



# Right Hemisphere Language Abilities

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# History of RH language

- ☞ 1860: RH role in recovery from aphasia (Broca)
- ☞ 1910: RH role in language (J.Hughlings Jackson)
- ☞ 1960: RHD causes communication problems
  - ◆ Abstraction, learning new linguistic information, dysprosody
- ☞ 1970: RH has limited comprehension abilities
  - ◆ Based on commissurotomy studies
  - ◆ RH processing = holistic, Gestalt

# History of RH language

- ☞ 1970-80: Description of RHD deficits
  - Prosody, humor, non-literal language, emotional language, discourse
- ☞ 1990: Controlled research of RHD communicative deficits
  - Theories of RH language abilities

# Theories of RH language processing

- ☞ Coarse coding/activation of weak associates & subordinate meanings (Beeman/Chiarello)
  - RH broad semantic networks
  - Activate multiple, distant meanings
  - Continued activation of those meanings
  - Evidence from healthy adults only

# Theories of RH language processing

- ☞ Suppression deficit (Tompkins)
  - Activation of multiple meanings
  - Inefficient selection of contextually appropriate meanings
  - Evidence from individuals with RHD

# Theories of RH language processing

- Theory of mind deficits (Brownell, Happe)
  - Difficulty interpreting others' point of view
    - Egocentric interpretations & conversations
  - Social disconnect
    - Affects pragmatics

# Language in the healthy RH

## Word level

- Recognition of concrete & abstract nouns, verbs, spatial prepositions
  - Smaller vocabulary than LH
- Sensitive to word length (lexical decision)

# Language in the healthy RH

## ☞ Sentence level

- Poor comprehension of functors
- Little use of syntax
- Sensitive to semantic anomalies
- ASL representation in RH

# Language in the healthy RH

## ☞ Discourse level

- Little evidence available
- Coherence/cohesion: LH frontal activation
  - No specialized RH role in inferencing

# Individuals with RHD

- ☞ Not all have language disorders
  - 50% general population
  - 90% rehab unit population
- ☞ No obvious patterns of deficits
- ☞ Little evidence for localization of deficits

# Language disorders after RHD

☞ Lexical semantics: mild deficits (if any)

- Slowing on lexical priming tasks
- Problems naming collective nouns
- Disorganization in verbal fluency (possible)
- Auditory comprehension of complex/lengthy material

# Language disorders after RHD

## Figurative/Nonliteral language

- Overly literal interpretation on explicit tasks
  - Explaining proverbs, idioms
  - Explaining indirect requests
- Good performance on implicit tasks
  - Priming for metaphorical meaning
  - Responding to natural indirect requests

# Language disorders after RHD

## Inferencing

- Basic (bridging) inferences OK
- Elaborative inferences may be impaired
  - Depends on cognitive demands & contextual cues
- Difficulties with multiple interpretations

# Language disorders after RHD

## ☞ Discourse organization (macrostructure)

### ■ Comprehension

- Problems identifying main ideas/themes
- Reduced use of themes to organize information

### ■ Production

- Off-target, disjointed, poor coherence
- Can use scripts to organize discourse

# Language disorders after RHD

## Pragmatics

- Conversation is more egocentric
- Poor eye contact
- Prolong conversations despite cues from listener
- Difficulty using context to interpret sarcasm/lie
- Difficulty detecting & fixing conversational breakdowns

# Language disorders after RHD

## ☞ Humor

- Can detect incongruities
- Difficulty re-interpreting information

## ☞ Affect

- Poorer comprehension of affective words
- Affective inferences depend on contextual bias
- Use less expressive words in discourse

# Evidence & theories

## ☞ Coarse coding:

- Explains performance on off-line tasks

## ☞ Suppression:

- Explains performance on on-line tasks
  - Inferencing, ambiguities, non-literal language
- Explanation for pragmatic deficits

## ☞ Theory of Mind:

- Explains pragmatic disorders

# Research Caveats

- Varied terminology
- Large range of normal behaviors
- Selection of research participants
- Appropriate control groups?
- Poor localization data in RHD studies
- Broad conclusions about lack of RH functioning after damage