False Belief Understanding in Infants
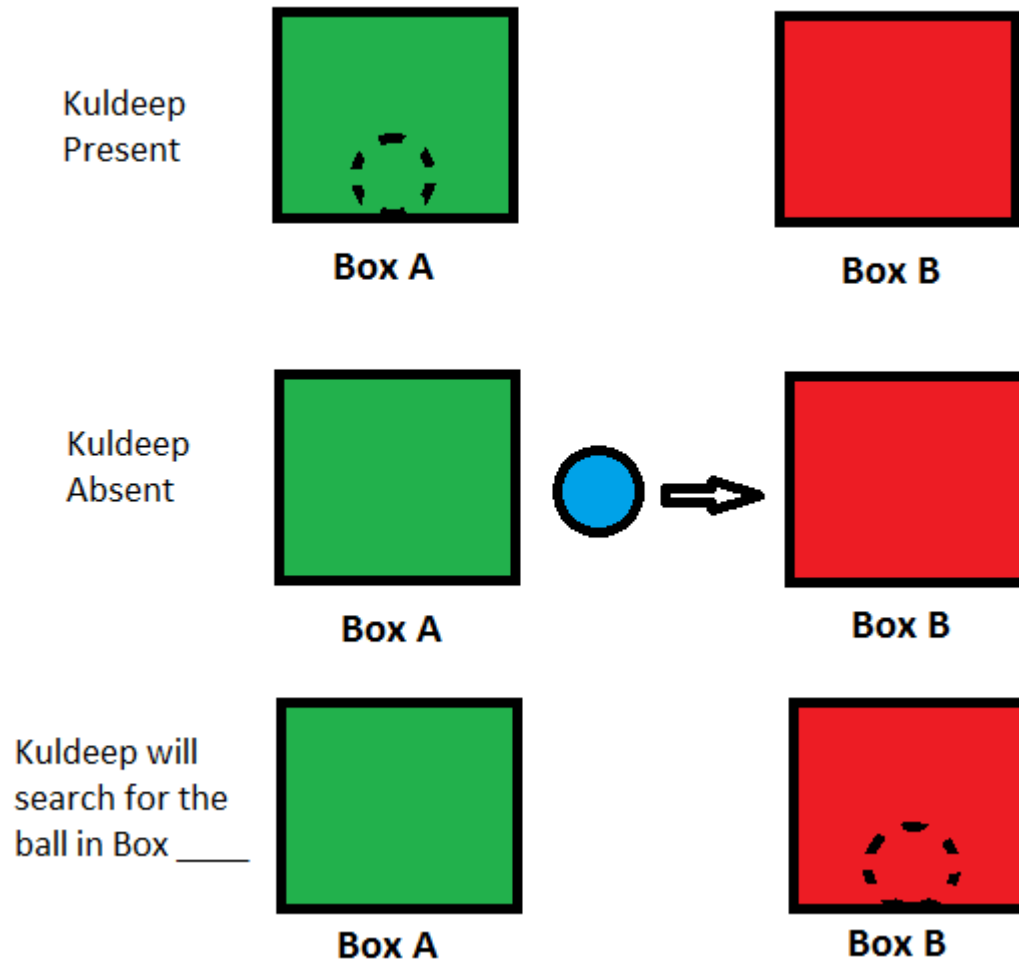
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Rose M. Scott,

Zijing He

- Kuldeep Yadav (10358)

Let's start with a situation

Kuldeep Present

Box A   Box B

Kuldeep Absent

Box A   Box B

Kuldeep will search for the ball in Box _____

Box A   Box B

➢ If this question is asked to you
   You will answer – Box A

➢ If I ask this same question to the children

   • Age (around 4 years) – they will answer Box A (where Kuldeep falsely believe the ball is)
   • Age (below 4 years) – mostly will answer Box B (where the ball actually is)

➢ This shows that children below 4 years of age do not understand that Kuldeep will have a false belief.

➢ This process of directly questioning to the children about false belief of agents is called elicited response tasks.

➢ Here Dr, Baillargeon is practicing spontaneous response tasks and showing that false belief understanding in infants present much earlier than what is being suggested by elicited response task.

➢ Spontaneous response tasks includes Violation of Expectation (VOE) task in which an infant looks reliably longer when agents violates the expectation of the infant.

➢ To date, spontaneous response tasks Have shown that infants can attribute an agent

- False belief about an objects location
- False perception of an object
- False belief about an object's identity
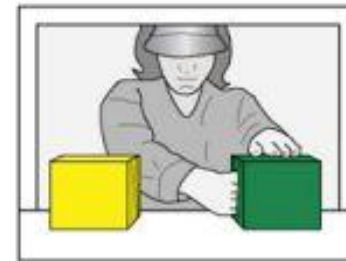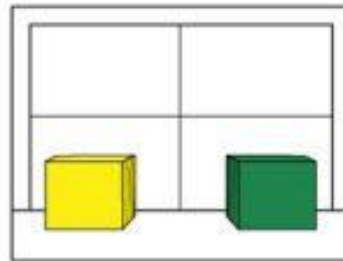
False belief about location (15 months old infants)

➢ Familiarization of the experiment to infant, every time agent hide the toy in green box and put his hand in green box in order to grasp it.
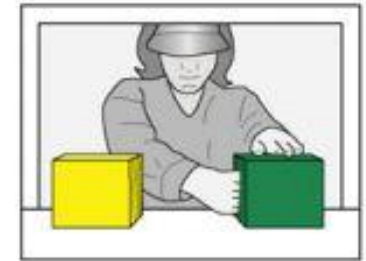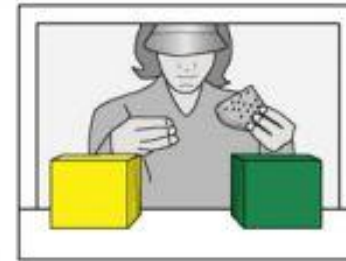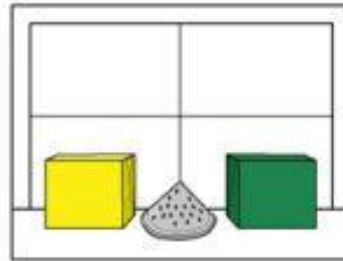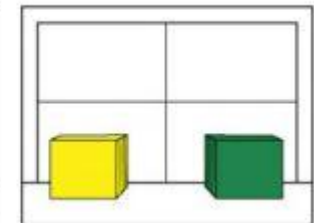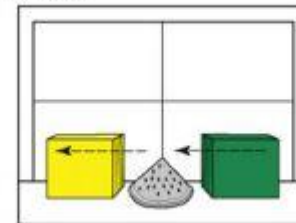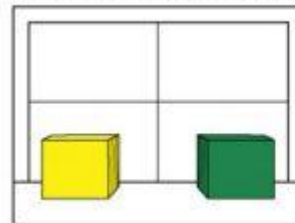
➢ Here in the absence of the agent the toy is being transferred to the yellow box

➢ When agent search for the toy in yellow box, infants looks reliably longer to it as they expected the agent to look in green box.

Familiarization trials
Trial 1

Trials 2 and 3

False-belief-green condition

Yellow-box event

False-belief-yellow condition

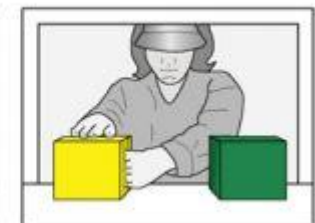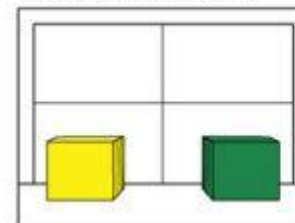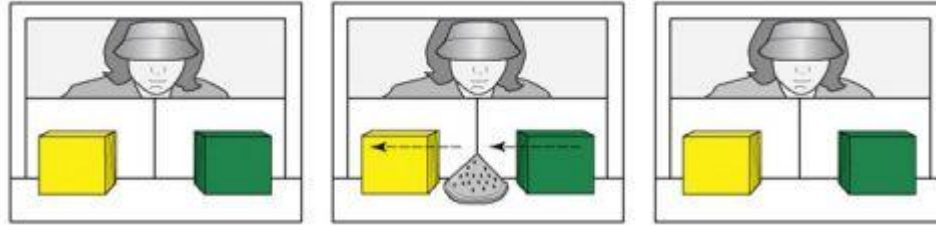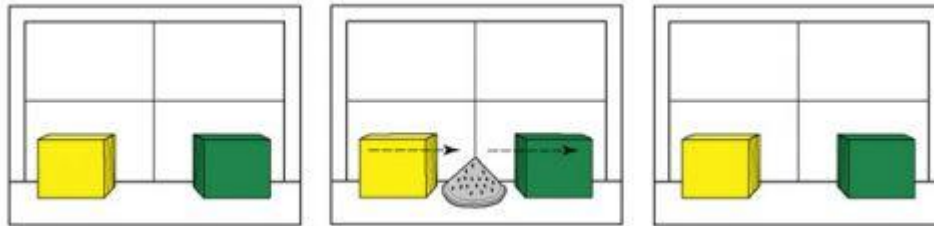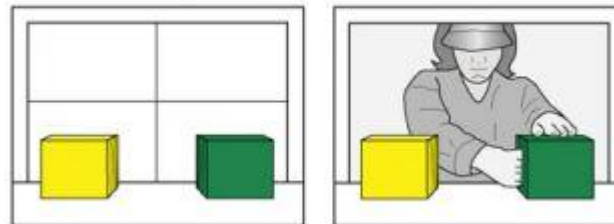➤ Here in the presence of the agent the toy is being transferred to the yellow box

➤ Then again here in the absence of the agent the toy is being transferred to the yellow box
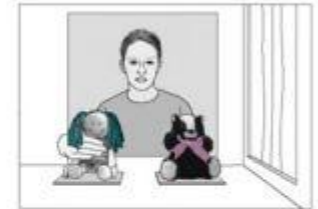

Green-box event

➤ When agent search for the toy in green box, infants looks reliably longer to it suggesting that infants expected the agent to falsely believe that toy is in yellow box.
➤ This shows that even 15 months old infants can attribute false belief to agents about location

False perception of an object (14.5 months old infants)

➤ Doll Condition: The agent always reached for doll when both doll and skunk are placed before her.

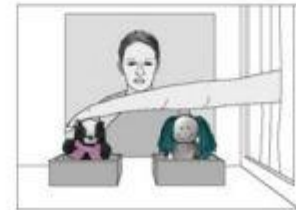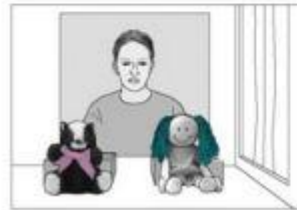➤ Skunk Condition: The agent always reached for skunk when both doll and skunk are placed before her.

Familiarization trials
Doll condition
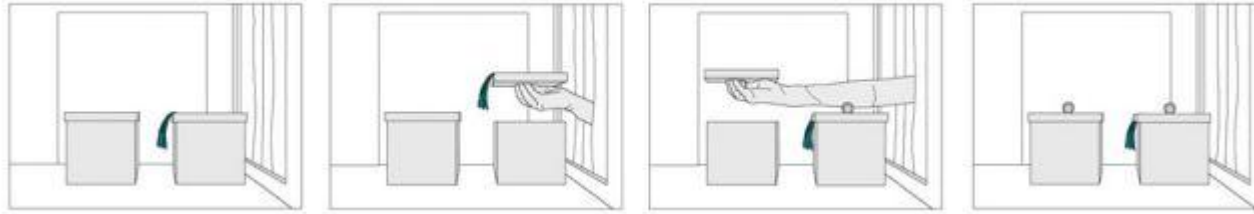Trials 1 and 2

Trials 3 and 4

Skunk condition
Trials 1 and 2

Trials 3 and 4

Box-orientation trial

➢ the right box's lid had a tuft of blue hair (similar to the doll's) attached to it

Test trial
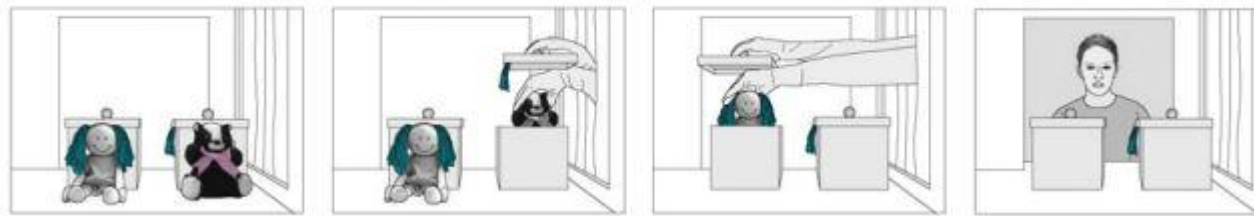
➢ In the absence of agent the experimenter hide the doll in the plain box and the skunk in the hair box
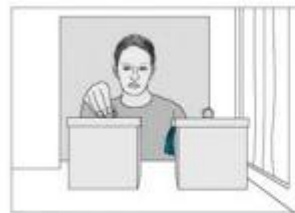
Plain-box event   Hair-box event

➢ The infants expected the agent:

- To falsely perceive the tuft of hair as belonging to the doll
- To falsely conclude that the doll was hidden in the hair box and the skunk in the plain box
- To search for her preferred toy accordingly.

False belief of an object's identity (18 months old infants)

Familiarization trials
Trials 1 and 2

Trials 3 and 4

Test trials

➢ In the absence of agent the experimenter assembled the 2-piece penguin, covered it with a transparent cover, and then covered the 1-piece penguin with an opaque cover.
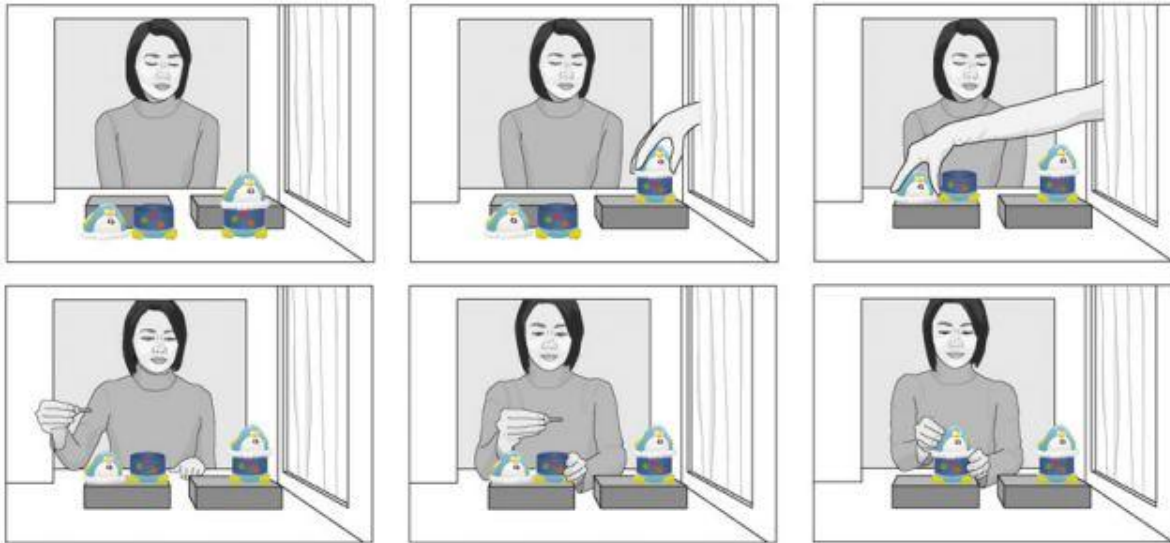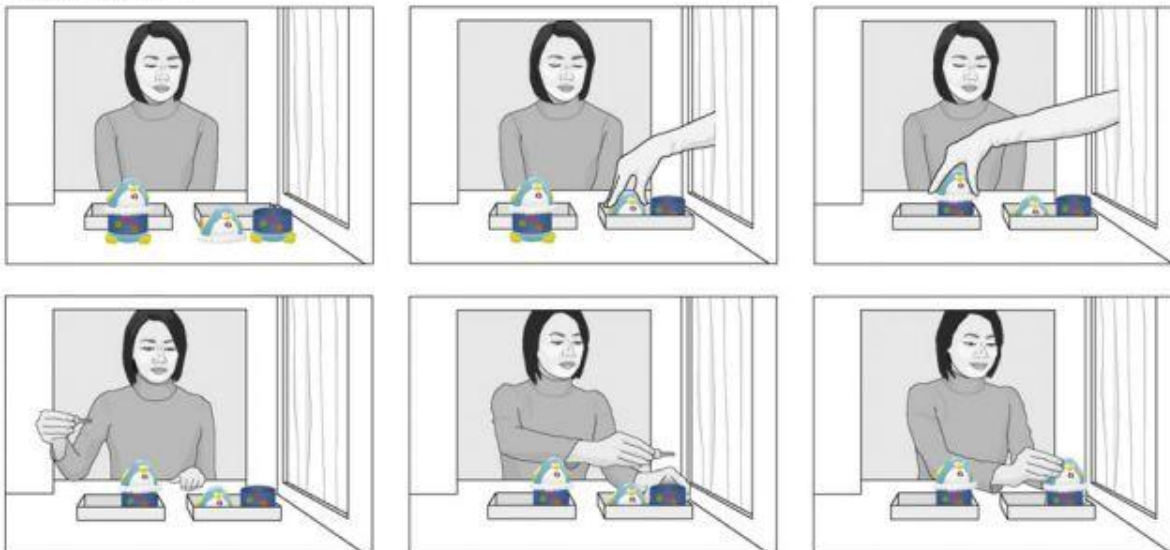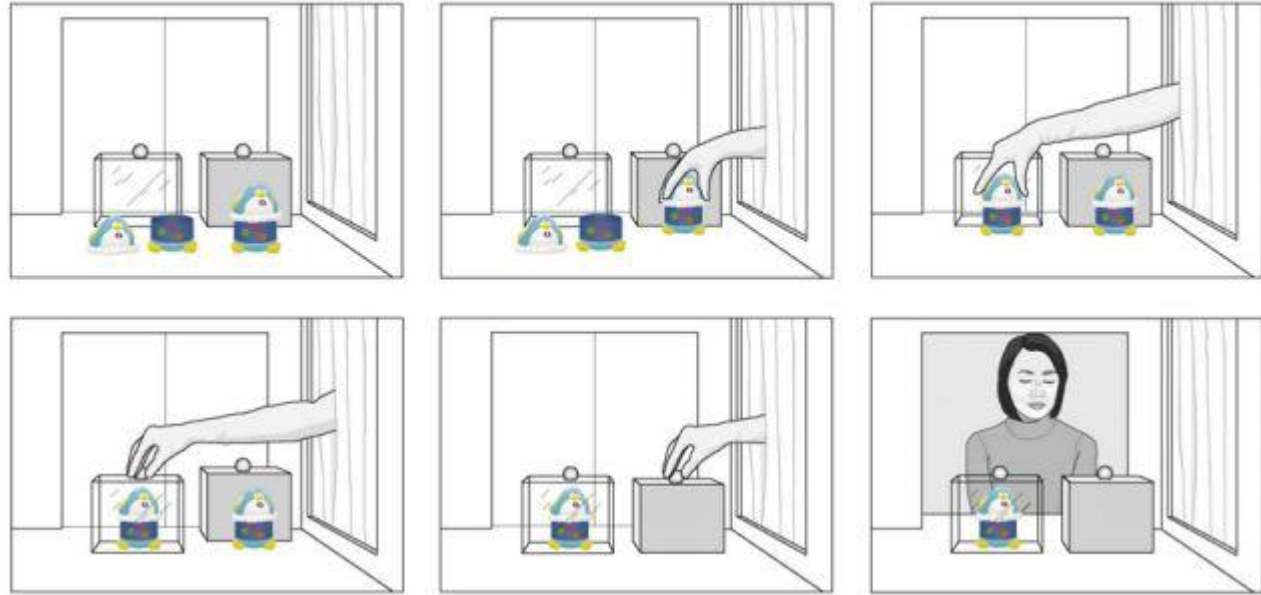
➢ The infants looked reliably longer when the agent reached for the transparent as opposed to the opaque cover, suggesting that they expected agent:

Transparent-cover event   Opaque-cover event

• To falsely assume that the penguin under the transparent cover was the 1-piece penguin

• To falsely conclude that the disassembled 2-piece penguin was under the opaque cover (because both penguins were always present in the familiarization trials)

• To reach for the opaque cover

Why do young children fail at elicited-response false-belief tasks?

➢ According to our response account, elicited-response tasks involve at least three processes:

- A false belief representation process (children must represent the agent's false belief)
- A response-selection process (when asked the test question, children must access their representation of the agent's false belief to select a response)
- A response-inhibition process (when selecting a response, children must inhibit any prepotent tendency to answer the test question based on their own knowledge)

➢ On the other hand Spontaneous response tasks only involve the false belief representation process.

➢ Young children fail elicited response tasks because simultaneously executing the false belief representation, response selection, and response inhibition processes overwhelms their limited resources, and/or because the connections between the brain regions that serve these processes are still inefficient.

Summary

➤ The evidence reviewed above suggests that infants in the second year of life can already attribute false beliefs to others

➤ Infants can attribute an agent

- False belief about an objects location (15 months olds)
- False perception of an object (14.5 months olds)
- False belief about an object's identity (18 month olds)

References

➢ Renee Baillargeon, Rose M. Scott and Zijing He "False-belief understanding in infants", Department of Psychology, University of Illinois, Champaign, IL 61820, USA

➢ Wimmer & Perner, "Modeling the False-Belief Task", 1983

➢ https://www.youtube.com/watch?v=Zd7OIDm_btM