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## Introduction

### ❖ Parental mind-mindedness (MM)

- Extent to which parents view their children as distinct entities with a mind<sup>1</sup>
- Tendency to comment verbally on their child's mental activities during parent-child interactions<sup>2</sup>

### ❖ Developmental outcomes of mind-mindedness<sup>3</sup>

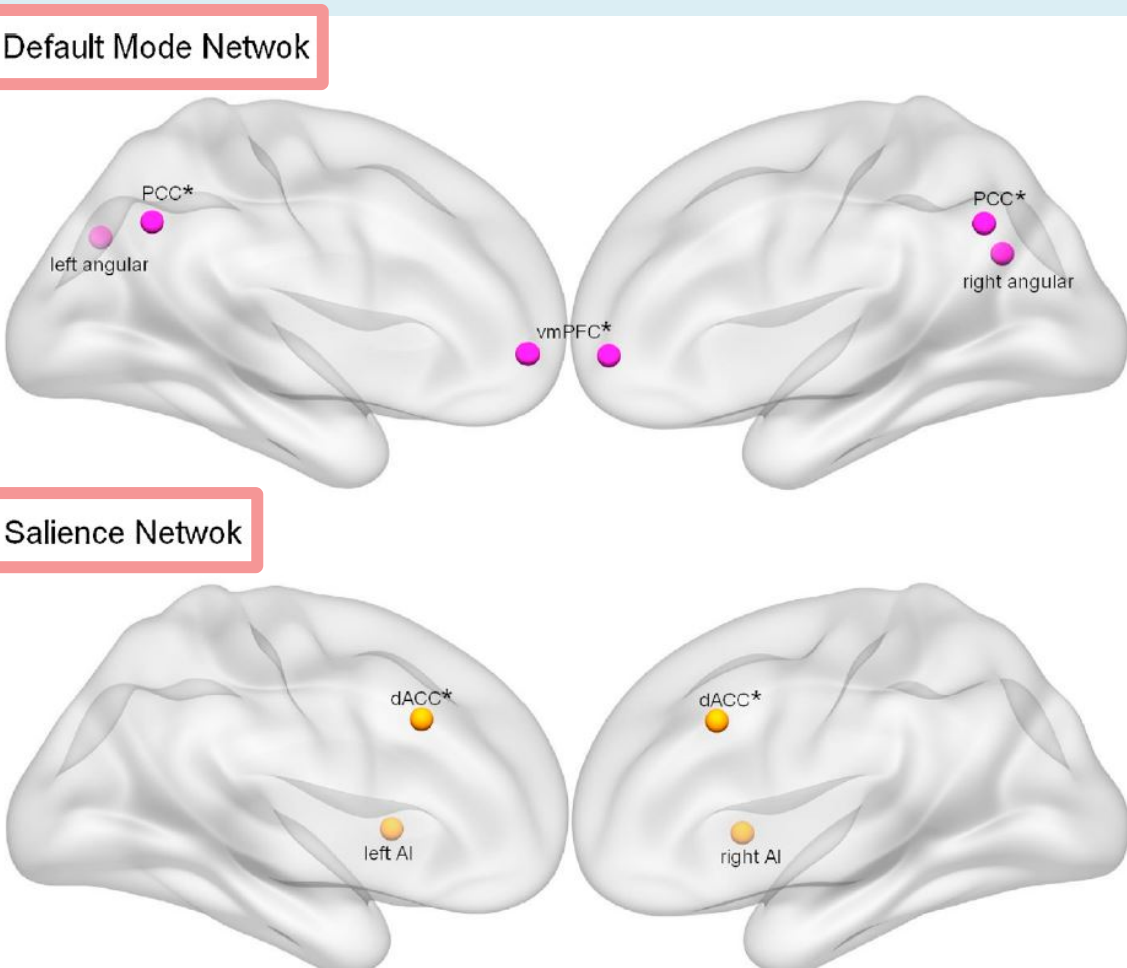
- Attachment security
- Mentalizing abilities
- Executive functioning
- Language acquisition
- Neural structures?

### ❖ Mind-mindedness and neural development<sup>4</sup>

Higher levels of maternal mind-mindedness in infancy



+ Mature functional connectivity between DMN and SN



- Sense of self
- Social cognition
- Affective cognition

- Stimuli detection
- Cognitive control

### ❖ Hypothesis

- Effects of parenting on child adjustment transit through neural pathways<sup>5</sup>
- MM related to brain regions associated with socio-affective adjustment?
- Exact location of these regions not hypothesized a priori

**Objective:** Investigate the associations between maternal MM in infancy and whole-brain grey matter volume in late childhood

## Method

### ❖ Participants

- 65 children (29 boys)  
Two assessments:
- T1 = 12 months ( $M = 12.60$ )
  - T2 = 10 years ( $M = 10.45$ )

### ❖ Measures

#### Maternal mind-mindedness (T1)

- 20-min mother-infant free play
- Videotaped and coded using the Meins et al. (2001) coding system for parental MM<sup>6</sup>

#### Grey matter volume (T2)

- MRI with standard 3D T1-weighted whole-brain protocol
- Scanner models: Siemens 3T Trio ( $n = 33$ ) and Siemens 3T Prisma ( $n = 32$ )
- Preprocessing (CAT12, SPM12)
  - Pediatric templates<sup>7</sup>
  - 8-mm FWHM smoothing

### ❖ Statistical analyses

- Multiple regression analyses to predict whole-brain regional grey matter volume from maternal MM
- $p < .001$ , uncorrected
- Minimum extent threshold = 100 voxels
- Covariates: child age, sex, total intracranial volume, maternal education and scanner model

## Results

### High maternal mind-mindedness levels



Larger GMV in the left superior temporal pole

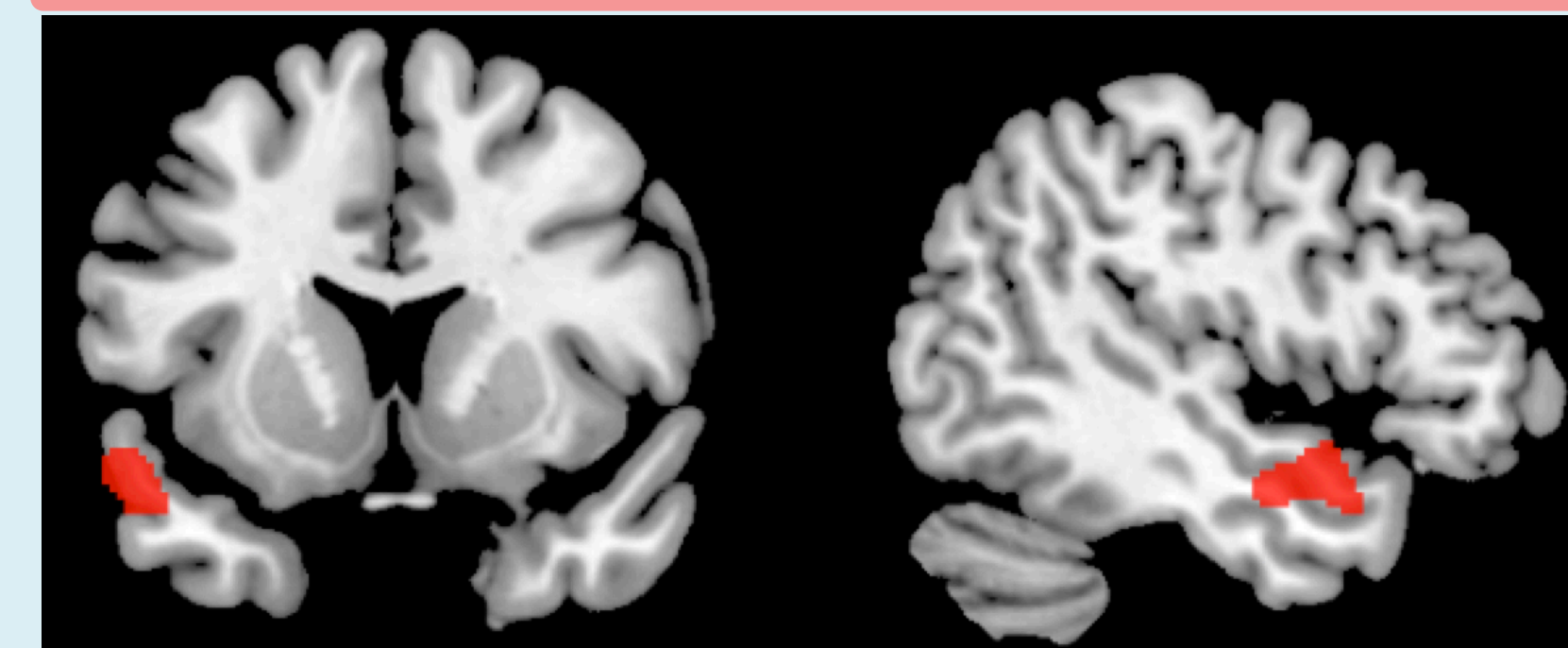


Table 1. GMV in the Left Superior Temporal Pole

BA	k	T	MNI coordinates
21	629	4.36	-48, 6, -16

Note. Results hold at  $p < .001$ , uncorrected, with a minimum extent threshold of 100 voxels. BA = Broadman's area.  $k$  = number of voxels.  $T$  = peak T-value.

## Conclusion

Maternal MM during infancy was related to the volume of neural structure responsible for social processing 9 years later

### ❖ Temporal pole

- Part of the dorsal medial subsystem of the DMN<sup>8</sup>
- Superior region: active role in retrieving social knowledge<sup>9</sup>
- Activates selectively to social information<sup>9</sup>
- Involved in the processing of semantic and conceptual knowledge related to social information<sup>9</sup>

### ❖ Significance

- Quality of maternal behavior during infancy could induce structural changes in the developing brain
- Infants can benefit from their parents' mind-related comments, as early as 1 year of age

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QR Code linked to the Grandir Ensemble lab website



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