than with the unified images they had stored for the white ones, Schooler concludes.

Other research indicates that verbally adept individuals exhibit less memory loss after describing a same-race face than individuals with poor verbal skills do. Also, verbal overshadowing afflicts those with superior perceptual capabilities—such as skillful discernment of objects in cluttered scenes—to a greater extent than it does people with meager perceptual power.

Schooler is now exploring other perceptual capabilities that respond to verbal overshadowing. For instance, verbal descriptions impede one's mental map of an area, according to Schooler and his Pittsburgh colleague Stephen M. Fiore.

In their experiment, volunteers spent 12 minutes studying a map of a small town with a path connecting 16 landmarks, such as a library and a town hall. Half the test participants then wrote everything they could remember about the path's route and landmarks along the way. The rest took the time to write down some personal experiences unrelated to the map.

Only those who had described the map had difficulty estimating the relative straight-line distances between pairs of landmarks. Schooler says that these as-the-crow-flies estimates required each volunteer to consult a mental image of the entire town's layout, a form of perceptual knowledge that he regards as susceptible to verbal interference.

Verbal descriptions of the map didn't undermine recall of approximate lengths of winding paths between pairs of landmarks. This task called for route knowledge that volunteers could verbalize, as in "go left at the library, then take the long, curving path to reach the schoolhouse," Schooler says.

Saving face

Other findings also suggest that a shift from a perceptual to a verbal focus blocks a person's access to perceptual memories, even though they remain intact.

In one study, conducted by Kim Finger of Claremont (Calif.) Graduate University, participants who wrote a description of a man's face after studying the face for 5 minutes suffered no

memory loss if they were then nudged back into a perceptual frame of mind. To do this, Finger asked them either to solve a printed maze or to listen to 5 minutes of instrumental music. Both strategies yielded face memory equal to that of volunteers who didn't provide a written description.

Face recall also benefits from a delay of as few as 24 minutes between completing a verbal description and viewing a photo lineup, according to a study conducted by Finger and her Claremont colleague Kathy Pezdek. Such interruptions erased memory lapses that characterized volunteers tested 10 minutes after writing a description of a man's face.

Nearly half-hour breaks similarly refreshed the memories of people instructed to visualize the man's face, consider the thoughts and feelings they had while looking at his face, and report everything they could remember. Such tactics, now used by some police departments with crime witnesses (SN: 4/19/97, p. 246: http://www.sciencenews.org/sn_arc97/4_19_97/bob1.htm), yielded particularly poor face memories after 10-minute delays.

For now, police officers should show patience after interviewing people at crime scenes, Finger suggests. Before asking them to pore over mug shots, perhaps give eyewitnesses a few minutes to listen to recorded music, which may safeguard their memories.

Verbal descriptions can also interfere with "earwitness" memories, report psychologist Timothy J. Perfect of the University of Plymouth, England and his coworkers. In their study, volunteers heard a recorded voice say, "Just follow the instructions, don't press the alarm, and no one will get hurt." Compared with people who then sat quietly for 5 minutes, those given that same period to write down everything they could remember about the voice had far more difficulty identifying the same voice from among six choices.

"Verbal overshadowing is an amazing phenomenon," Pezdek says. However, she notes that it's failed to turn up in some studies.

Deceptive details

Meissner proposes an explanation for the sometimes elusive nature of verbal overshadowing. He bases his argument on a statistical analysis, conducted with John C. Brigham of Florida State University in Tallahassee, of 15 separate investigations of verbal overshadowing in facial memory that recruited a total of 2,018 people.

The pattern of results indicates that participants told to delineate every possible detail about a face, even to the point of guessing, litter their descriptions with blunders—especially if quizzed within 10 minutes of seeing the face, Meissner contends. They then try in vain to match their verbally retooled memories to what they see in a photo array or a lineup. This view contrasts with Schooler's idea that the original memory remains intact but inaccessible.

In a new study, Meissner explores the memory effects of different types of instructions given to 576 college students who studied a face for 5 seconds. One group was told to describe the face in detail and to disregard any uncertainties about their memories. Five minutes later, only about a third of these students selected the previously seen face from a photo array.

A second group of students was instructed to describe only what they could confidently remember, and after 5 minutes, slightly more than half recognized the face they had studied.

A third group was told to describe only what they could recall with certainty about the face and also was warned not to guess. They performed as well as study participants who weren't required to provide a description. About two-thirds of both

groups chose the correct face.

These findings held whether volunteers tried to pick the previously seen face from an array of eight photos or viewed one photo at a time and gave a "yes" or "no" answer. Other studies, which have not controlled for the amount of detail in eyewitnesses' verbal descriptions, have generally concluded that one-at-a-time presentations of crime suspects yield more accurate recall than all-at-once inspections.

Moreover, in Meissner's work, the group told to report even uncertain details in their descriptions made far more false identifications than any other group when shown photo arrays that didn't include the original face.

Silent might

Meissner's findings underscore the narrow scope of verbal overshadowing, contends Florida State University psychologist K. Anders Ericsson. People forced to generate strictly limited verbal accounts can still remember a considerable amount of perceptual information, he says.

Ericsson and the late Herbert A. Simon developed a method, called protocol analysis, for interviewing individuals about their thought processes during and immediately after performing various tasks, such as mental arithmetic. Participants in these studies had been instructed to report orally only on what they can confidently recall and avoid making guesses.

Under these conditions, the act of reporting one's thoughts out loud either during or just after performing a mental task often leads to better memory for that task, when compared with silent recall of one's thoughts or the performance of irrelevant acts in the interim, Ericsson maintains.

Bare-bones interviewing practices, such as protocol analysis, avoid verbal overshadowing partly because the effect thrives on conscious deliberation about a prior act or perception, according to Schooler.

The types of problems that volunteers grapple with also make a difference, he says. For instance, Schooler has reported that people who described their thoughts as they solved "insight" problems—"Aha!"-type puzzles that require the discovery of subtle ways to conceptualize, say, an ambiguous picture or a word problem—had more difficulty solving the tasks than did people who said nothing. However, describing ongoing thoughts had no effect on people's success at solving analytical problems, such as mental arithmetic. In other words, articulating one's inner thoughts disrupts intuition but not logical analysis, in Schooler's view (SN: 10/30/99, p. 282).

Just as provocatively, research on verbal overshadowing challenges the popular notion among philosophers and psychologists that language lies at the core of thought. "Various forms of inexpressible knowledge may be best served by avoiding the application of language," Schooler says.

He adds that Albert Einstein would have agreed. "I very rarely think in words at all," the great scientist once told an interviewer. "A thought comes, and I may try to express it in words afterwards."

More often than the rest of us would like to admit, silence may indeed be golden.

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References and sources for this article

References:

Ericsson, K.A. 2002. Towards a procedure for eliciting verbal expression of non-verbal experience without reactivity: Interpreting the verbal overshadowing effect within the theoretical framework for protocol analysis. *Applied Cognitive Psychology* 16(December):981-987. Abstract available at http://www3.interscience.wiley.com/cgi-bin/abstract/102519668/START.

Finger, K. 2002. Mazes and music: Using perceptual processing to release verbal overshadowing. *Applied Cognitive Psychology* 16(December):887-896. Abstract available at http://www3.interscience.wiley.com/cgi-bin/abstract/102519671/START.

Finger, K., and K. Pezdek. 1999. The effect of the cognitive interview on face identification accuracy: Release from verbal overshadowing. *Journal of Applied Psychology* 84(June):340-348.

Fiore, S.M., and J.W. Schooler. 2002. How did you get here from there? Verbal overshadowing of spatial mental models. *Applied Cognitive Psychology* 16(December):897-910. Abstract available at http://www3.interscience.wiley.com/cgi-bin/abstract/102519664/START.

Meissner, C.A. 2002. Applied aspects of the instructional bias effect in verbal overshadowing. *Applied Cognitive Psychology* 16(December):911-928. Abstract available at http://www3.interscience.wiley.com/cgi-bin/abstract/102519665/START.

Meissner, C.A., and J.C. Brigham. 2001. A meta-analysis of the verbal overshadowing effect in face identification. *Applied Cognitive Psychology* 15(November):603-616. Abstract available at http://www3.interscience.wiley.com/cgi-bin/abstract/88011392/START.

Perfect, T.J., L.J. Hunt, and C.M. Harris. 2002. Verbal overshadowing in voice recognition. *Applied Cognitive Psychology* 16(December):973-980. Abstract available at http://www3.interscience.wiley.com/cgi-bin/abstract/102519675/START.

Schooler, J.W. 2002. Verbalizaton produces a transfer inappropriate processing shift. *Applied Cognitive Psychology* 16(December):989-997. Abstract available at http://www3.interscience.wiley.com/cgi-bin/abstract/102519669/START.

Schooler, J.W., and T.Y. Engstler-Schooler. 1990. Verbal overshadowing of visual memories: Some things are better left unsaid. *Cognitive Psychology* 22:36-71.

Further Readings:

Bower, B. 1999. The mental butler did it. *Science News* 156 (Oct. 30):280-282. References and sources available at http://www.sciencenews.org/sn_arc99/10_30_99/bob1ref.htm.

_____. 1997. Thanks for the memories. *Science News* 151 (April 19):246-247. Available at http://www.sciencenews.org/sn_arc97/4_19_97/bob1.htm.

Sources:

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From *Science News*, Vol. 163, No. 16, April 19, 2003, p. 250.