بسم الله الرحمن الرحیم

علوم شناختی

جلسه ۲۴ (الف)

بازی تظاهری و فرابازنمایی

Pretend Play and Metarepresentation

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http://courses.fouladi.ir/cogsci

PART 3:
APPLICATIONS

Chapter 13:
Exploring Mindreading

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Chapter 13.1: Pretend play and metarepresentation

Aims

Bring together

- theroretical discussions of modularity
- neuroimaging tools for brain mapping

Use a case study to explore the interconnection between functional structure and anatomical structure

Work through the example of mind-reading

Mind-reading

- Can be characterized in very general terms
  - abilities to make sense of other people's behavior in psychological terms
  - abilities to coordinate with others

- Questions for cognitive science
  - how can we give a theoretical account of these practical abilities?
  - how are these practical abilities neurally implemented?

Mind-reading and cognitive science

- **Developmental psychology**
  - theory of pretence
    - false belief task
- **Primate cognition**
  - chimpanzee "theory of mind"
- **Developmental disorders** (e.g. autism) thought to be connected with problems in mind-reading
- **Evolutionary psychology**
  - Machiavellian intelligence hypothesis
    - mind-reading as a Darwinian module

Why is it interesting?

- Mind-reading is often taken to require a very distinctive kind of thinking
  - Thinking about other people's thoughts
  - More complex than thinking about objects in the world

- Different terms
  - metarepresentation
  - second-order thinking
  - reflexive thinking
  - secondary representations

Metarepresentation in early childhood

Two different views

Alan Leslie:

capacities for metarepresentation emerge very early in development – manifested in pretend play

Joseph Perner:

metarepresentation only emerges at around 4, when children pass the false belief task

Pretend play

Emerges very early in infancy (13 months – fairly sophisticated by end of the second year)

- **Self-directed** = pretending to carry out familiar activity
- **Other-directed** = pretending that some object has properties it does not
  - Object-substitution = pretending that some object is a different object (e.g. banana is a telephone)

Leslie's basic principles

1) Pretend play requires sophisticated abilities to represent the world
   - Primary representations

2) Pretend play cannot be explained simply with reference to primary representations

3) Pretend representations must preserve their ordinary meanings in pretend play

Interpretation

Primary representations in pretend play cannot be functioning in their usual way

- Preserve their ordinary meaning, but are "quarantined" from other primary representations
- The primary representations are not doing their usual job of representing the world

Analogy with belief language

- Philosophers have devoted much attention to studying the language we use to attribute beliefs to others

"Sarah believes that the world is flat"

vs

"The world is flat"

- The phrase "the world is flat" functions very differently in the two contexts

Frege's distinction

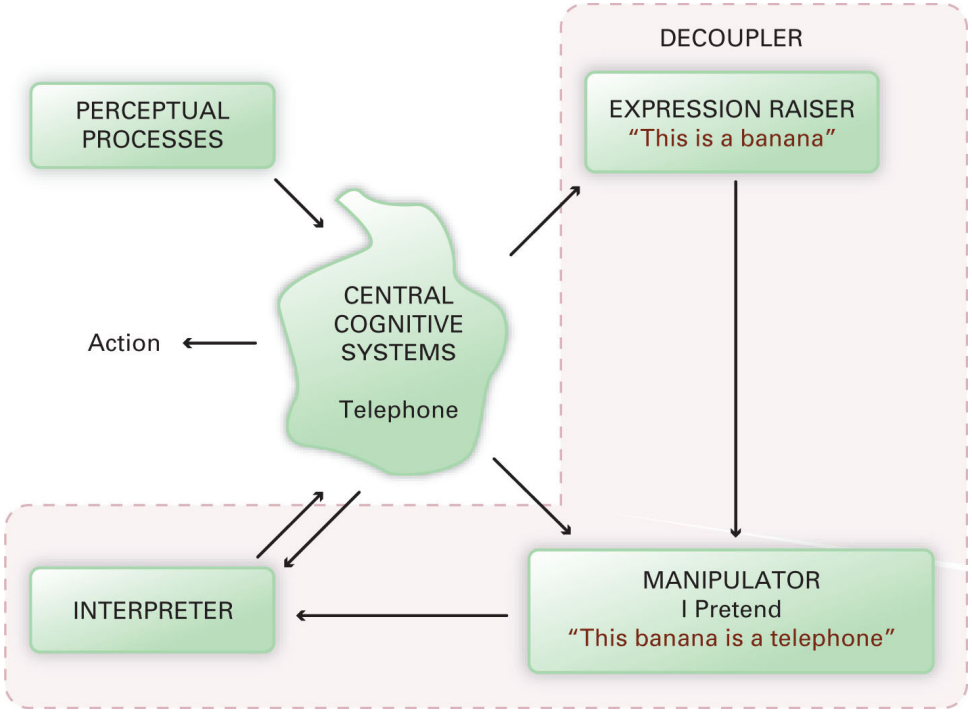
- There are two components in a word's meaning
    - Its **reference** (the object(s)/property that it picks out in the world)
    - Its **sense** (a particular way of thinking about that object/property)
- Many examples of pairs of words with the same reference, but different senses

Indirect contexts

- In indirect contexts (e.g. belief ascriptions) words refer to their senses rather than to their usual referents
- So, they are "decoupled" from their usual functions
  - ❑ They do not aim at truth
  - ❑ They cannot be premises in inferences
- This allows them to metarepresent other people's mental states

Leslie's model

- Primary representations are decoupled from their usual functions
- This allows them to feature in pretend play
- The decoupling mechanism involves some sort of quotation device



Pretend play and mindreading

- The same "decoupling" mechanism works both for pretend play and propositional attitude attributions
    - The difference is in the operators applied to the decoupled representations
    - BELIEF vs PRETEND
- Decoupling mechanism provides inputs to dedicated Theory of Mind Mechanism (ToMM)

Experimental support?

- Basic idea is that there is a common mechanism in pretend play and metarepresentational mindreading
  - And that pretend play is a vital stage on the road to mindreading
- Would be supported by the existence of disorders affecting both mindreading and pretend play
  - Leslie, Frith, Baron-Cohen 1985 argues that autism fits this description
  - well-documented that autistic children fail to engage in pretend play [diagnostic tool]

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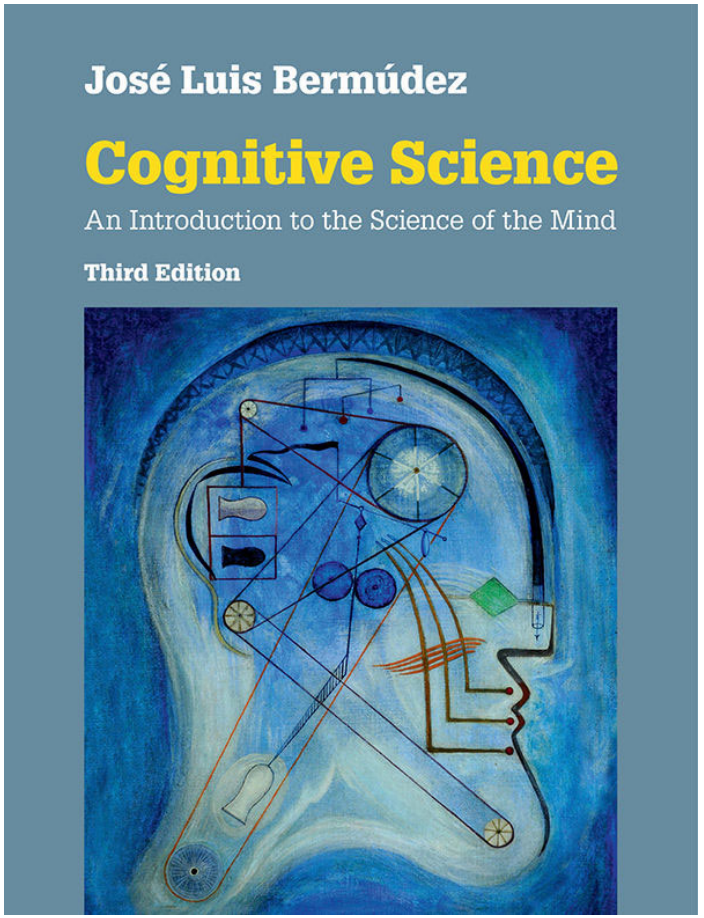
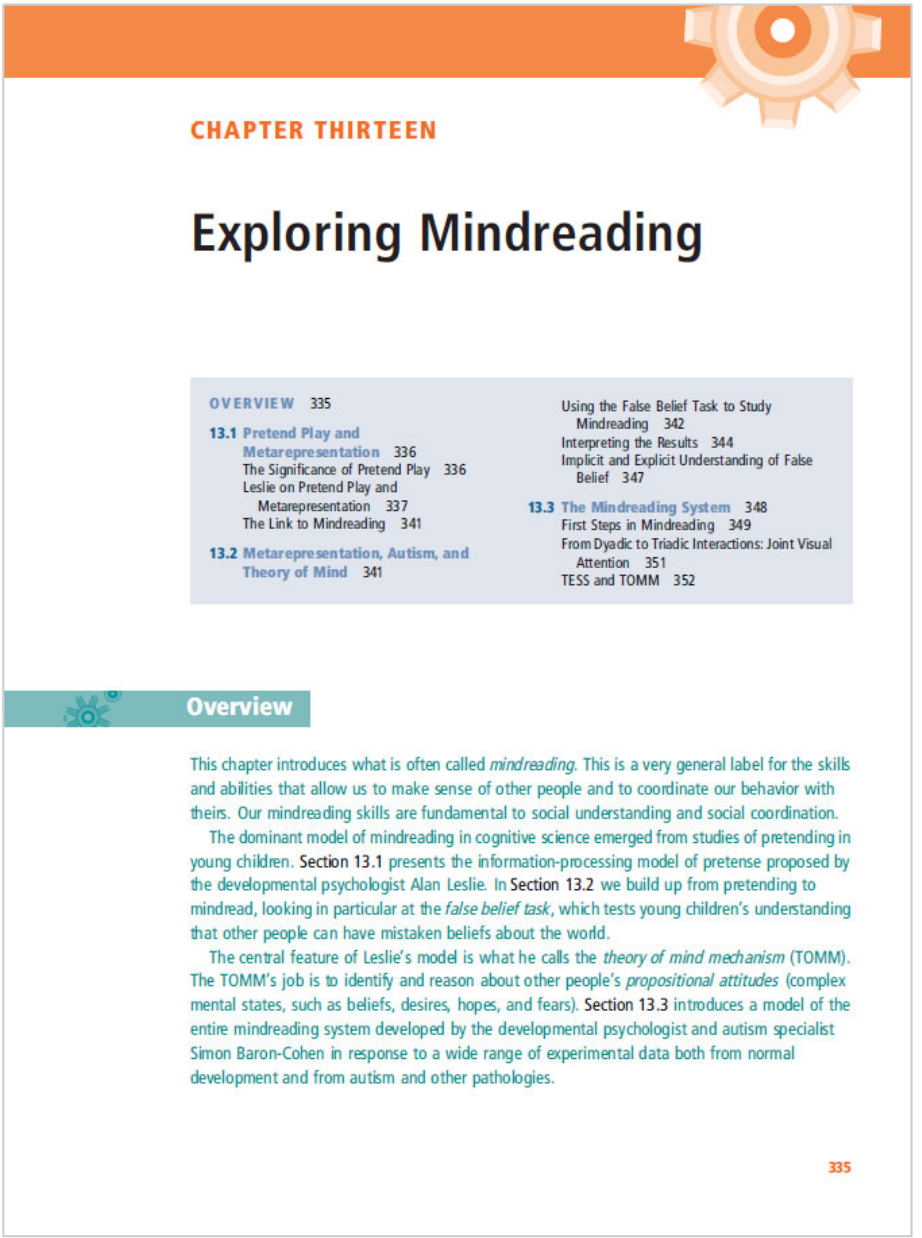


José Luis Bermúdez,
Cognitive Science:
An Introduction to the Science of the Mind,
3rd ed., Cambridge University Press, 2020.
Chapter 13 (Section 13.1)



CHAPTER THIRTEEN

Exploring Mindreading

Overview

This chapter introduces what is often called *mindreading*. This is a very general label for the skills and abilities that allow us to make sense of other people and to coordinate our behavior with theirs. Our mindreading skills are fundamental to social understanding and social coordination.

The dominant model of mindreading in cognitive science emerged from studies of pretending in young children. Section 13.1 presents the information-processing model of pretense proposed by the developmental psychologist Alan Leslie. In Section 13.2 we build up from pretending to mindread, looking in particular at the *false belief task*, which tests young children's understanding that other people can have mistaken beliefs about the world.

The central feature of Leslie's model is what he calls the *theory of mind mechanism* (TOMM). The TOMM's job is to identify and reason about other people's *propositional attitudes* (complex mental states, such as beliefs, desires, hopes, and fears). Section 13.3 introduces a model of the entire mindreading system developed by the developmental psychologist and autism specialist Simon Baron-Cohen in response to a wide range of experimental data both from normal development and from autism and other pathologies.

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