

The Motor Theory of Speech Perception Revised

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Presented By

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Agenda

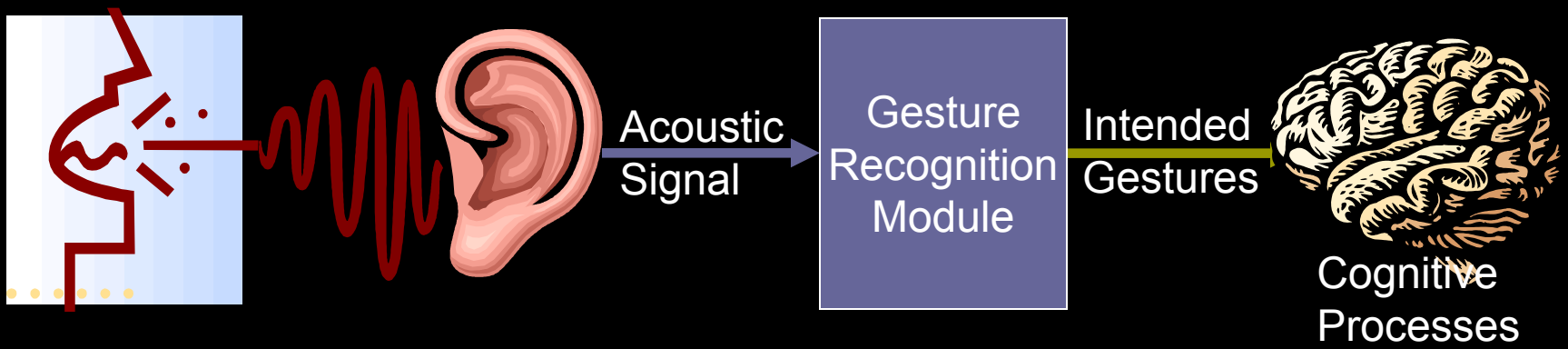
- Introductions
- Two Objections
- Experimental Evidence
- Some Issues
- Discussion

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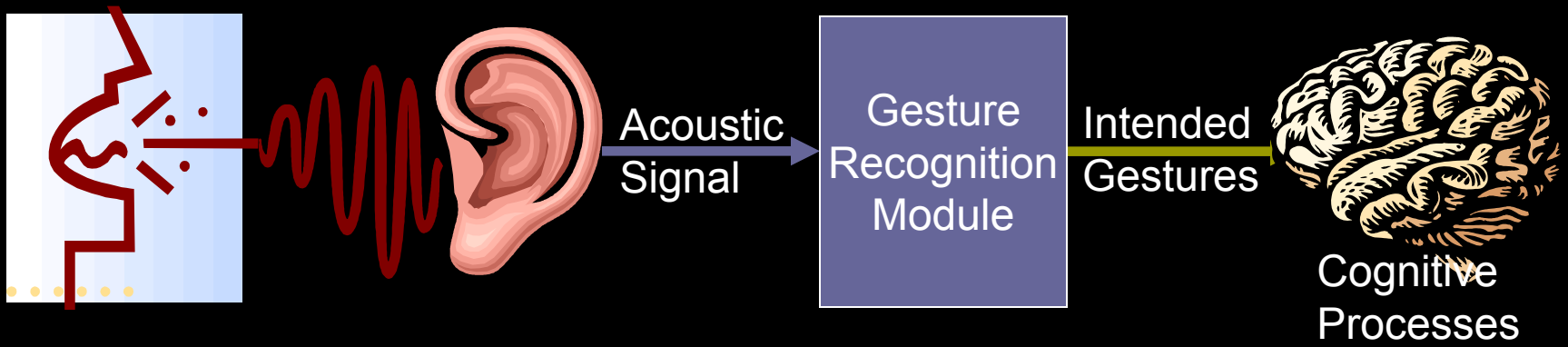
The Theory

- Objects of speech perception are
 - intended phonetic gestures
 - represented as invariant motor commands



The Theory

- Motor commands
 - call for movements of the articulators
 - linguistically significant configurations
 - Innately specified



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 - Ludicrous
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Meaningless

- How does a “black box” help
- How to map from acoustics to gestures
 - one-to-one
 - many-to-one

Coarticulation

- Signal influenced by many gestures
 - Influence is systematic
 - Specific to language
 - Isolated sounds are unintelligible
- Motor theory
 - Speech perception differs from sound perception
 - motor event vs. surface acoustic signal

Ludicrous

- Biological explanation
 - Little green man hypothesis

- Not biologically unique
 - Directionality of sound
 - Visual depth perception

Proximal vs. Distal Perception

■ Proximal Signal

- Directionality: time disparity
- Vision: binocular disparity
- Speech: acoustic signal

■ Distal Perception

- Directionality: direction
- Vision: distance of object
- Speech: intended gesture

Speech is Different

- Different classes and domains
- Local of distal event
 - Out there
 - Conceptual (upstream neural command)
- Competition between modes
 - Auditory
 - Speech

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Experimental Evidence

- Articulation: multiplicity, variety, equivariance of cues
- Coarticulation
 - Sound and percept
 - Different sounds & contexts, same percept
 - Same sound, different context, different percept

Experimental Evidence

- Distinct phonetic and auditory modes
- Convergent visual and auditory modes
- Characteristics required for perception
- Responses to cues

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Some Issues

- Aspects of the Theory
 - Invariant gestures
 - Perception-production link
- How direct is perception
- Motor theory and modularity
- One module or two

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