

# Chapter 9b – Brain and Language

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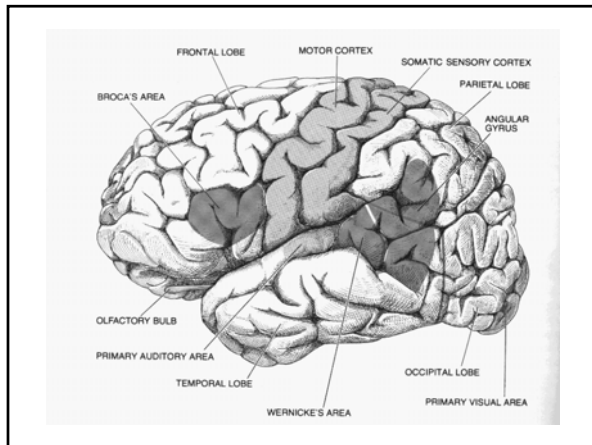
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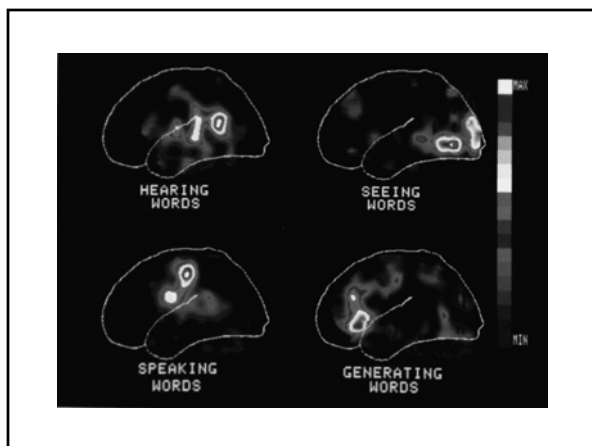
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## Broca's Aphasia

- **M.E.** Cinderella...poor...um 'dopted her...scrubbed floor, um, tidy...poor, um...'dopted...Si-sisters and mother...ball. Ball, prince um, shoe...
- **Examiner** Keep going.
- **M.E.** Scrubbed and uh washed and un...tidy, uh, sisters and mother, prince, no, prince, yes. Cinderella hooked prince. (Laughs.) Um, um, shoes, um, twelve o'clock ball, finished.
- **Examiner** So what happened in the end?
- **M.E.** Married.
- **Examiner** How does he find her?
- **M.E.** Um, Prince, um, happen to, um...Prince, and Cinderella meet, um met um met.
- **Examiner** What happened at the ball? They didn't get married at the ball.
- **M.E.**No, um, no...I don't know. Shoe, um found shoe...

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## Wernicke's Aphasia

**Examiner:** What brings you to the hospital?

**Patient:** Boy, I'm sweating, I'm awful nervous, you know, once in a while I get caught up, I can't mention the tarripoi, a month ago, quite a little, I've done a lot well, I impose a lot, while, on the other hand, you know what I mean, I have to run around, look it over, trebbin and all that sort of stuff.

**Examiner:** Thank you, Mr. Grogan. I want to ask you a few –

**Patient:** Oh, sure, go ahead, any old think you want. If I could I would. Oh, I'm taking the word the wrong way to say, all of the barbers here whenever they stop you it's going around and around, if you know what I mean, that is tying and tying for repucer, recuperation, well, we were trying the best that we could while another time it was with the beds over there the same thing

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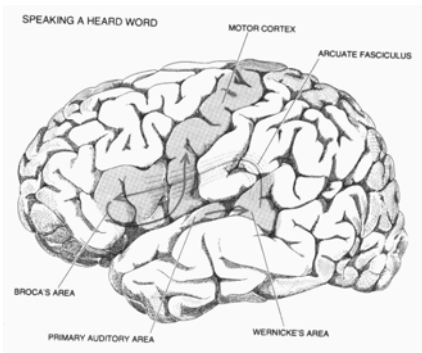
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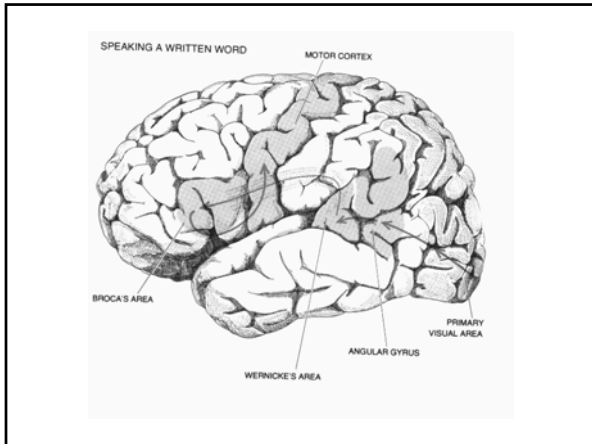
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### Bilingualism

- Different regions for different languages?

#### fMRI Evidence:

- Dehaene et al (1997)
- Kim et al (1997)
- Wagner et al (1999)

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### Dehaene et al (1997)

- N = 8
- Listen to stories:
  - Native (French)
  - Second (English) - after age 7
- Found:
  - Native = activation in Broca's
  - Second = activation spread through frontal regions

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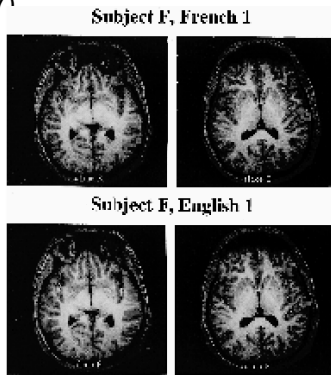
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Dehaene et al (1997)

- Conclude:
- separate centers for 2 langs



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Kim et al (1997)

- N = 6
- Silent word reading:
  - Native (English)
  - Second (French) - after age 11
- Found:
  - Native = left activation
  - Second = left activation
    - 2 centers = 7.9 mm apart

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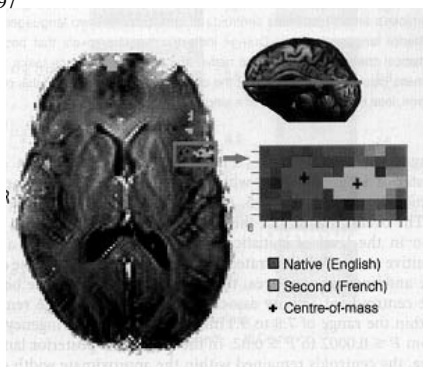
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Kim et al, 1997



•Conclude: separate - but close centers

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Wagner et al (1999)

N = 8

- Decide if words in upper/lower case:
  - Native (Spanish/English)
  - Second (Spanish/English) - after age 10
- Found:
  - Native = left activation
  - Second = left activation

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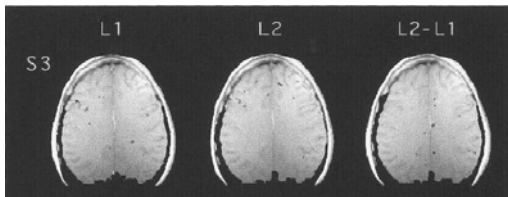
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Wagner et al (1999)



•Conclude: same location

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One location or 2? Or 3? Or?

- Differences in procedure/task
  - Listening, Reading, Deciding
- Differences in languages
  - English, French, Spanish
- Small sample sizes

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### Reichle, Carpenter & Just (2000)

- 12 participants
- measured verbal and spatial ability
- Sentence-picture verification task (plus above star)
- had participants do some blocks of trials using verbal strategy and others using visual-imagery strategy

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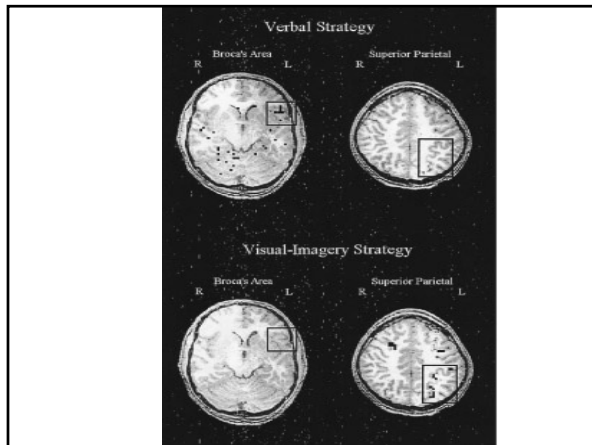
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