Pure word deafness
Poeppel 2001

Table 1
Auditory disorders following cortical and/or subcortical lesions

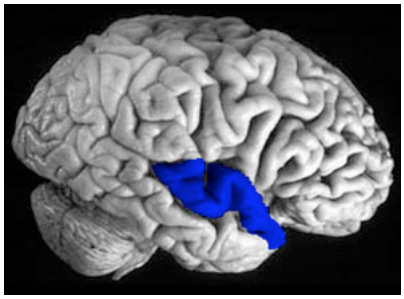
	Pure word deafness	Auditory agnosia	Cortical deafness
Speech comprehension	impaired	1 (or mildly impaired)	impaired
Speech repetition	impaired	1 (or mildly impaired)	impaired
Recognition of familiar non-speech sounds	1	impaired	impaired
Recognition of music	1	1 /2	impaired
Hearing sensitivity (audiometry)	1	1	impaired
Language I: Spontaneous speech	1	1	1
Language II: Reading comprehension	1	1	1
Language III: Writing	1	1	1

1 indicates adequate performance in a given domain.

In the brain…

- Of those 59 cases, 42 have bilateral temporal lobe lesions (cortical and subcortical)
- and 17have unilateral lesions (mostly subcortical).
- Of the 17 unilateral lesion cases, 16 are in the left temporal lobe and only one is in the right temporal lobe (Roberts et al. 1987).

- The fact that most of these patients only manifested PWD subsequent to the second lesion supports the hypothesis that both sides of the superior temporal gyrus are necessary.

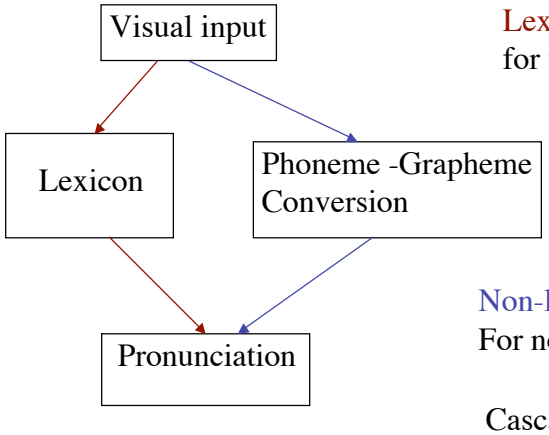


- If the lesion includes primary ("core") auditory cortex and pSTG bilaterally, the disorder will be cortical deafness or auditory agnosia including word deafness - a'prephonemic' disorder. The word deafness occurring in this case is associated with a deficit in analyzing many types of auditory information.
- If the lesion is restricted to pSTG bilaterally, the patient presents with PWD. Speech perception is fully compromised and speech sounds are perceived as noise.
- If the lesions are subcortical with cortical sparing (due to a unilateral or bilateral lesions), the syndrome is the one commonly designated 'disconnection syndrome.' Speech sounds are perceived as belonging to a foreign language.

Word reading DRC

- Dual Route Cascaded Model of reading (Coltheart et. al. 2001).
  - There are two routes that visual input can take in reading tasks:
    - The lexical route
    - The non-lexical route
- Model is cascaded, activation spreads immediately throughout the network.
- Variation of a logogen model: there are semantic/cognitive aspects of words, and there are morphological/phonological forms

DRC model



Lexical route: more efficient for words

Non-lexical route: more efficient For non-words

Cascaded model: both routes active and 'compete'

Evidence for DRC

- Competition of two routes provides for the following effects:
  - Consistency (regularity) effect (Forster et.al 1973): Regular words are pronounced faster than irregular ones.
  - Regularity combines with frequency effect (Seidenberg et al. 1984): The regularity effect increases for low frequency words as compared to high frequency words.
  - Neighborhood regularity effect (Glushko 1979): Words that have only regular neighbors (e.g. ‘bang’; compare ‘rang’ and ‘sang’) are pronounced faster than words that have some irregular neighbors (e.g. ‘base’; compare ‘case’ and ‘vase’).

Patient evidence

- Surface dyslexia
  - Exhibited by a selective impairment in their ability to read irregular words but have normal ability to read words and non-words.
- Lexical route is damaged

More patient data

- Phonological dyslexia
  - A selective impairment of the ability to read pronounceable non-words. However, the ability to read both regular and irregular words is spared. So, for example, ‘gat’ would be problematic, but not ‘cat’.
- Non Lexical route is damaged