

## Conscious memories may emerge in infants

Sometime in the first year of life, babies develop a flair for maintaining relatively durable memories of simple events that they can recall intentionally, a new study finds. The investigation raises new questions about why people typically forget all about their infancy.

It also adds to an ongoing debate about whether memory derives from one or many brain systems.

"This is the first solid evidence that infants consciously remember what they have learned," asserts Laraine McDonough, a psychologist at the University of California, San Diego. "But our data don't address whether infants consciously remember where and when they learned the same information."

She and her coworkers present their data in the Aug. 1 PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES and an upcoming JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY.

Before looking at memory in infants, the team examined "deferred imitation" of experimentally demonstrated tasks in eight healthy adults, three adults with frontal-lobe damage that largely spared memory, and seven adults with brain damage that blocked much of their ability to recall new information for more than a few minutes.

Volunteers concentrated on a series of word lists read by a researcher. In between these tasks, they watched the experimenter perform specific actions. These consisted of causal chains of events (such as turning on a hair dryer, placing a balloon in its air stream, and moving the balloon by tilting the dryer)

and arbitrarily ordered events (for example, folding and unfolding a piece of paper, cutting off its corners, and drawing a star on it).

The next day, the researchers showed the same sets of objects to the volunteers and asked them first to handle the objects as they wished, then to imitate the researcher's earlier actions.

Healthy participants and those with frontal-lobe damage correctly imitated most of the previously viewed actions, even when doing what they wished with the objects, McDonough's group reports. The other brain-damaged patients recalled far less and performed on a par with seven healthy adults given the objects without having seen the demonstrations.

Successful deferred imitation relies on brain structures essential for declarative memory, the capacity for intentionally calling to mind specific facts and events, McDonough argues. Amnesia-inducing brain damage affects these structures, she theorizes, but not those needed for procedural memory, which handles skills and knowledge employed without conscious effort.

The second study shows that babies also imitate actions after long delays and thus display declarative memory, according to McDonough. She and San Diego coworker Jean M. Mandler conducted a study in which 12 babies, all 11 months old, observed a researcher performing simple actions. These included causal sequences (such as making a rattle by putting a button in a box and shaking it) and arbitrary sequences (say, putting a



bracelet on a teddy bear and brushing the bear).

When shown the sets of objects 1 day later and 3 months later, infants accurately imitated the causal sequences but largely forgot the arbitrary sequences.

"These data reflect deferred imitation by 11-month-olds, but it's very difficult to know if this is conscious remembering in infants," asserts Carolyn Rovee-Collier of Rutgers University in New Brunswick, N.J.

Moreover, the work with amnesia patients probably revealed more about memory's decline than its development, Rovee-Collier holds, since all subjects exceeded 55 years of age.

Rovee-Collier theorizes that a single memory system renders infants sensitive to cues in their surroundings that trigger recall (SN: 4/18/92, p.244).

McDonough responds that Rovee-Collier studies only procedural forms of memory in infants. The loss by adulthood of declarative memories from infancy may stem partly from the massive pruning of brain connections that normally occurs during childhood, she suggests. —B. Bower

## Tranquilizers mimic Parkinson's symptoms

A 70-year-old woman turns up at her doctor's office moving slowly with stiffness and tremor—the classic symptoms of Parkinson's disease. The doctor prescribes the anti-Parkinson's drug L-dopa to alleviate her symptoms.

But this physician had previously prescribed the drug haloperidol (Haldol) for the patient's anxiety, agitation, and fears—behavioral problems associated with senile dementia. Because of the way haloperidol affects the brain, this woman's "Parkinson's" could in fact be the result of the original medication.

Such confusion may be all too common. A new study by researchers at Harvard Medical School in Boston indicates that elderly people taking medications to control nervous disorders and dementia may end up with drug-induced Parkinson's disease symptoms. What's more, people suffering from these symptoms often get additional drugs that provide no relief and may

cause hallucinations and psychoses.

"Because the symptoms of true Parkinson's are indistinguishable from drug-induced Parkinson's, physicians need to review the patient's medication record," says geriatrician Mark Monane, a collaborator on the study.

Parkinson's disease results from the loss of brain cells that produce the chemical dopamine. Haloperidol and some other tranquilizers block receptor molecules for dopamine, sometimes causing symptoms of Parkinson's disease in response to the apparent lack of the neurochemical.

The researchers studied 19,929 Medicaid recipients, 3,512 of them first-time users of anti-Parkinson's drugs and 16,417 nonusers. They report in the July AMERICAN JOURNAL OF MEDICINE that patients on tranquilizers were twice as likely as those not on tranquilizers to be taking strong anti-Parkinson's drugs (dopaminergic drugs)

such as L-dopa or Sinemet and 5.4 times as likely to be taking any type of anti-Parkinson's drug (either dopaminergic or anticholinergic drugs).

"L-dopa and Sinemet are completely ineffective in treating drug-induced Parkinson's, while subjecting patients to side effects of the drugs [which include hallucinations, low blood pressure, and sleep problems]," says study leader Jerry Avorn. Avorn notes that while anticholinergic drugs may be effective, they too have side effects.

"These results should raise the question in doctors' minds of thinking of a drug-related cause for the sudden onset of Parkinson's disease," says Stanley Slater of the National Institute on Aging in Bethesda, Md.

Whether drug-induced Parkinson's appears depends on the dosage of the tranquilizer, says Monane. The researchers recommend that doctors consider reducing or stopping the tranquilizer before adding an anti-Parkinson's drug. —L. Seachrist