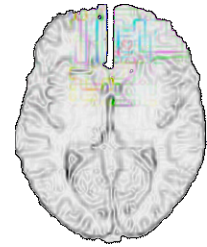


# NEUROPSYCHOLOGICAL STUDIES OF BRAIN INJURY

UNIVERSITY OF PENNSYLVANIA  
CENTER FOR COGNITIVE NEUROSCIENCE (CCN)



## PATIENT RESEARCH PROGRAM: BRAIN-INJURED AND NON-BRAIN INJURED SUBJECTS NEEDED FOR STUDIES

Patients who are part of the Center for Cognitive Neuroscience (CCN) Patient Database work together with scientists who study cognitive processing in the brain. The studies focus on how changes in the brain, such as those that occur as a result of stroke, affect things like reading, memory and problem solving. The tasks that the patients are asked to perform are typically done with paper and pencil or by using a standard computer. The patients are viewed as collaborators in this research, in that by sharing what has changed for them as a result of their brain injury, they help guide the researchers' hypotheses about brain function.

Recently, our group began testing subjects who have never had a brain-related problem. These subjects are just as important in making claims about brain function because the researchers can compare the performance of patients to individuals of similar age and education. In this way, differences in test results can most

likely be attributed to the brain area that has been affected in the patients.

To date, we have conducted over 850 testing sessions, including patients and non-brain injured controls.

If you are a friend or family member of one of our patients and would be interested in participating in one of our studies (you receive the same kinds of tests as the patients), not only will you be doing a good deed in helping us to learn about brain function, but you will receive compensation in the form of \$15 per hour.

*If you would like more information about either the Patient or Normal Control Programs, contact the Patient Coordinator at [215-615-3649](tel:215-615-3649).*

## THANK YOU

Thank you to all who have participated, as well as to spouses, family, and significant others who have helped to make it possible for us to do our testing by either providing transportation to and from the university or by opening your homes to us.

## ONGOING STUDIES

The famous neurologist, Korsakoff once stated that "A man's memory is all that stands between him and chaos." Amnesia is the inability to form or retrieve memories. Amnesia can be for the past (retrograde amnesia) or for the present (anterograde amnesia). Amnesia can be graded, where only some memory deficits are observed, or it can be more profound. In the latter case, patients are unable to form new memories and remain mentally at some point in time before their brain damage as if they are stuck in a time warp. The overall effects of amnesia depend on the type and severity of the event that caused the injury. What causes amnesia? Head trauma, various illnesses, or accidents such as carbon monoxide poisoning are the leading causes.

Hollywood fell in love with amnesia long ago and has used it (usually inaccurately) in numerous films. For instance, Alfred Hitchcock's film *Spellbound* is about a man who has forgotten his past (retrograde amnesia). Other films about people with retrograde amnesia are *Dead Again*, *Anastasia*, *The Bourne Identity*, *The Long Kiss Goodnight*, *The Majestic*, and *The Man*

*Without a Past*. There are fewer movies about anterograde amnesia, but two recent ones are *Memento* and *50 First Dates*.

Although Hollywood is not so intrigued with anterograde amnesia, neuroscientists are very interested in this illness. Anterograde amnesia allows scientists to study how the normal brain forms memories. Findings from patients with anterograde amnesia have shown that one area of the brain, the medial temporal lobe, is especially important in the formation of new memories. We have two ongoing projects aimed at understanding how this region is involved in memory formation. One project is aimed at understanding whether this region is importantly involved in non-verbal, visual memories, and the other project is aimed at understanding whether this region is involved in the linkage of different elements of a memory into a coherent ensemble.

~ Ingrid Olson, Ph.D.

I oversee two research projects that are funded by the National Institutes of Health. One project is focused on exploring impairments in language and memory that accompany damage to the frontal lobes. Another project, just funded this year, will allow us to investigate the relationship between vision and long-term memory. The patient database is an important part of both projects, as it helps us to identify patients with cognitive impairments who will help us better understand language, memory, and vision.

~ Sharon Thompson-Schill, Ph.D

Several studies are on-going (many in collaboration with other scientists at the CCN), including one examining what parts of the brain are important in regulating emotion and mood, and another looking at how the brain keeps track of stereotypes.

This work has been judged important enough to warrant continuing financial support from the National Institutes of Health, and new support from the Canadian Institutes of Health Research, and the Fonds de Recherche en Sante du Quebec.

~ Lesley Fellows, M.D., D.Phil.

## RECENT PRESENTATIONS

At the Cognitive Neuroscience Society meeting in San Francisco, April 2004, **Dr. Lesley Fellows** presented "Is anterior cingulate cortex necessary for cognitive control?". This study raises questions about two popular theories of how attention is organized in the brain.

In November, Dr. Fellows will present a paper entitled "Damage to ventromedial prefrontal cortex impairs simple preference judgments in humans" at the Society for Neuroscience meeting in San Diego. This study shows that damage to a particular part of the frontal lobes can sometimes lead to inconsistent choices. Not only is this helpful in understanding some of the problems experienced by people with injury to that part of the brain, but it sheds light on what parts of the brain are important in normal decision making.

## RECENT PUBLICATIONS

**Fellows L.K. and Farah M.J.** (2004). Different underlying impairments in decision making following ventromedial and dorsolateral frontal lobe damage in humans. *Cerebral Cortex*, Epub June 24.

**Thompson-Schill, S.L.** Dissecting the language organ: A new look at the role of Broca's area in language processing. To appear in *Twenty-first Century Psycholinguistics: Four Cornerstones*. (Edited by A. Cutler) Hillsdale, NJ: Lawrence Erlbaum Associates.

## FACULTY UPDATE

Studying how language problems affect patients with frontal lobe damage may provide clues into obstacles young children must overcome when learning a language. **Dr. Sharon Thompson-Schill** has joined forces with psycholinguist John Trueswell and graduate student Jared Novick to explore some surprising similarities between these two groups of people. Their latest research will be presented in Aix en Provence this Fall.

In the past year, **Dr. Thompson-Schill** has spoken about her work to audiences across the United States and in the Netherlands, England, Wales, Scotland, and France.

**Dr. Lesley Fellows** has (finally!) finished her fellowship training, and has headed back to Canada to take up a faculty position at McGill University in Montreal. She sends a big 'thank you' to everyone who has given their time and effort to her research projects at Penn.

## FACULTY DIRECTORS

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FOR MORE INFORMATION:  
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PATIENT COORDINATOR

215-615-3649

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## INTERNET RESOURCES FOR PATIENTS

A quick check on the internet turns up a variety of organizations with tremendous contact information for patients. These include support groups for patients and resources for family members too. Here are a few that we came up with—these are not necessarily organizations with whom we have a lot of contact, but they might be worth checking out.



**National Aphasia Association (NAA) (800)-922-4622**

[www.aphasia.org](http://www.aphasia.org)

The NAA site also includes a number of recommendations. Here are a few.

**Brain Injury Association of America (703) 761-0750**

[www.biausa.org/index.html](http://www.biausa.org/index.html)

**National Brain Tumor Foundation (800) 934-CURE**

[www.brainumor.org](http://www.brainumor.org)

**National Patient Travel Center (800) 296-1217**

[www.patienttravel.org](http://www.patienttravel.org)

**National Stroke Association (800) 787-6537**

[www.stroke.org](http://www.stroke.org)

**The Well Spouse Foundation (800) 838-0879**

[www.wellspouse.org](http://www.wellspouse.org)

**HEAD Injury Hotline 212 Pioneer Bldg., Seattle, WA 98104-2221**

[www.headinjury.com](http://www.headinjury.com)

**American Academy of Neurology**

[www.neurology.org](http://www.neurology.org)

Click on "Patient Pages", and you will find articles written for patients and their families concerning research and information on neurological diseases.

**American Speech-Language-Hearing Association (ASHA) (800) 638-8255**

[www.asha.org](http://www.asha.org)

This site contains resources related to speech, language and swallowing.

**American Stroke Association (888) 478-7653**

[www.strokeassociation.org](http://www.strokeassociation.org)

This site is huge, and it contains a wealth of information about stroke and conditions related to stroke.