

Behavior

Mysterious thoughts about phobias

It sounds plausible: People with phobias believe that certain situations or objects will cause them harm; therefore, when confronted with one of these feared phenomena, panicky thoughts of catastrophe and danger flood their minds.

The only problem with this scenario is that it may not be true, according to a study directed by psychologist S. Lloyd Williams of Lehigh University in Bethlehem, Pa. A group of agoraphobia sufferers, whose difficulties appeared when driving alone or when confined in an enclosed space, reported virtually no thoughts of impending danger or panic while immersed in these experiences, Williams and his coworkers report in the November *JOURNAL OF ABNORMAL PSYCHOLOGY*.

Agoraphobic volunteers believed that, if plunged into a feared situation, they would experience skyrocketing anxiety and a sense of panic. However, when actually participating in one of the experiments, they experienced gradually rising anxiety levels that revolved around doubts about their ability to perform the required tasks, the researchers hold.

Further work is needed to unravel the mystery of why the same people who believe that a phobic situation will ignite severe anxiety actually express few thoughts about looming danger and panic in the midst of that situation, they note.

Williams' group examined self-reports of the thoughts and feelings of 74 agoraphobic adults as they drove alone or sat in a dark closet with the door closed for up to 20 minutes. Drivers navigated four increasingly scary routes, from a residential neighborhood to a busy highway. A total of 11 nonphobic adults also completed one task or the other.

During their stints on the road or in isolation, volunteers responded to periodic beeps from an electronic device by voicing their thoughts at that moment. This process yielded more than 1,800 tape-recorded statements for analysis.

Participants ranged from being mildly affected to largely incapacitated by their condition. All of them displayed a near-total absence of thoughts about dangerous consequences and potential panic while performing phobia-related tasks, the researchers say. —B.B.

Lighting up anxiety

Cigarette smokers often find it difficult to kick their nicotine habit. Part of the problem, at least according to the official manual of psychiatric disorders, is that people in the throes of nicotine withdrawal typically feel intense pangs of anxiety, which stoke their cravings for a calming batch of smokes.

The psychiatric bible may have it backwards, however, contend Robert West and Peter Hajek, both psychologists at the University of London in England. Regular nicotine use may inflate anxiety levels, which then shrink in the weeks after a person gives up cigarettes, the scientists suggest.

West and Hajek studied 70 adults who stayed nicotine-free for 1 month while attempting to quit cigarette smoking. During that time, the volunteers received either an experimental anti-smoking medication or an inactive pill.

Volunteers reported that their anxiety levels declined markedly during the first week of abstinence and dipped slightly more over the next 3 weeks, the researchers observe in the November *AMERICAN JOURNAL OF PSYCHIATRY*. Neither the active drug nor the placebo influenced anxiety or other withdrawal symptoms, they add.

A prior study conducted by other investigators found that former smokers report considerably less stress and depression than current smokers.

"The present findings, in consort with previous research, lend support to the view that smoking leads to chronically increased anxiety and that giving up smoking improves the situation," West and Hajek conclude. —B.B.

Biology

From New Orleans at the annual meeting of the Society for Neuroscience

Peering into the developing brain

Investigators have for the first time imaged the language-related brain activity of a 15-month-old girl just learning to speak. These snapshots of a developing brain identified many regions previously linked to language use in adults, as well as a few additional areas, says Joy Hirsch of Memorial Sloan-Kettering Cancer Center in New York.

Normally, it's impossible for a very young child to remain motionless long enough to have his or her brain activity imaged. Hirsch and her colleagues sedated the child and exposed her to a tape of her mother's voice. To their surprise, the unconscious girl's brain reacted to the words; when the tape was played backwards, the language areas in her brain did not become active.

The researchers obtained permission to do the study since the child had a large brain tumor and surgeons were hoping to identify and spare regions expected to be devoted to language. The surgery went well, and the child has no obvious language problems, says Hirsch.

Michael S. Gazzaniga of Dartmouth College in Hanover, N.H., praises the imaging studies as an unexpected glimpse into the workings of a developing human brain. He also suggests it might prove interesting to conduct similar studies on sedated adults to investigate what role consciousness plays in how various parts of the brain respond to stimulation. —J.T.

Tuning in to a tasty meal

Formally called *Polyodon spathula*, the paddlefish's common name stems from its long, bill-like appendage. This endangered freshwater fish feeds on plankton in the muddy rivers it inhabits, and some ecologists speculate that the appendage helps the fish stir up the river bottom in its search for food.

Xing Pei of the University of Missouri-St. Louis and his colleagues now suggest that this paddle serves as an antenna that directs the fish to food by detecting small electric signals emitted by moving plankton. The paddle has an array of cells that are sensitive to electricity, and the fish catch food efficiently in darkened tanks. Moreover, the animals aggressively go after wires that emit a weak electric signal. "They're not that clever. They keep trying to bite the wire," says Pei. —J.T.

A role for the prion's better half

Seldom has so little been known about a protein at the heart of a Nobel prize. This year's Nobel Prize in Physiology or Medicine lent respectability to the controversial theory that mad cow disease and several similar neurodegenerative disorders in people stem from the conversion of a harmless protein called PrP into an infectious, cell-killing agent known as a prion. Scientists still have few clues concerning PrP's normal purpose on the surface of cells. Mice lacking their *PrP* gene live to old age and appear healthy.

David R. Brown of the University of Cambridge in England argues that PrP's main role is to bind copper atoms. Moreover, this task may help cells resist the toxicity of highly reactive molecules called oxygen radicals.

Other researchers, notes Brown, had shown that a part of PrP can bind copper. He and his colleagues have now found that brain cells of mice lacking the protein die more readily after exposure to copper than normal brain cells do. Previously, they had discovered that brain cells lacking PrP succumb more easily to oxygen radicals. Superoxide dismutase, an enzyme that protects cells from oxygen radicals, requires copper for its activity, prompting Brown to suggest that PrP helps make copper available to the enzyme. Since copper can alter communication between brain cells, a role for PrP in copper metabolism may also explain subtle neurological differences observed in mice lacking PrP. —J.T.