Behavior

Pass it on: The power of persuasion

Last year, the federal government sent every household in the United States the pamphlet "Understanding AIDS." In five places the text encouraged readers to talk about AIDS with lovers, friends and family. Although no one knows how many people took that advice, the requests to pass on information about AIDS may nonetheless have helped to promote more positive attitudes toward the much-publicized disease, the authors of a new report suggest.

People who read a persuasive message and expect to discuss its contents with others feel substantially more receptive to the message up to five months later, maintain psychologist David S. Boninger of Ohio State University in Columbus and his colleagues. This effect apparently holds even for some messages with which people do not initially agree, they say.

Two of the studies in Boninger's report focused on 81 university students who read an essay that advocated educating people to use their leisure time more purposefully. Some received booklets explaining that readers would transmit information in the essay to another person, while others were informed they would receive more information on leisure-time planning. After reading the essay, volunteers were told there was no time for transmitting or receiving information. Another 35 students received no instructions and read an essay advocating repeal of "right turn on red" traffic laws.

Ten weeks later, all 116 participants were contacted by phone and asked to respond to a survey on current interests that included four questions on the leisure-time issue. After completing the survey, students learned it was part of the previous study.

On a 1-to-10 scale, "transmitters" and "receivers" of the initial leisure-time essay reported similarly positive assessments of its message immediately after reading it. Only the transmitters, however, maintained their positive opinions when contacted later by phone. Transmitters initially rated the leisure-time argument higher than did students who read the traffic essay, and remained more positive at 10 weeks.

Transmitters said they had expected to pass on information to a person who had read a similar message. This expectation appears to boost positive attitudes toward persuasive messages, according to a third study.

In that experiment, 92 students were primed to transmit information about the "right turn on red" essay to someone else exposed to the same message. They expressed a positive attitude toward the proposal five months later, although most had initially disagreed with it, Boninger's team reports in the July PSYCHOLOGICAL SCIENCE. Students told to describe the essay to someone who had read a different message were much less receptive to the argument after five months.

A fourth study of 300 adults in the Columbus area produced similar results with advertisements promoting either the health benefits of a brand of butter or the increased use of nuclear energy. Some participants read the ads as transmitters; some read the ads with no further instructions; others did not see the ads. Two months later, transmitters reported the most positive attitudes toward both messages. However, the attitude difference proved statistically significant only for the butter ad.

Other factors undoubtedly influence a person's disposition toward messages with a persuasive angle, the psychologists acknowledge. But the experimental situations mimic many mass media campaigns—from television commercial blitzes to distribution of the AIDS pamphlet—in which the same message reaches most of the general public, they assert.

Future research should examine transmitters' attitudes toward topics evoking strong personal and emotional reactions, the researchers add. Possibilities include messages discussing AIDS or ways to deal with drug abuse.

Biology

Fungus routs gypsy moth outbreak

People in the eastern United States go to great lengths to prevent gypsy moth caterpillars from devouring forests and favorite shade trees. They sic bacteria and viruses on them; drop planeloads of pesticides on them; lure them, drown them, squash them—and curse them. Failing these attempts, people may soon have a fungus to help fight the pests.

Last summer, the fungus *Entomophaga maimaiga,* which efficiently checks gypsy moths in its native Japan, unexpectedly proliferated in the northeastern United States. It slaughtered gypsy moths in droves, producing their first known massive fungus-induced die-off in North America, according to insect pathologist Ann E. Hajek of the Boyce Thompson Institute for Plant Research in Ithaca, N.Y.

This past spring, Hajek tested whether scientists could deliberately use the fungus in the wild to induce gypsy moth die-offs. She seeded a fungus-free woodlot in Ithaca with *E. maimaiga* spores from some of last year's battlegrounds. One month later, while caterpillars swarmed in untreated plots, fungus-ridden corpses littered tree trunks in her treated plots. Hajek estimates the fungus vanquished up to 85 percent of the leaf-gobbling pests.

Though Hajek foresees commercially produced batches of *E. maimaiga* someday bolstering the forester's and homeowner's arsenal against gypsy moths, entomologist Ralph E. Webb of the USDA's Agricultural Research Service in Beltsville, Md., remains wary. *E. maimaiga* was intentionally released against the moths in Massachusetts 80 years ago, yet it wasn't noticed again until 1989's unusually heavy spring rainfall. "In a dry year," Webb says, "the fungus would fall flat on its face."

Nevertheless, under less soggy conditions this year, researchers in several northeastern states are again attributing massive caterpillar die-offs — of up to 90 percent — to the suddenly conspicuous Japanese fungus.

Giardia displays intestinal fortitude

Microbes encounter few environments more hostile than the human small intestine. To survive, they must withstand onslaughts of enzymes, antibodies, bile detergents and acid baths—all the while holding fast against a surging current of corrosive fluids. Yet this environment is what the protozoan pathogen *Giardia lamblia* comfortably calls home.

G. lamblia, a single-celled, pear-shaped parasite that clings to the lining of the upper small intestine, can bring on violent attacks of diarrhea, stomach cramps and nausea. Usually transmitted through contaminated drinking water or unsanitary personal contact, it has become a bane of the backcountry hiker and one of the most common infections in child day-care centers.

But how does it flourish in the inhospitable intestine?

The answer may lie in the parasite's versatile protein coating. In the June 1 JOURNAL OF IMMUNOLOGY, parasitologist Theodore E. Nash of the National Institutes of Health and his colleagues report that when they inoculate patients' intestines with *G. lamblia,* antigens on its protein surface rapidly mutate—and, in doing so, nimbly sidestep the host's antibodies.

Nash's group and others have also detected an unusually rich proportion of the amino acid cysteine in the protein layer. Cysteine may form disulfide bonds, which in turn can form strong links between protein molecules, microbiologist Frances D. Gillin of the University of California, San Diego, and her colleagues speculate in the June PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES (Vol.87, No.12). "So if these cysteines form a network of [bridge-like] cross-links on the parasite's surface," Gillin says, "then that might explain how *Giardia* survives in the small intestine, where it's swimming around in a sea of degradation."