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