

Center for Aphasia



and Related Disorders

Fall 2005

Volume 5, Issue 2

# Aphasia News

## *The Holidays are Here!*

### Inside this issue:

Cross-linguistic Research in Aphasia	2,3
Definitions of Stroke	4
Holiday Party Invitation	5
Game Zone	6
Holiday Greetings	7

### Have you Heard?

The annual Holiday Party is December 7th!

See page 5

Dear Friends,

Holiday greetings to everyone! We have had a very busy Summer and Fall, and the holidays just seem to have snuck up on us!

In August, we hosted a conference on Cross-Linguistic Studies in Aphasia that included researchers from England, Italy, and Taiwan. We discussed our ongoing research projects aimed at understanding how aphasia affects people in different languages. It was a very successful meeting, and a lot of exciting ideas and data were shared.

One of our colleagues from Taiwan, Dr. Ching Ching Lu, received a Fulbright Scholarship, which allowed her to stay and work with us in our lab through November. Between Ching Ching and her assistant Lydia Huang, we learned a lot about Chinese languages and the kinds of problems that stroke patients in Taiwan face. We are very grateful to both of them for spending time with us.

In other news, we recently received a 4-year grant from the VA to do more research on aphasia and the effects it can have on other aspects of cognitive functioning. We are very excited to receive this grant, and to try and answer more interesting questions about aphasia and the brain.

Last, we want to welcome a new addition to our lab—Fedor Petrenko. He is a recent graduate of UC Berkeley, and he is our new research assistant in the lab. We are very lucky to have him on board, and he has already become a valuable member of our group.

We are looking forward to seeing you at our annual Holiday Party, which will be on Wednesday Dec. 7<sup>th</sup>, from 12:30-2:30. If we don't see you there, we hope you have a wonderful holiday season and a Happy New Year!

Sincerely,  
Nina Dronkers, Ph.D., Director

## *Cross-Linguistic Research in Aphasia*

by Fedor Petrenko

A great deal of research has been done to determine how language is disrupted by stroke. We now have a good picture of the many different forms of aphasia that can occur following a cerebral infarct. Non-fluent aphasia (Broca's), fluent aphasia (Wernicke's), anomia, and apraxia of speech are just a few of the syndromes we are familiar with. However, a great deal of this research has been carried out exclusively with English speakers. This makes it very difficult to propose a general theory of language that can be applied to the thousands of different dialects around the world.

Without a look at stroke patients from other linguistic backgrounds, we might never know, for example, if a Chinese Broca's aphasic has the same difficulties with speech as an American aphasic. Perhaps the most important question one could pose, however, is the following: What is universal about language and language loss? That is, what are the common characteristics of aphasia around the world? Are different languages processed in the same way by the brain?

Through research with aphasic patients from countries such as Germany, Italy, Turkey, and China, scientists are discovering that the "same" aphasic syndromes in fact look very different from one language to another. For example, unlike English, Chinese dialects have distinct tones that accompany words and modify their meanings. If you leave out the tone, the word "ma" could mean "mother", "scold", or "horse" in Chinese. Unfortunately, a lot of aphasic patients in Asian countries have difficulty producing these tones as well as understanding them, which makes communication difficult. This difference in the way that tonal languages are produced and perceived has a wide range of implications for treatment and recovery.

Another interesting finding has been made by comparing English-speaking Broca's aphasics with those who speak German or Italian. To review, people

with Broca's aphasia have problems with language production, but comprehension is usually spared. In English, Broca's aphasics speak in shorter sentences, and often leave out grammatical rules or omit article words such as "the", "a" and "an". However, it has been found that Italian and German aphasics still include these articles. In considering this important difference between these patient groups, the investigators hit upon a very fundamental difference between the three languages. In English, article words carry relatively little information about the object—"the", "a", and "an" are simply conventions that precede a word. By themselves, each of these three articles does not convey much information about the noun that follows. For example, "a tree" does not say significantly more than simply "tree". However, the Italian and German versions of these articles can indicate gender, number, and case. Therefore, their functional value is greater than it is in English, so they are more likely to be preserved in Broca's aphasics.

While it is true that there are many differences between languages, there are also many similarities. Let us return to the question of universality in the languages of the world. What is true of every human language, no matter how different or bizarre the pronunciation, grammar or sentence structure? Every language is a system of conventional sounds, gestures, or symbols that convey meaning. All languages have a system of rules, called syntax or grammar, which allows the construction of any number of meaningful sentences. Every language can be broken down into tiny word-like units, the smallest parts of language that carry meaning.

From an anatomical perspective, all languages use similar parts of the brain. For example, between 70 and 90 percent of all people use the left hemisphere of their brain for language, regardless of the language they speak. The production of speech mostly occurs in frontal regions of the brain, such as Broca's area. In contrast, comprehension of speech

**“What is universal about language and language loss?”**

## Cross-Linguistic Research in Aphasia (cont'd)

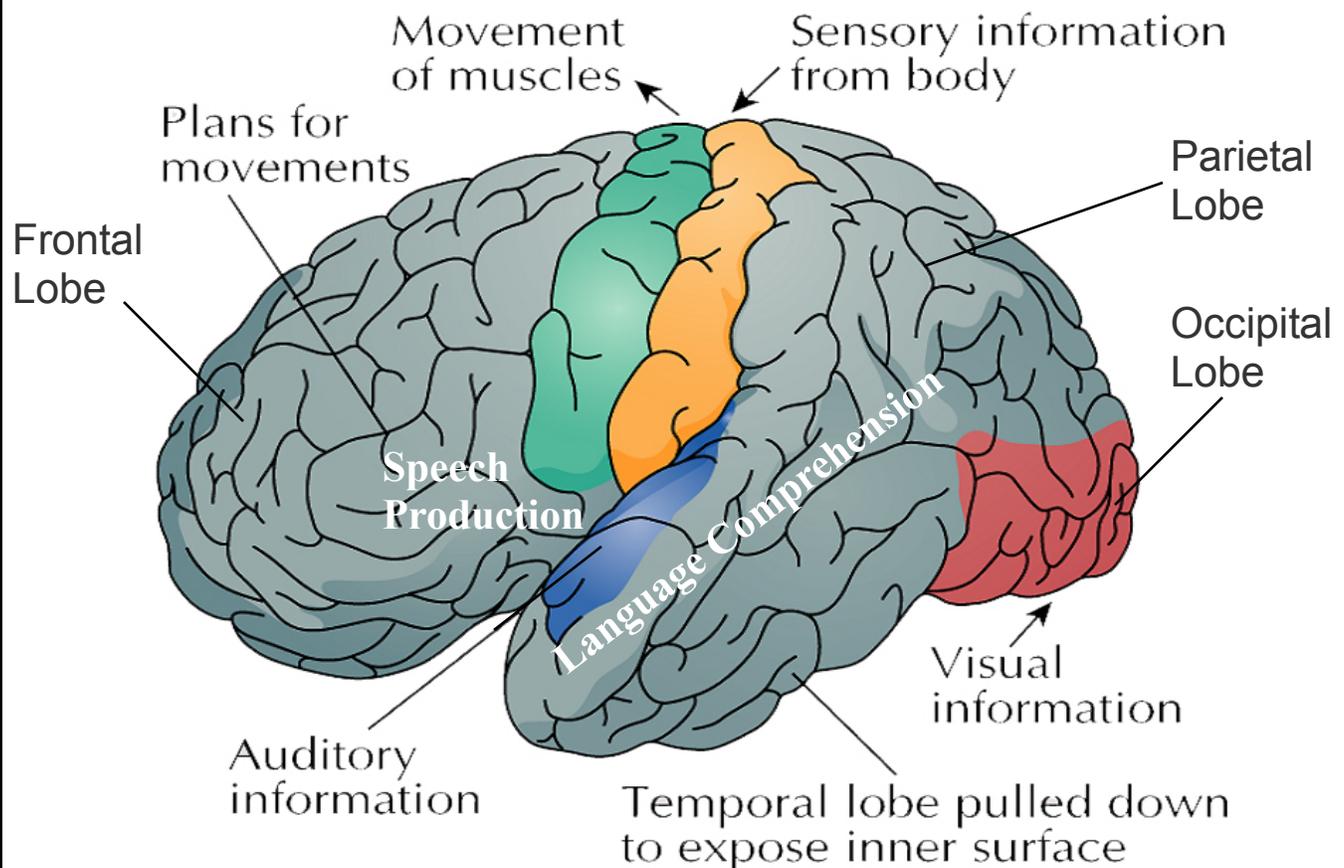
is processed in more temporal regions, particularly Wernicke's area. The functions of these two areas have been found to be very constant across different languages. The frontal regions of the brain are involved in activities such as motor planning and execution, which are both crucial for speech production. In turn, temporal regions include the auditory cortex, which processes the speech sounds crucial for understanding words.

Although there are basic similarities, the specific ways that unique languages are represented in the brain can be different. We must not forget that the neural systems that support language are among the most complex in the brain. For example, Chinese speakers use a significant region of the left hemisphere to process tones, but this area is used differently by English

speakers, for whom tone does not carry as much meaning. In order to understand more about these differences in brain function, we are currently designing experiments with our colleagues in Taiwan.

While the differences between languages and their neuroanatomical links are fascinating, the inherent similarities are perhaps even more important. For example, while they do look a bit different in other languages, the basic syndromes of Broca's and Wernicke's aphasia occur around the world. Thus, cross-linguistic research can contribute findings that advance treatments for English speaking aphasics. No matter what language a person with aphasia speaks, the goals for therapy are always the same: to rehabilitate the production and comprehension of language, and restore the ability to communicate.

"While they do look different in other languages, the basic syndromes of Broca's and Wernicke's aphasia occur around the world."



## Stroke and Aphasia Definitions

**Aphasia** – impairment in speech and language following a brain injury.

**Broca’s aphasia** – language impairment that affects a person’s ability to say what they want, with relatively good speech comprehension. A person with this type of aphasia may use short phrases or single words to convey what they want to say.

**Wernicke’s aphasia** – language impairment that affects a person’s ability to understand what is being said to them. People with this type of aphasia may sound fluent, but it is difficult to understand what they are trying to say. Sometimes, they are helped if a person communicates with them by writing information down.

**Conduction aphasia** – language impairment that involves mildly impaired comprehension, some difficulty speaking, and a reduced ability to repeat what has been said.

**Anomic aphasia** – one of the milder forms of aphasia that involves difficulty with word-finding, but relatively good comprehension and ability to speak.

**Global aphasia** – the most severe form of aphasia, which greatly impairs a person’s ability to both speak and understand what is being said to them. People with this type of aphasia may rely on pointing and gestures to communicate with others.

**Stroke** – general term for a loss of blood and oxygen to the brain that results in the loss of brain tissue. This is also sometimes called a cerebrovascular accident (CVA) or a brain attack.

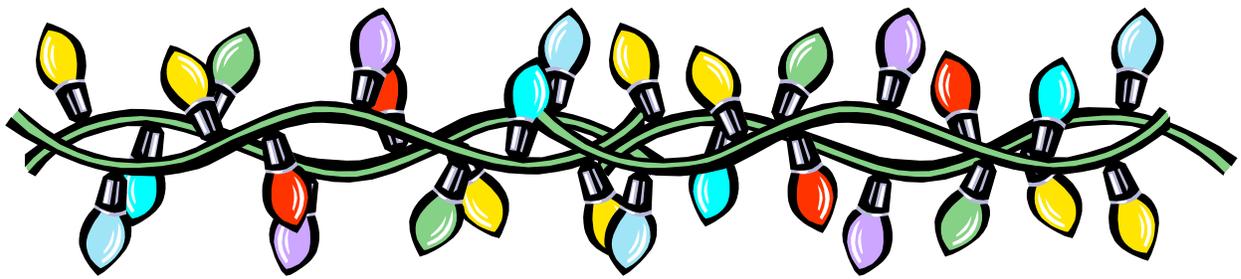
**Ischemic stroke** – this type of stroke occurs when an artery in the brain is blocked, for example, by a blood clot. This clot may have originated somewhere else, such as the heart.

**Hemorrhagic stroke** – this type of stroke occurs when a blood vessel in the brain bursts and blood flows out. Sometimes, the pressure of the extra blood in the brain can cause damage, in addition to the damage due to the loss of blood flow.

**Aneurysm** – an enlargement of an artery due to a weakening of the vessel’s wall. This is often congenital (you’re born with it). At some point, if a person’s blood pressure is high enough, the aneurysm may burst, leading to a hemorrhagic stroke.

### Always keep in mind the warning signs of stroke:

- Sudden numbness or weakness, especially on one side of the body
- Sudden confusion
- Sudden vision problems in one or both eyes
- Sudden difficulty walking, dizziness, loss of balance or coordination
- Sudden, severe headache with no known cause
- Sudden difficulty speaking or understanding speech



# Stroke Support Group Annual Holiday Party!

**When:** Weds., December 7th,  
12:30–2:30 p.m.



**Where:** Room E8A&B on 1st Floor  
of AB21 (tallest building at the VA)

**What to bring:** A dish or drink to share, if you are  
able, and a wrapped ornament to exchange



*Questions: call Juliana (925) 372-4649*

# Game Zone/Exercises

## WINTER WHITE DELIGHTS - WORD SEARCH

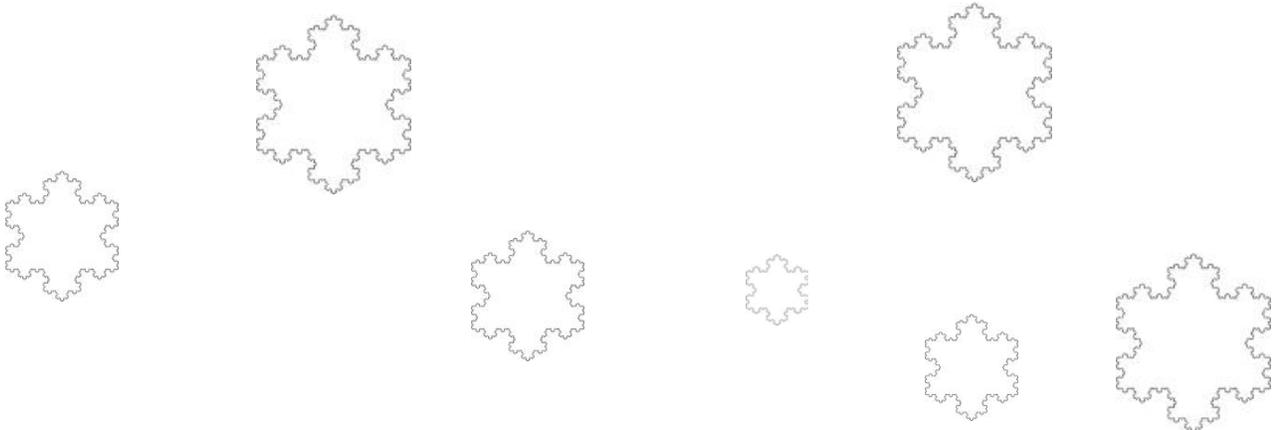
- boots
- coat
- cold \*
- crystal
- flake
- fort
- frost \*
- frozen
- hail
- hat
- ice cream
- ice fishing
- icicle \*
- icy \*
- igloo \*
- mittens
- popsicle
- skate
- ski \*
- sled \*
- sleet
- sleigh
- slick
- slush \*
- snow angel
- snow cone
- snowball

S	M	I	C	E	F	I	S	H	I	N	G
E	N	L	T	T	R	H	C	E	C	C	F
S	N	O	W	C	O	N	E	Y	I	O	R
P	F	L	W	D	Z	H	A	T	C	S	O
C	O	L	D	A	E	H	A	I	L	L	S
R	R	P	W	I	N	T	S	L	E	E	T
Y	T	H	S	A	I	G	L	O	O	D	S
S	C	S	L	I	C	K	E	U	S	P	L
T	C	O	A	T	C	O	F	L	A	K	E
A	B	O	O	T	S	L	U	S	H	F	I
L	C	I	C	E	C	R	E	A	M	O	G
C	S	N	O	W	B	A	L	L	O	A	H
S	K	A	T	E	M	I	T	T	E	N	S

## HIDDEN MESSAGE

After you have found all the words, start at the top of the puzzle. Going from left to right on each line, fill in the spaces below with the letters NOT used in the found words. Find the hidden message!

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# Aphasia News

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## Contributors

*Thanks to:*  
Nina Dronkers  
David Wilkins  
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Luci Varian  
Fedor Petrenko

We would also like to thank the members of the Stroke Support Group and their families, the Speech Pathology staff, and the East Bay Institute for Research and Education.

## Newsletter Information

If you would like to receive this newsletter or you have comments/suggestions, call Juliana Baldo at (925) 372-4649 or email her at [juliana@ebire.org](mailto:juliana@ebire.org), or write to:

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We welcome your comments and questions!

The Center for Aphasia and Related Disorders is supported by the VA Northern California Health Care System, the VA Medical Research Program, the National Institutes of Health, and the University of California (at Davis and San Diego), as well as through generous donations from private foundations and individuals. Please feel free to contact Dr. Dronkers if you would like more information, at (925) 372-2925.