



People with **Aphasia** helping each other to become independent, communicate with other **Aphasic** people and overcome **Aphasia** together

Aphasia Recent Research - Part I

Dr Jenny Crinion

Part 1 (of 3): A Closer Look at Recovery

Aphasia is a communication disorder that can affect a person's ability to use and understand spoken or written language.

It usually results from damage to the side of the **brain** dominant for language. For most people, who are **right handed** this is the **left side**.

To understand **recovery processes in the brain**, we are attempting to use **functional MRI** (magnetic resonance imaging) to uncover the anatomical organization of the human brain regions involved in

- **understanding spoken and written words and sentences.**

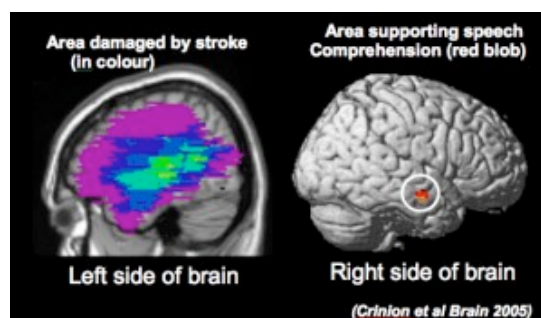
I plan to do this by studying people **immediately after their stroke** and then monitor their brain and language changes over the subsequent months and in some cases follow them up over **several years**.

This type of research may improve understanding of how **brain areas reorganize** after focal brain injury.

The results could have implications for both the basic **understanding** of brain function and the **diagnosis and treatment** of neurological diseases.

For example: Recent results show that

- following an extensive left hemisphere stroke
- **good recovery of speech comprehension** is dependent on activation in an area in the **right** hemisphere of the brain
- (see picture below) [Crinion and Price 2005]



Reference

Crinion J, Price CJ. Right anterior superior temporal activation predicts auditory sentence comprehension following aphasic stroke. *Brain* 2005.

Next step

If you have any other questions or would like to get involved in our research please contact **Jenny Crinion**; **contact details can be found in Part III of this article.**

Aphasia Recent Research - Part II

Jenny Crinion

Part 2 (of 3): New Approaches to Evaluation: Brain and language functioning.

Aphasia is a communication disorder that can affect a person's ability to use and understand spoken or written language.

It usually results from damage to the side of the **brain** dominant for language. For most people, who are **right handed** this is the **left side**.

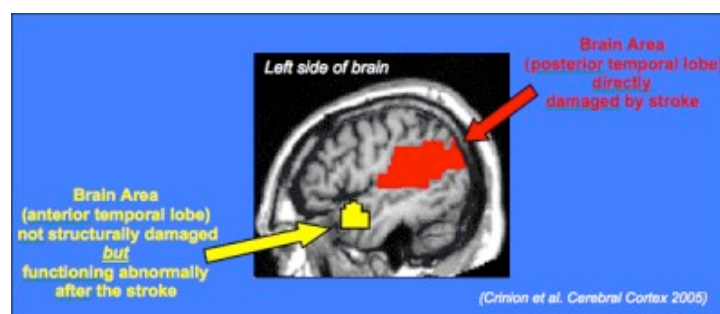
In an attempt to understand why some patients recover and some don't we use **functional MRI** (magnetic resonance imaging) **brain imaging**.

We hope to reveal the underlying crucial brain areas that when damaged cause specific aphasia symptoms.

- The **goal** is to **understand** how injury to a particular brain structure impairs specific portions of a person's language process.
- The **results** could be useful in **treating** many types of aphasia, since the underlying cause can vary.

For example: We found that

- despite patients having **similar brain damage**, (lesions to the left posterior temporal lobe, **Wernicke's area**)
- they had **recovered speech comprehension to varying degrees**.
- The reason was that **brain areas on the left side**, near to the stroke but not directly damaged by it were **not functioning** normally. (*See figure below*)
- The implication is that in the patients who did not recover speech comprehension the **connections between the 2 brain regions were also damaged by the stroke**. [Crinion et al. 2005]



Future treatments will be targeting these structurally intact brain regions to make them function normally again through **drugs** and **speech/language therapy** and hopefully then these aphasics' speech comprehension will

improve too.

Reference

Crinion, J. T., Lambon-Ralph, M. A., Warburton, E. A., Howard, D., and Wise, R. J. Function of the anterior superior temporal sulcus during speech comprehension after aphasic stroke. *Cerebral Cortex* . 2005.

Next step

If you have any other questions or would like to get involved in our research please contact **Jenny Crinion; contact details can be found in Part III.**



People with **Aphasia** helping each other to become independent, communicate with other **Aphasic** people and overcome **Aphasia** together

Aphasia Recent Research - Part III

Jenny Crinion

Part 3: New Approaches to Characterisation and New Therapeutic Approaches.

New Approaches to Characterisation: Multilingual speakers.

Since the same **types of aphasia look different from one language** to another, we are attempting to distinguish between

- universal symptoms of aphasia and
- those that are language specific.

Researchers are also looking at how **treatment** of other cognitive deficits involving **attention and memory** can improve communication deficits.

We hope that these studies may help with the

- development of tests tailored to specific characteristics of **individual languages** and
- in clinical services to **bilingual** communities.

New Therapeutic Approaches: Drugs, Speech Therapy and Computers

Pharmacotherapy is a new, experimental approach to treating aphasia.

Dr Alex Leff, a neurologist in the language group is testing

- how **drugs** can be used in **combination with speech therapy**
- to improve recovery of **speech comprehension**
- by increasing the task-related flow of activation in the left hemisphere of the brain.

Previous studies indicate that drugs may help improve aphasia in acute stroke and as an adjuvant to language therapy in postacute and chronic aphasia.

The additional treatment approach uses **computers** to improve the **speech comprehension** abilities of people with aphasia.

Studies have shown that people who have auditory problems perceiving the difference between phonemes can benefit from computers, which can be used for speech-therapeutic auditory discrimination exercises.

Next step

If you have any other questions or would like to get involved in our research please **contact Jenny Crinion**. Here are several ways to contact us:

Telephone: FIL reception on **020 7833 7472**.

Address: Wellcome Department of Imaging Neuroscience, 12 Queen Square, LONDON, WC1N 3BG **E-mail: j.crinion@fil.ion.ucl.ac.uk**

Internet: <http://www.fil.ion.ucl.ac.uk/Price/>