

## Investigating eyewitness memory mishaps

An influential series of studies in the 1970s suggested that eyewitness memories — say, for the details of a traffic accident — often change when misleading information about the event is later presented. In the March *JOURNAL OF EXPERIMENTAL PSYCHOLOGY: GENERAL*, two sets of investigators present data they say support this contention.

The reports do not, however, dim an ongoing debate over the sturdiness of eyewitness memories.

The notion of malleable memory championed by psychologist Elizabeth F. Loftus of the University of Washington in Seattle, who led the initial studies, gained rapid acceptance. Since then, psychologists have increasingly testified in courts on how eyewitness memories can change over time.

But psychologists Maria S. Zaragoza of Kent (Ohio) State University and Michael McCloskey of Johns Hopkins University in Baltimore more recently conducted experiments indicating misleading information may have little effect on memories for an event (SN: 3/16/85, p.164). Rather, subjects may forget what they saw before receiving misinformation and report the latter as their “memory”; become confused as to whether a memory was really from the original event and end up guessing; or assume the misinformation must be right even if they remember something else.

In one of the new studies, Robert F. Belli of Vanderbilt University in Nashville, Tenn., concludes misinformation at least partly distorts eyewitness memories. He showed slides of a maintenance man stealing \$20 and a calculator from an office to 144 undergraduates. They then read a narrative of the episode containing misleading information about two items in the office. In some cases, for example, a Folgers coffee jar was described as a Nescafe jar. Another two items in the slides served as controls and were described in general terms. A can of 7-Up became, for example, a generic soda can.

Subjects were next presented with a series of statements, each dealing with an item in the office, and asked to respond “yes” if an item appeared in the slides or “no” if it did not.

Compared with memories for the control items, there was a 20 percent reduction in accurate memories for the items about which people had received misleading information, Belli says. Part of this effect, he acknowledges, may be due to source confusion, in which subjects remember both slide and narrative items but forget which was shown first or assume they were shown together.

Stanford University psychologists Barbara Tversky and Michael Tuchin conducted a similar study and conclude misinformation often interferes with the

ability to retrieve an original memory, thus leading to distorted reports.

The researchers showed slides depicting a theft to 72 undergraduates, some of whom later read a narrative of the event with one piece of misleading information. Memory for the original information (a Coke can, for instance), misleading information (a 7-Up can) and a new piece of information (a Sunkist can) was tested with a series of true/false statements. Subjects also rated their confidence in each response.

Memory proved considerably worse for items on which subjects were misled, the researchers say. Furthermore, misled subjects were more likely to say they had seen an item described in the narrative than to recall the one they had actually seen. Misled subjects and those who did not read the narrative equally rejected new information.

Misled subjects were as certain of their

errors as control subjects were of their correct responses. Nevertheless, the researchers note, higher confidence is often taken as a sign of better memory in a courtroom witness.

In a comment accompanying the two new studies, Zaragoza and McCloskey say there are alternative explanations of the results, such as misled subjects’ possible confusion as to the origin of accurate memories. In their view, memory-impairing effects of misleading information remain to be demonstrated.

In a second comment, Loftus and colleague Hunter G. Hoffman argue memory impairment plays some role in the observations of Belli, Tversky and Tuchin and others. More important, they say, is the finding that people can accept misinformation and confidently adopt it as a genuine memory. They contend this phenomenon often occurs when people who experience the same event talk to one another and hear about the event through the media and other sources.

— B. Bower

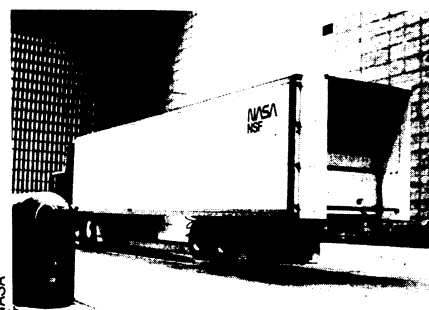
## Big rigs ease down a long and windy road

A gallon of fuel saved is roughly a dollar earned, and a good environmental and public-health deed to boot. A small New Jersey company has devised an aerodynamic-drag-reducing device for big-rig trucks that it says could save 1 billion of the estimated 16.5 billion gallons of fuel used annually by the nearly 1 million registered U.S. tractor-trailer combinations.

The device, called an aerodynamic boat tail, reduces fuel use by eliminating about 10 percent of the drag on a truck’s forward motion caused by air flowing haphazardly around the trailer. Since road-tire friction also retards forward motion, engineers estimate the device reduces overall drag by 6 percent. The prototype device, a hollow and open rectangular box, fits just within the boundaries of the trailer’s rear panel and juts out about 3 feet. Air flowing over the top and around the sides of the truck turns inward when it reaches the back, and combines into an aerodynamically smoother, boat-tail-shaped flow.

“It doesn’t look like it should work,” remarks James C. Ross, an aerospace engineer at NASA’s Ames Research Center in Moffet Field, Calif. But wind-tunnel tests he supervised there indicate otherwise. Six 40-foot-diameter fans sent air careering at ticketable speeds over a stationary test truck in the wind tunnel. Sensors measured vertical, lateral and other forces on the vehicle. When fitted with an aerodynamic boat tail, a truck suffers 10 percent less drag than it would without the device.

Many new tractor designs involve drag-damping geometries formed with such things as roof and bumper fairings and



Wind-tunnel tests of big rig with fuel-saving device on rear panel.

skirting that smoothes contours on the sides of the cabs and over the gas tanks. But trailer designs haven’t changed much in 20 years, notes engineer Alan Bilanin, senior associate of Continuum Dynamics, Inc., the Princeton, N.J., company that designed the new device.

Prior to this decade, federal laws regulating trailer length would have precluded a device like the aerodynamic boat tail, Bilanin says. But legislative action in 1982, together with deregulation of the trucking industry, created a competitive environment in which cost-cutting tactics grow in importance, he adds.

“I believe you can make these [aerodynamic boat tails], install them and recoup your costs in one year of use,” Bilanin says. In its most likely commercial design, drivers will be able to collapse the device against the rear panel. But he and others caution that hurdles remain. Each trailer manufacturer has several models, each of which has a different rear-panel design. Aerodynamic boat tails may have to be customized for each design, they say.

— I. Amato