

Introduction to Cognitive Science

(7: Mindreading)

(Ch. 13)

Mindreading

- General label for skills that enable us to make sense of what other people want
- Pretend play
 - Self-directed: pretend to drink from an empty cup
 - Other-directed: pretending an object has some ability it does not have (toy car making engine sounds)

Pretend play

- Dependent on the infant's representation
- We cannot make sense of pretend play by solely referencing the infant's primary representation:
 - „coordinating” phone rep and banana rep
- During pretend play, the infant cannot loose touch
- Metarepresentations: when a representation is used to represent another representation
- Consider:
 - Sarah said that the world is flat
 - Sarah said: „the world is flat” (explicit decoupling)
- I PRETEND: „This banana: it is a telephone.”

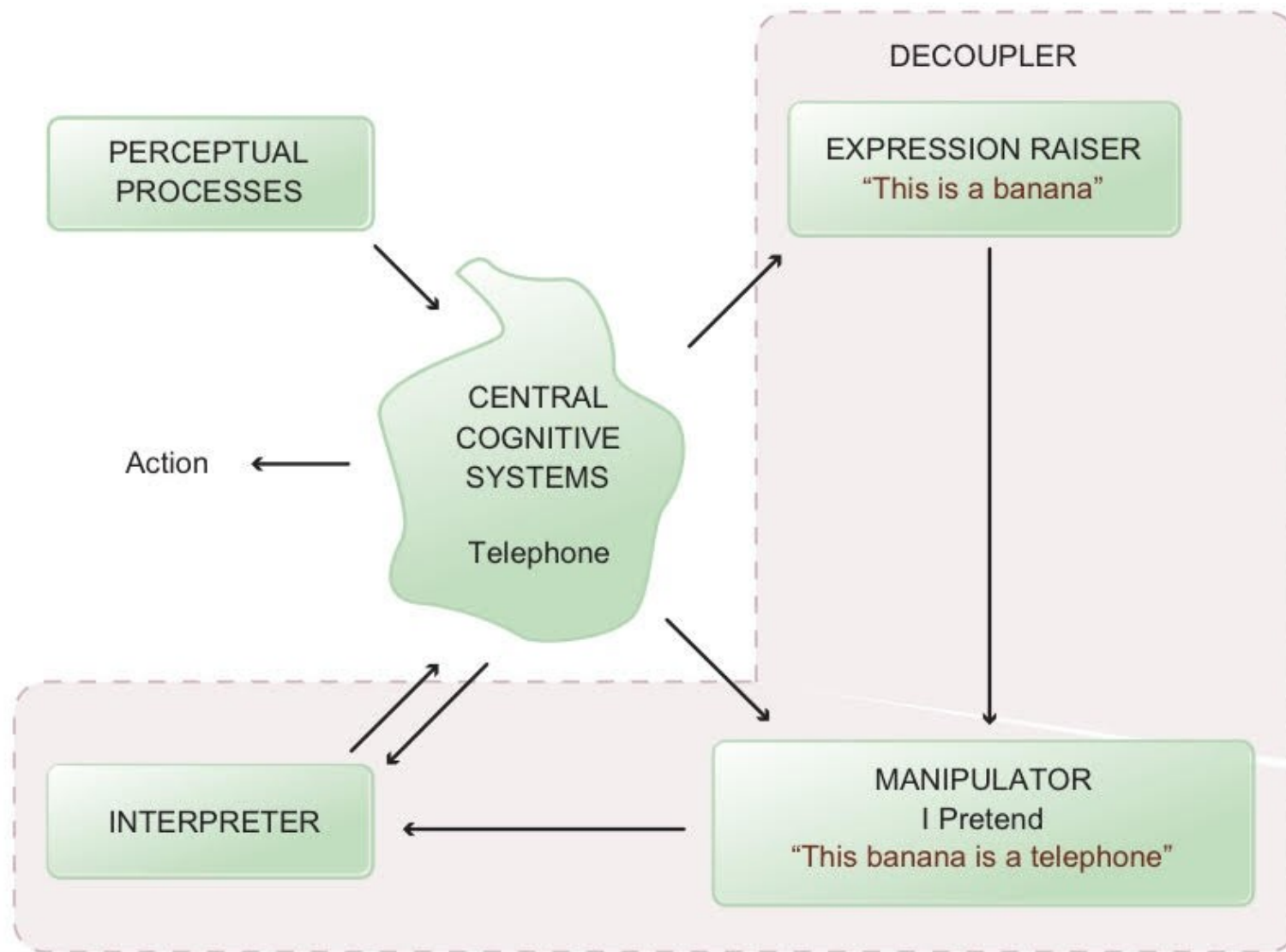


Figure 13.3 Leslie's Decoupler model of pretense. This model makes explicit how the right-hand side of Figure 13.2 is supposed to work. (Adapted from Leslie 1987)

Mindreading

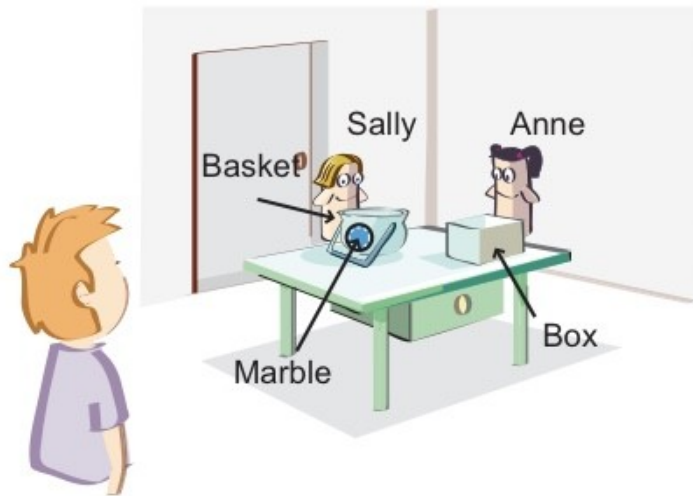
- Understanding that other people are pretending is mindreading
- Many forms of mindreading exploit decoupled representations:
 - Believe, hope, fear...
 - All have the same structure as I PRETEND

Pretend play and autism

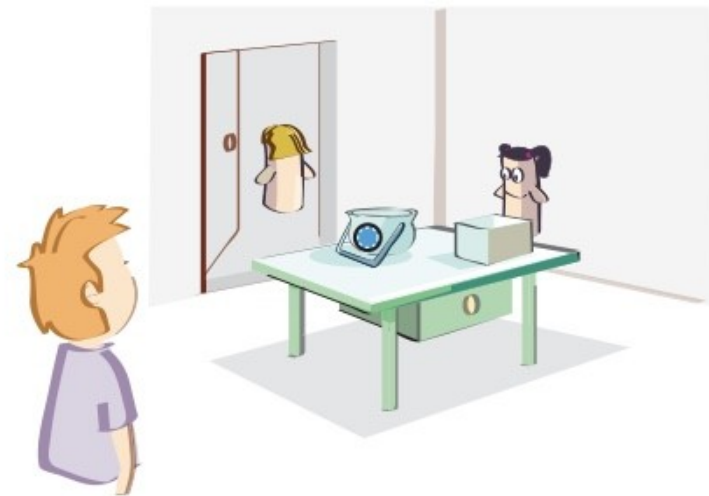
- Autistic kids have a problem with pretend play
 - Compared both to normal and Down kids
 - Standard diagnostic tool for autism
- Verbal skills are above normal in autistic kids
- However, they fail the false belief test
 - Basic contrast between belief and knowledge
- They seem to be at odds with the concept of belief

TABLE 13.1 The three groups studied in Baron-Cohen, Leslie, and Frith (1985)

| POPULATION | MEAN VERBAL MENTAL AGE | MEAN NONVERBAL MENTAL AGE |
|---------------------|-----------------------------------|--------------------------------------|
| Normal group | 4;5 | 4;5 |
| Down syndrome group | 2;11 | 5;1 |
| Autistic group | 5;5 | 9;3 |



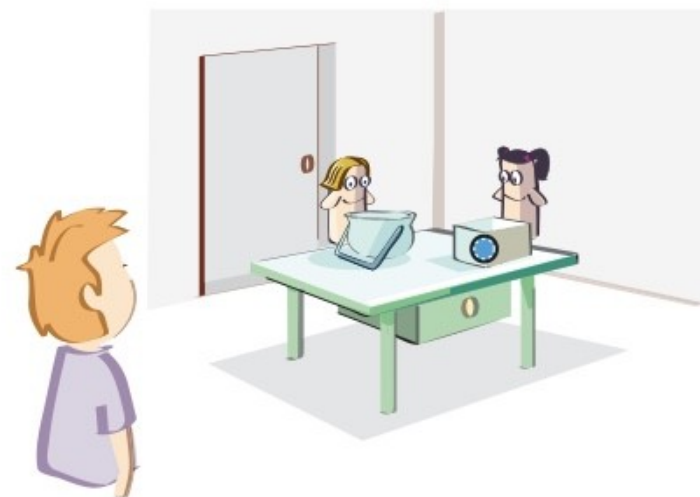
(a) Sally places her marble in basket.



(b) Exit Sally.



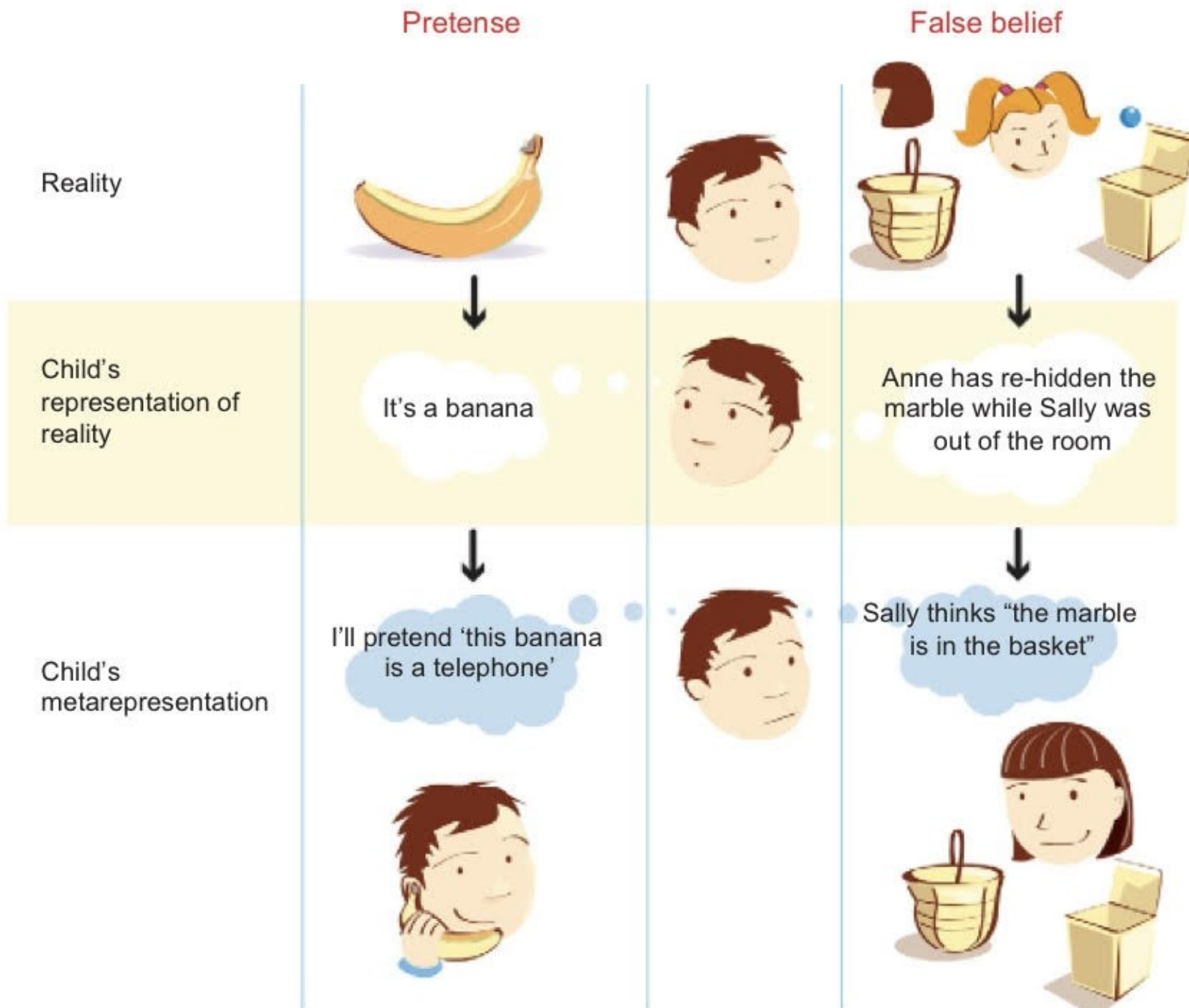
(c) Anne transfers Sally's marble to box.



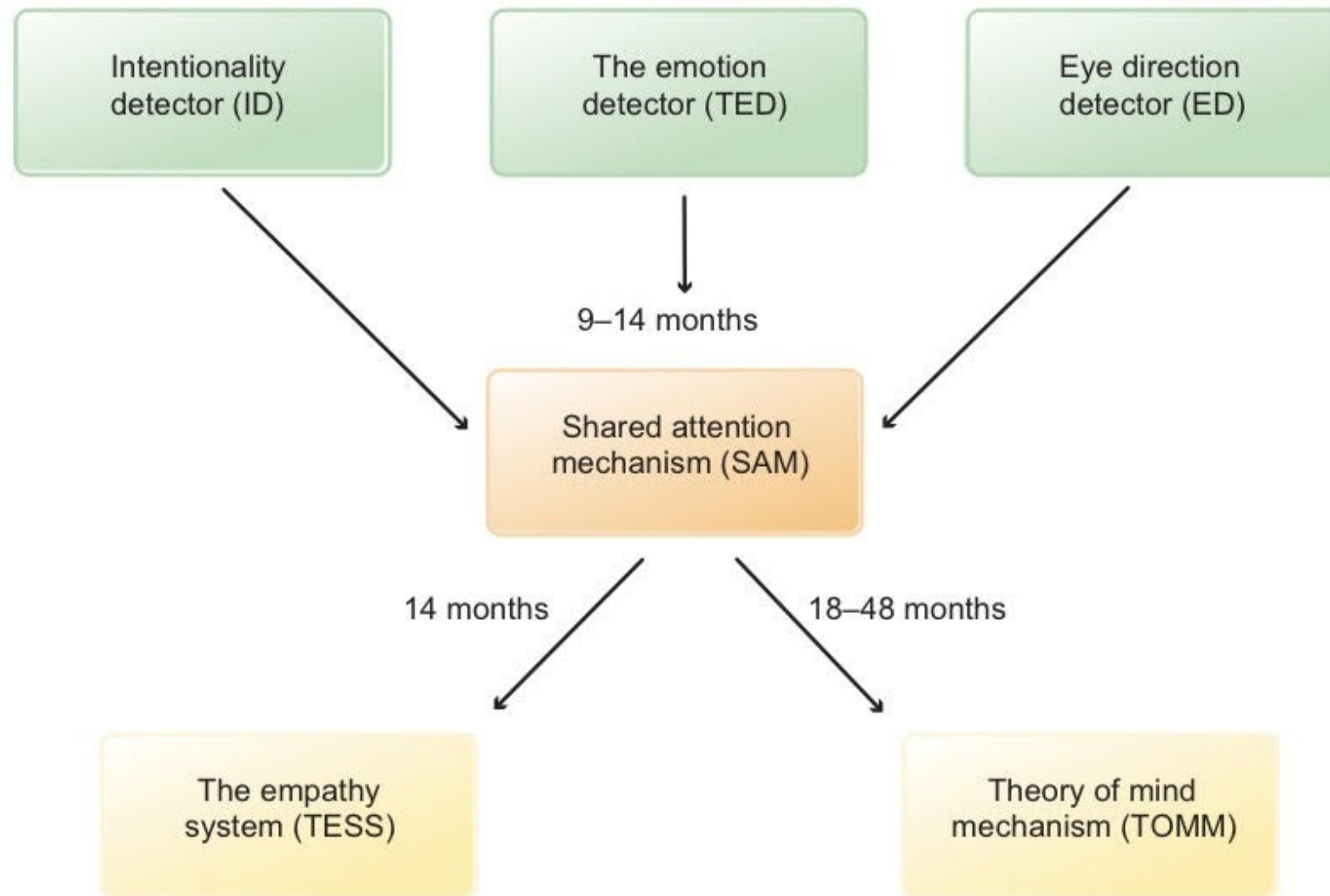
(d) Re-enter Sally. The experimenter asks: Where will Sally look for the marble?

Experiment

- Questions:
 - „Where was the marble at the beginning?” (memory)
 - „Where is the marble really?” (reality)
 - „Where will Sally look for her marble?” (belief)
- Normal and Down where successful, over 86% and 85% respectively
- 20% success rate in autistic kids
 - Failure to form metarepresentations
 - Unknown reason



Baron-Cohen model of mindreading



Baron-Cohen model

- The three basic systems (ID, TED and EDD) involve relatively simple types of representations
- All dyadic
- The move to triadic via the SAM:
 - Mother SEES (I SEE the cup)
 - SAM is the crucial part, and the part autistic kids do not have well developed

TOMM and TESS

- Theory of mind mechanism (TOMM)
 - Result of SAM, the ability to form triadic relations and to extrapolate the components to be able to handle the existence of other minds
- The empathizing system (TESS)
 - Second result of SAM: The ability to form emotional connections to metarepresentations
- Sociopathy and psychopathy seem to be connected to TOMM and TESS, not to SAM, but it is not well researched
- HW: idrlabs, study the psychopath and sociopath tests