

# Is development of theory of mind sequential?

From joint attention to theory of mind

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# Rationale

- The **birth** and **development** of mentalizing ability/theory of mind
- Contradictory research results: Communicative competencies of infants/toddlers (Bruner, Treverthen, O'Neill, Tomasello) vs lack of theory of mind before age 4 (Perner, Wellman, Astington)
- Onishi & Baillargeon (2005) study led to implicate vs explicit theory of mind (ToM) controversy

# Implicit vs explicit ToM

(Low i Perner, 2012, Schneider, Slaughter i Dux, 2014)

- Antcipatory Looking
- Unconscious
- nonverbal
- Intuitive/on-line
- Spontaneous
- Tested indirectly
- False Belief Test
- Conscious
- Verbal
- Reflective/off-line
- Controlled
- Tested directly

• **What are the relations between these theories?**

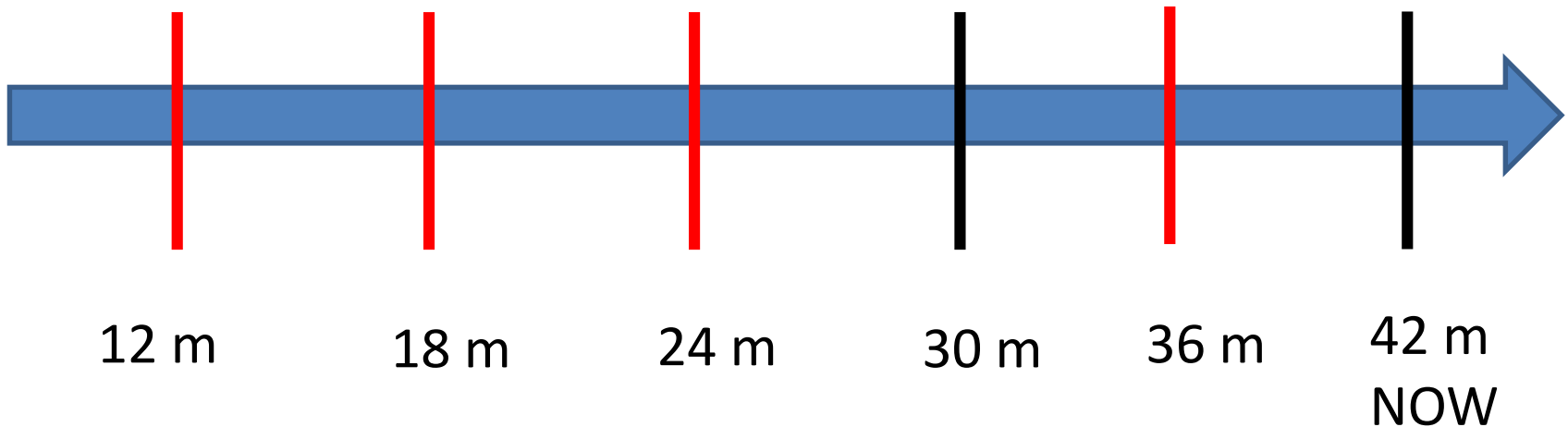
• **What is theory of mind for/What is its funtion?**

# Rationale

- **From** sharing actions, attention, perspective **to** distance/separation in these fields
- Joint intentionality (Tomasello, 2014), engaging minds (Reddy, 2008) and natural pedagogy (Csibra & Gergely, 2009, 2011) as a starting point in development
- From joint attention through visual perspective taking to theory of mind (Moll & Meltzoff, 2011)
- Longitudinal study

# Our study

- N=362 children (minus 7-15%)
- 6 measurement points, age of children



# Joint attention: **Gestures: 12 & 18 month olds**

- *Infant's use of social attention coordination gestures (e.g. showing/pointing) and alternating eye contact to spontaneously share experience with other people (Mundy, 2013)*
- **Early Social Communication Scale** (Mundy et al., 2003) & 3 tasks : Folder
- Lights
- Pictures **(PD3)**



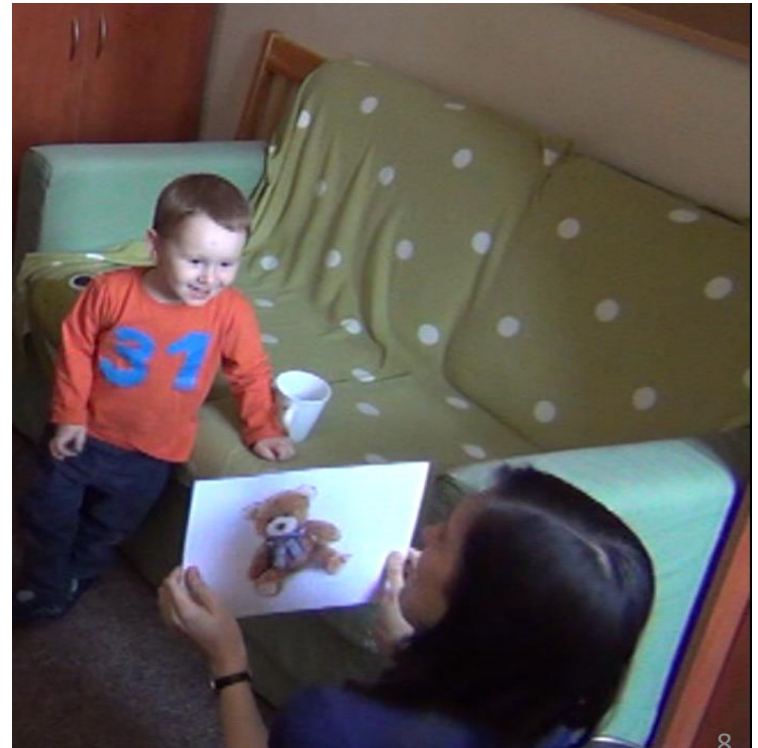
# Gestures (Pictures, PD3)



- E: There is now cow, no here and no here (twice)
- E: It is a pity that there is no cow!
- E: We will put this cow away
- **PICTURES**
- **E is waiting for correction**
- E: It is a pity that there is now cow
- **E is waiting for pointing**
- E: Oh , there is a cow!

# Level 1 visual perspective taking: 24month olds.

- *Children's understanding what the other can or can not perceive from his/her viewpoint (Flavell et al., 1992)*
- 3 Tasks :
- Hands
- **2-Sided Pictures (2SP)**
- **Elephant**





# VPT1: Elephant (E)



- E: Put an elephant that I can not see him. I do not want to see an elephant
- E: And again here: Put an elephant that I can not see him
- E: And again here, close to you: Put an elephant that I can not see him

# Theory of mind: 36 m.ż.

- **Explicite** - as ability to attribute mental states to others (Perner i Roessler, 2014)
- 3 tasks: Theory of Mind Scale (Wellman i Liu, 2004), Deceptive Box Task (Perner, Leekam i Wimmer, 1987), **What's the mum thinking (MT)?**

# Wellman's Scale (e.g. different desires)



E: Here is cookie  
and here is  
carrot.

E: What do you  
prefer?

CH: Cookie!

E: Maciuś  
prefers carrot

E: What does he  
chose as a  
snack?

CH: Carrot

# Deceptive Box Task



E: What do you is inside such a box?

CH: Eggs

E: Let see. Here it is, an egg! (opening)

E: But now we take an egg and put an small dog!  
(closing the box)

E: What is now in this box?

CH: A dog

E: In a minute Agatka will come. What will Agatka think is in this box when she sees it for the first time, this way, closed. Egg or a dog?

**CH: I guess an egg!**

# What's the mum thinking (MT)

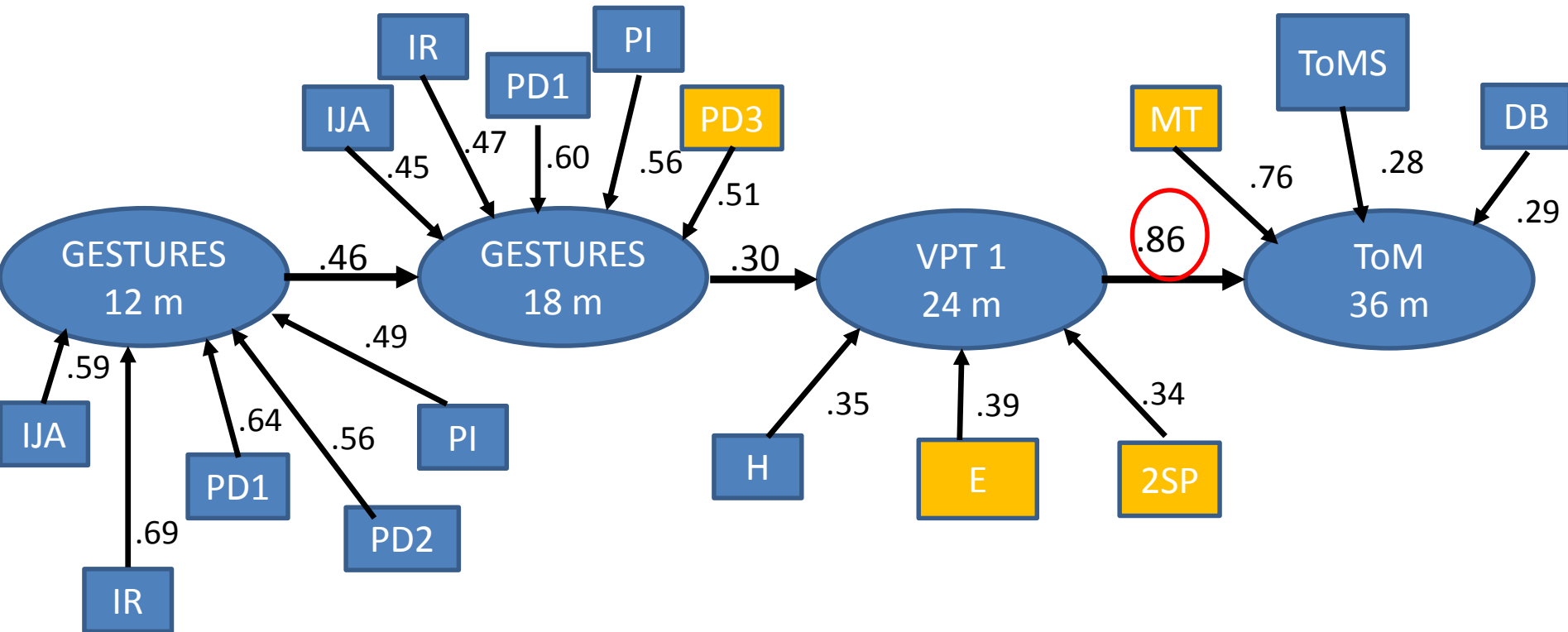


- 1) What is mum **thinking** about the boy...
- 2) What mum **thinks** that the boy has changed into...
- 3) the mum thinks that he is **pretending** to be.....



Control: What is mum doing with the boy?

# Structural equation modelling (SEM)



Chi2 = 119.2; df = 101; RMSEA = 0.022 [0.000 - 0.036]; CFI = 0.974

# Conclusions

- Different stages can be distinguished in the development of theory of mind
- The protodeclarative gesture is the basis of development of shared seeing
- Shared seeing is the path to separating one's own and others' visual perspective, and in turn also development of an epistemic perspective
- Implicit theory of mind means competences to engage in shared actions and fields of perception, which makes development towards separation of one's own and others' knowledge on reality possible





MENU

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