The role of conversational recursion in theory of mind development

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HIGHLIGHTS:

- Face-to-face conversation has turn-taking organization; in the next turn recipients' understanding or problem with it is expressed
- Other Initiated Repair (OIR) is embedded in ongoing conversation; it has a recursive structure
- OIR is not concurrently related to first order theory of mind (ToM), but is longitudinally related to second order ToM ; only the latter has recursive structure
- In Neo-Vygotskian framework: conversational recursion provides structure to recursive ToM

INTRODUCTION

Face-to-face conversation is primary setting for language use and acquisition. Development of ToM is interwoven with development of communication [1]. Recipients' problems with understanding may be signalled in the next turn (OIR). Both, OIR and ToM have recursive structure [2,3]. Do young children engage in OIR, and if yes, is it related to development of ToM?

I. Conversational recursion:

- turn taking provides infrastructure for expressing problems with understanding, due to underspecified message [4, 5]
- when B responds to A request with an question, this question-response pair is embedded in the first request-response pair [6]; it is recursion [7]
- conversation is collaboration and people are sensitive to breakdowns in the intersubjectivity [2, 8]
- or, people are insensitive to conversational incoherence; deaf of content [9]
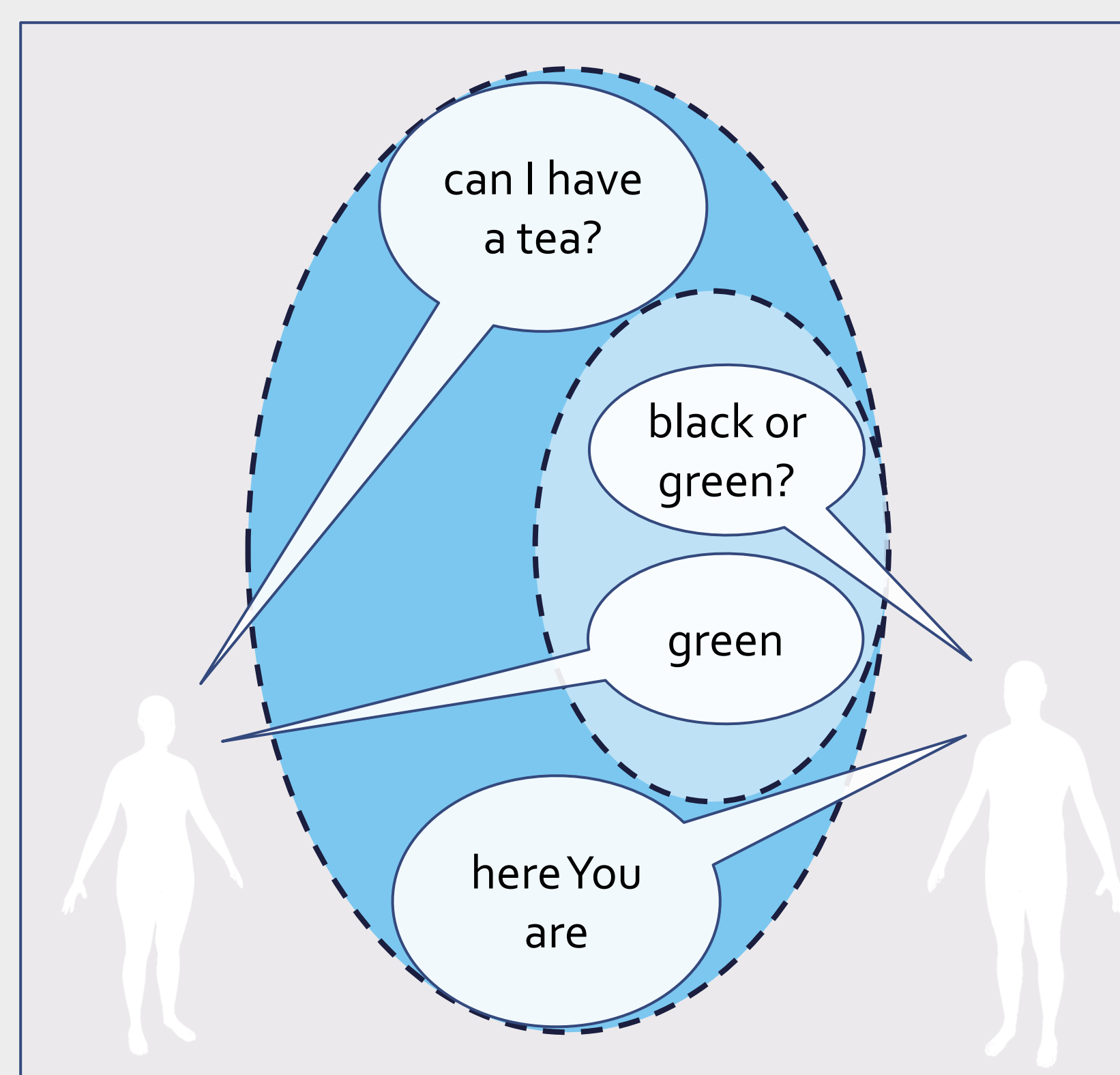
II. Theory of mind (ToM):

- attempts to explain and predict others' behaviour [10]
- the first and the second order ToM
- both [3] or only the second [11] is recursive?
- is mindreading necessary to predict other's behaviour?

ToM1   ToM2
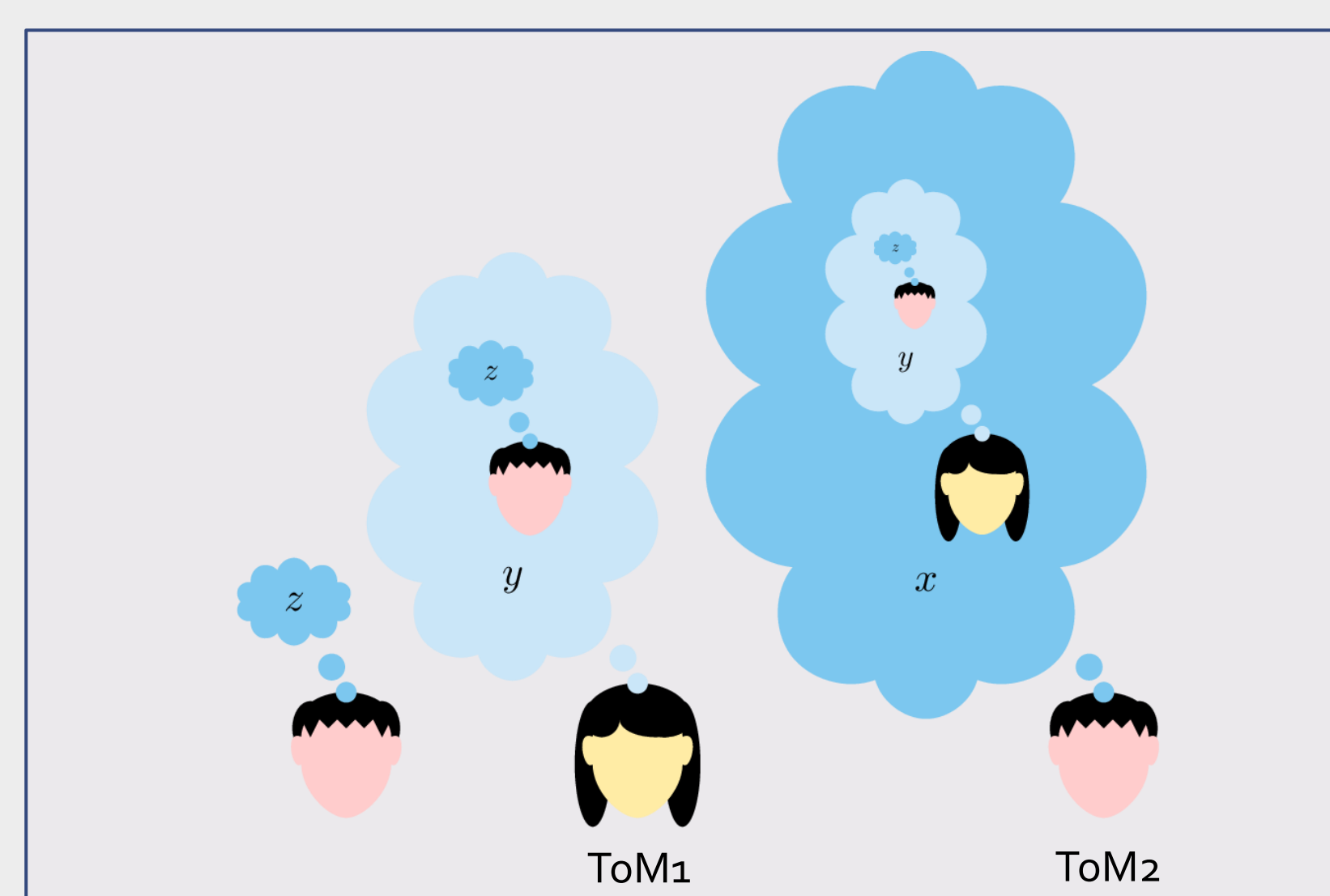
III. Language production and comprehension

METHODS

Participants: 285 children where tested in 1 and 2 when they have 24 months, in 3 and 5 when they have 42 months and in 4 when they have 66 months
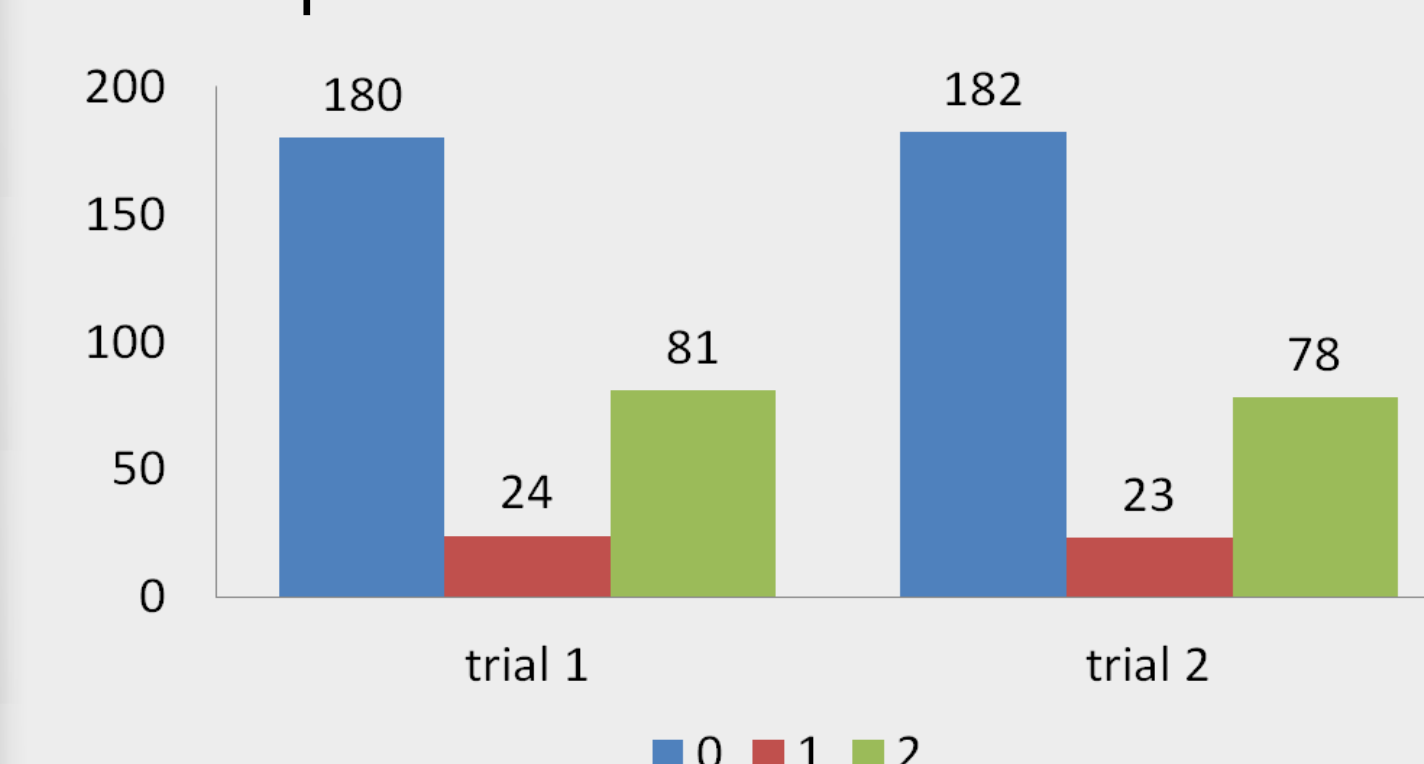
Tasks and latent variables:
1. Picture Vocabulary Test – Comprehension [12,13] (lang. compr. – diff.)
2. Spontaneous Speech Sample (lang. prod.)
3. First order ToM tasks [14] (ToM1)
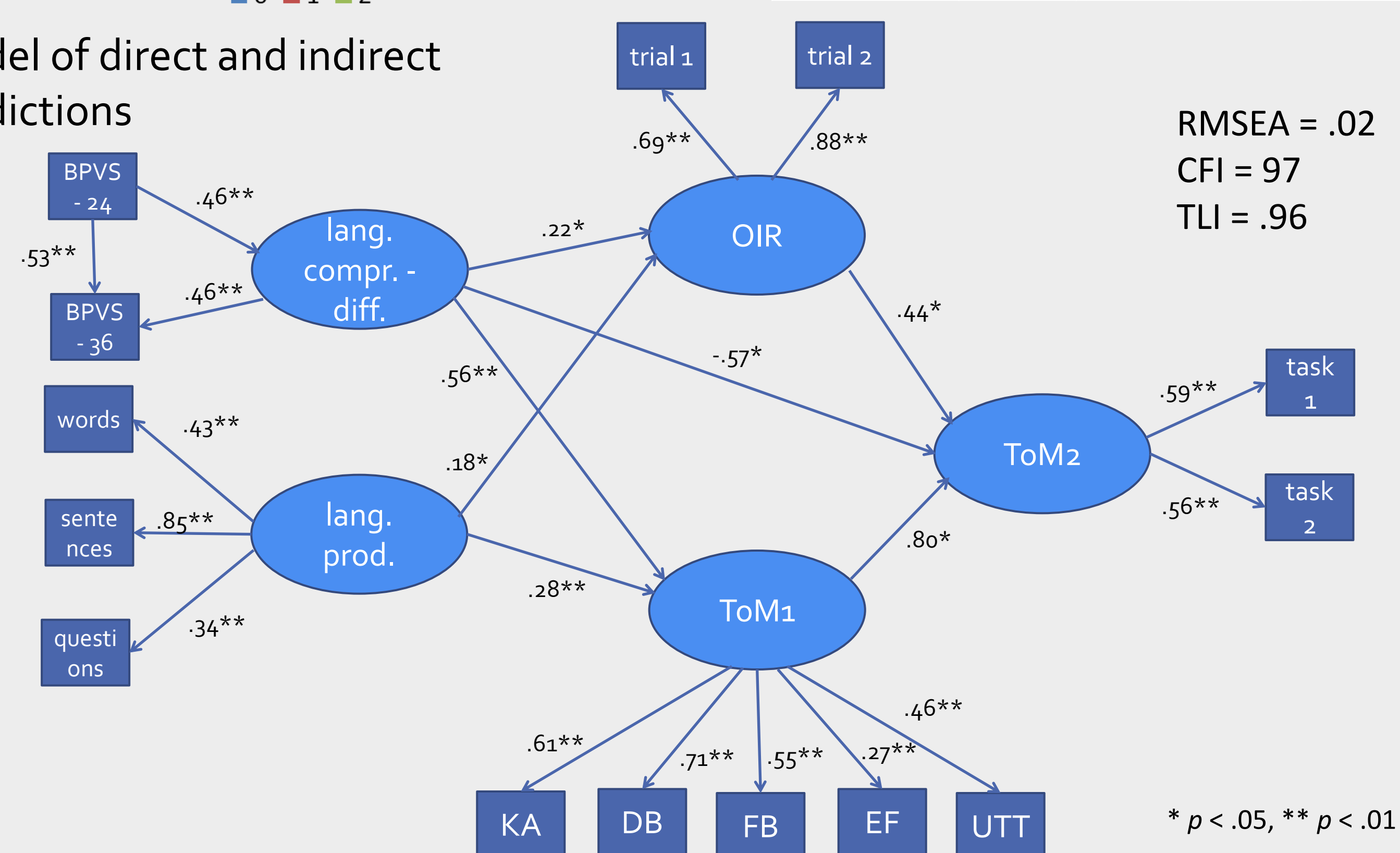4. Second order ToM tasks [15] (ToM2)
5. OIR task (OIR)

RESULTS

descritpive statistics OIR

intercorrelations between latent variables

variable	1.	2.	3.	4.
1. Lang.prod.				
2. Lang. compr. – diff.	.130*			
3. OIR	.193*	.162*		
4. ToM1	.285**	.191*	.166	
5. ToM2	.313**	.137	.434**	.544**

model of direct and indirect predictions

RMSEA = .02
CFI = 97
TLI = .96

* p < .05, ** p < .01

DISCUSSION

- some children recognize incomprehension and seek to repair it; almost half of the children engage in OIR (1/3 does it at least once spontaneously),
- unexpected result: lack of cross-sectional correlation between OIR and the first order ToM,
- interesting results: longitudinal relations OIR and the first order ToM with the second order ToM and some indirect (mediation) effects,
- thus, the first order ToM is not recursive and recursive is only the second order ToM,
- Neo-Vygotskian interpretation [16]: OIR has a structure of conversational recursion and it provides, through interiorization, the structure for the second order ToM
- developmentally: participation in interactive discourse of OIR form is developmental basis of recursive thinking.

Directions of future works:
- if these relations hold in the cultural context of less explicit communication, i.e. high-context cultures [17]?

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