

## INTRODUCTION

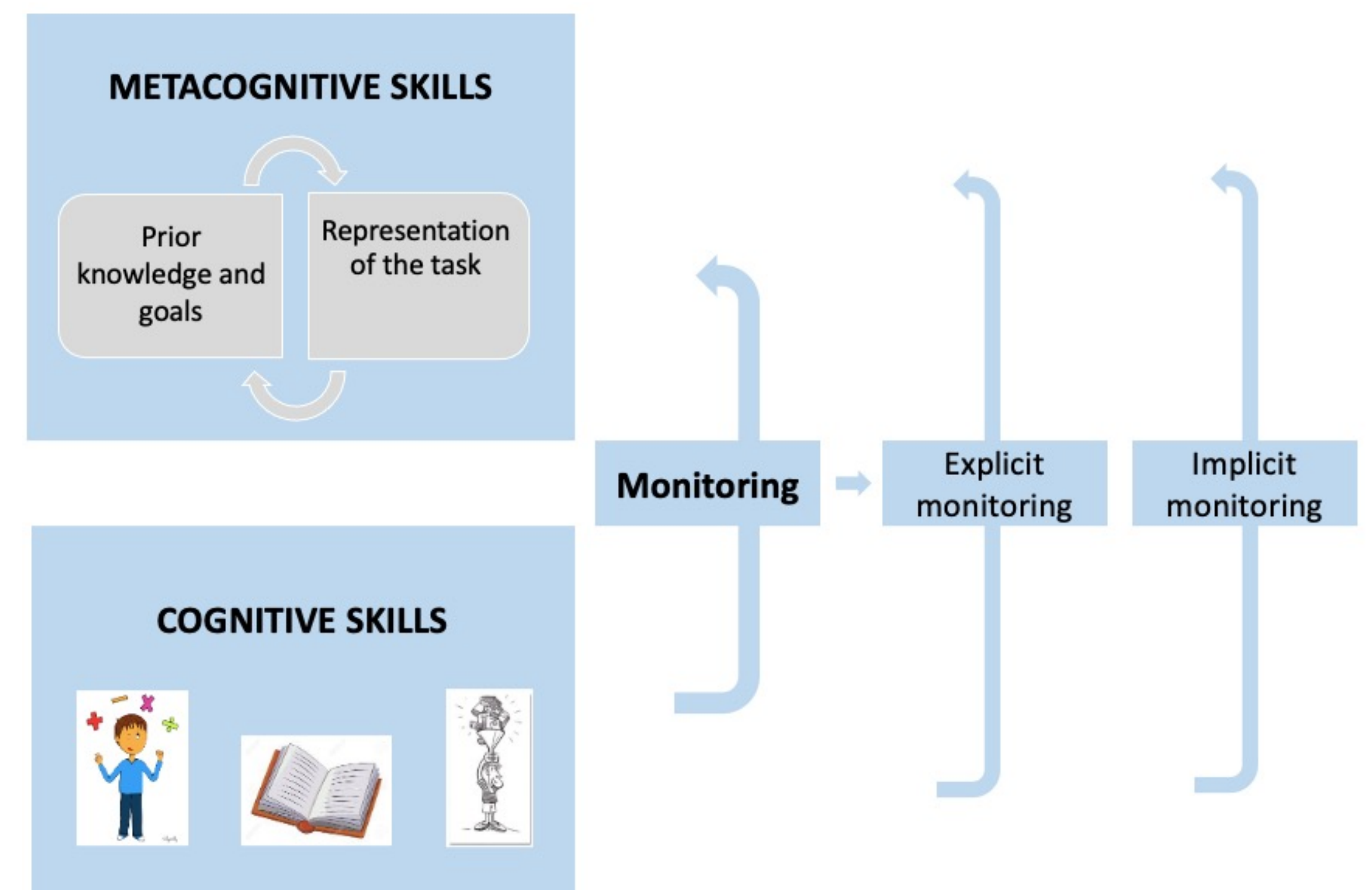
**Metacognition** – i.e., processes whereby people monitor and regulate their cognitive performance (1) – was long assumed to emerge relatively late in children development .

Research based on classical judgements has shown the presence of **explicit** metacognitive monitoring and control from the age of **4-5**. (2)

Recent studies have suggested that even **preverbal infants** can access their internal states, albeit not explicitly. (3,4)

This work opened up a new perspective on the existence of a second, **more implicit and automatic metacognitive pathway**, which is used by children at an earlier age.

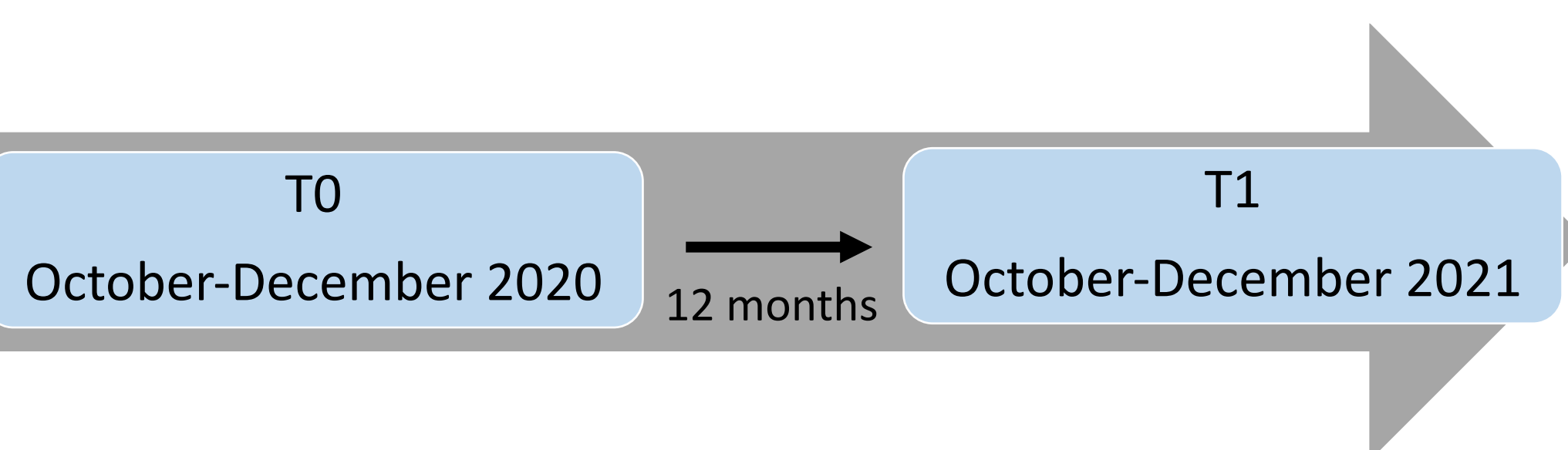
To date, the development trajectory of these early metacognitive skills remains **poorly understood**. (3)



Adapted from Nelson & Narens (1994) (5)

## AIM

To longitudinally document the evolution of both implicit and explicit metacognitive abilities in children aged from 2.5 to 3.5.



## PARTICIPANTS

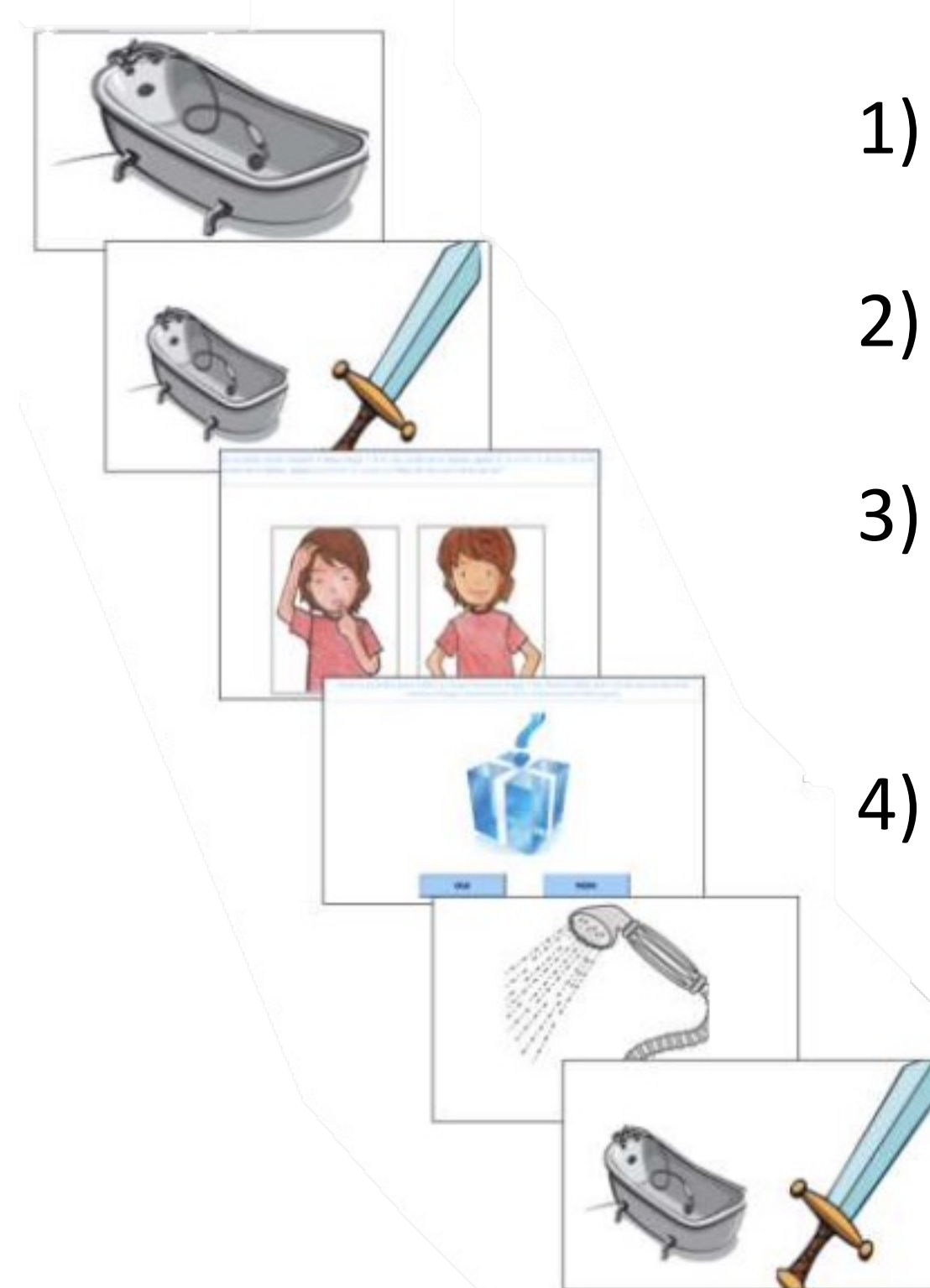
67 pre-school children

### Descriptive Statistics

	T0-Age (months)		T1-Age (months)		SE level (years)	
	F	M	F	M	F	M
Valid	31	36	31	36	31	36
Mean	32.258	32.333	44.258	44.194	14.113	14.222
Std. Deviation	1.505	1.707	1.505	1.849	3.068	2.082
Minimum	29.000	29.000	41.000	40.000	6.000	10.500
Maximum	35.000	35.000	47.000	47.000	21.500	19.000

## METHODOLOGY

Session at the child's home or school for 20 minutes

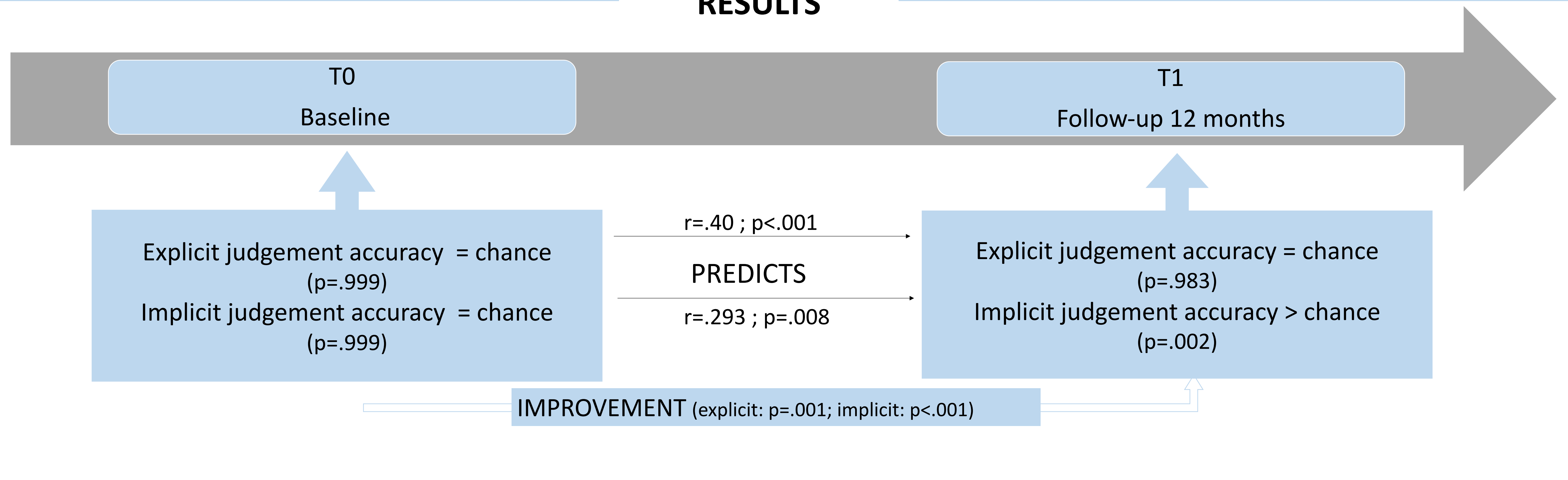


- 1) Encoding
- 2) Recognition
- 3) Explicit judgement: doubt vs certainty
- 4) Implicit judgement: clue vs no clue

### Measures:

- **Memory performance** : number of RC
- **Explicit judgement accuracy**: A'ROC concordance index between explicit judgement and memory performance
- **Implicit judgement accuracy**: A'ROC concordance index between implicit judgement and memory performance

## RESULTS



## DISCUSSION

This longitudinal study provides evidence for:

- ✓ an early use of implicit metacognition at around 3.5.
- ✓ a later and independent development of explicit metacognition.

## PERSPECTIVES

- To explore the potential influence of implicit metacognitive abilities on memory performance through automatic control strategies.
- To investigate the variables influencing the development of metacognition.



### References:

- (1) Flavell, J.H. (1976). Metacognitive aspects of problem solving. In L.B. Resnick (Ed.), *The nature of intelligence* (pp.231-235). Hillsdale, NJ: Lawrence Erlbaum Associates.
- (2) Hembacher, E., & Ghetti, S. (2014). Don't look at my answer: Subjective uncertainty underlies preschoolers' exclusion of their least accurate memories. *Psychological Science*, 25, 1768-1776. doi:10.1177/0956797614542273
- (3) Geurten, M., & Bastin, C. (2018). Behaviors speak louder than explicit reports: Implicit metacognition in 2.5-year-old children. *Development Science*, 22(2), e12742, 1-7. doi: 10.1111/desc.12742
- (4) Goupil, L., & Kouider, S. (2016). Behavioral and Neural Indices of Metacognitive Sensitivity in Preverbal Infants. *Current Biology*, 26, 3038-3045. doi: 10.1016/j.cub.2016.09.004.
- (5) Nelson, T. O., & Narens, L. (1994). Why investigate metacognition? *Metacognition: Knowing about knowing* (pp. 1-25). Cambridge, MA: The MIT Press.