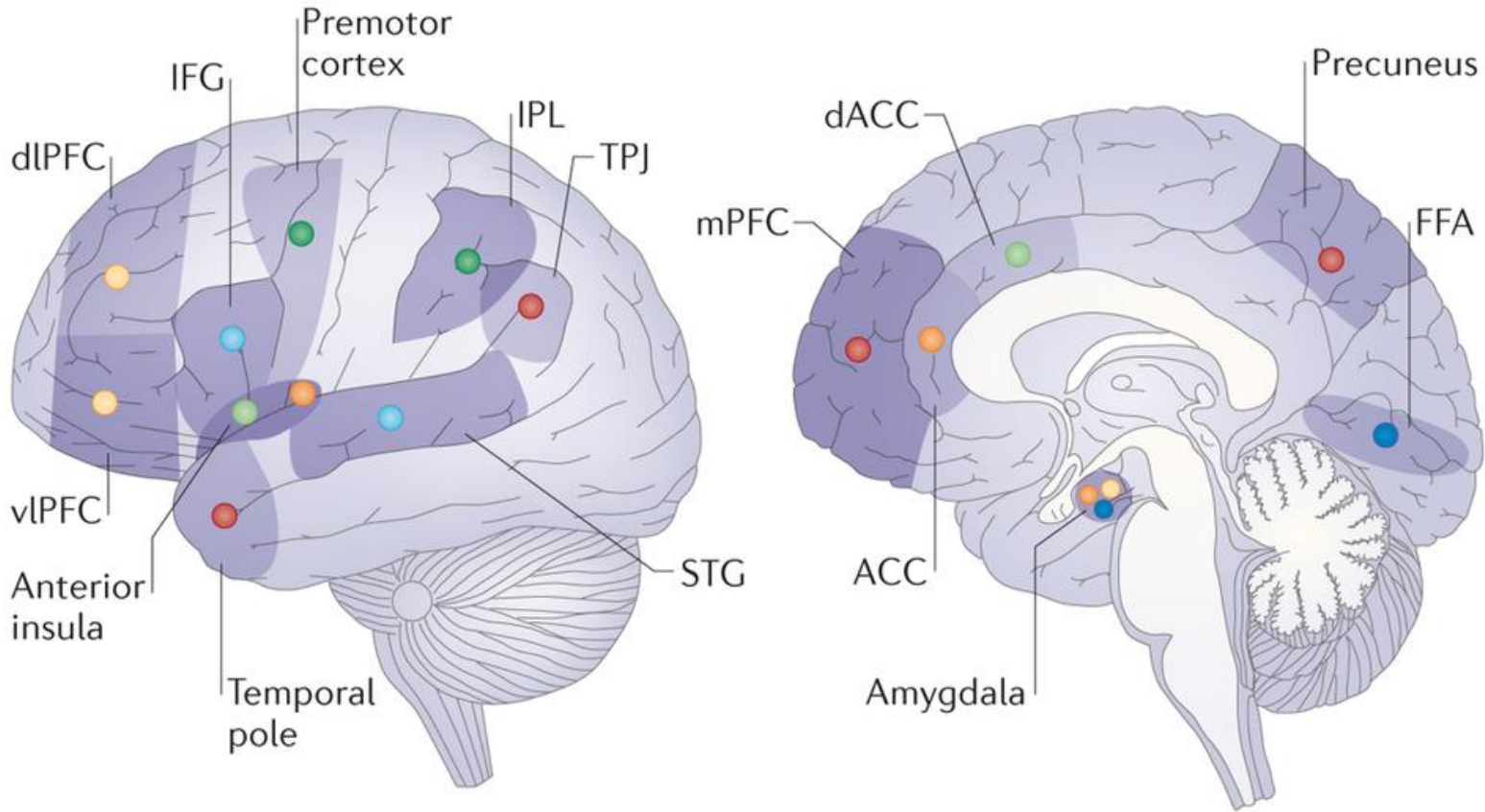


Social Cognition and Theory of Mind

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Part A: Theory of Mind (ToM) network

- Mechanism for reasoning about other people and other minds
- In the brain: right and left temporo-parietal junction (TPJ), medial parietal cortex (including posterior cingulate and precuneus), medial prefrontal cortex (MPFC)
 - RTPJ : attribution of mental states (beliefs, desires, ...)
 - MPFC: (general) consideration of other people
(personality traits: predict behavior without considering mental states)



Is ToM distinct and domain-specific?

- **False belief task** -- makes clear the importance of mental states for behavior prediction.

“Puppet places object in location A

Puppet leaves scene

Object is moved to location B

Puppet returns. Where will the puppet look for the object now?”

ToM Relation to Language and Inhibitory Control

- In adults, *separate from verbal processing*: non-verbal tests (animation), aphasia.

But language might be necessary during development (deaf kids of hearing parents are delayed in passing false-belief tests)

- *Separate from inhibitory control*: **False Belief Task VS False Photograph Task** (take picture, move object, is object in the picture now?)

(3 year old) Normal children find false belief tasks easier than false photograph task. Autistic children solve false photograph task faster.

ToM and Mirror Neurons

- **Motor Theory of Social Cognition:** Cognition is embodied in action; motor system participates in mental processing (evidence not strong)
- **Mirror neuron:** fires both when an animal acts and when the animal observes the same action performed by another (doubts about their existence and role)
- *ToM is anatomically distinct from regions implicated with action execution and perception.*

ToM: Automatic or Controlled?

- Research suggests *controlled*: Keep track of the person's (false) beliefs only when relevant to participant's task.
- Test:

False belief of character required to predict his/her behavior : looking at wrong place

VS

True belief (no belief attribution at all) : respond based on location of object

How to think of ToM?

1. Process of initially forming a representation of someone's thought (fMRI, Lesions, TMS)
2. Process of using that representation to answer questions and make predictions (ERP: high temporal resolution)

ToM Open Questions:

- What are the roles of the brain regions of ToM?
- How do the stimuli to ToM arise?
- How does ToM interact with other brain systems?
- How do ToM regions develop?
- Are these brain mechanisms universal (to all human beings)?
- Are they uniquely human?

Part B: Mindshaping

- Although nonhumans show a kind of sensitivity or ability to track some propositional attitudes (as an adaptive response to the behavior they cause), only humans seems to mediate this sensitivity with a representation of propositional attitudes.
- *Key distinction between human and nonhuman social cognition: our ability to shape each other's minds in ways that make them easier to interpret.*
- *Sophisticated mindreading presupposes sophisticated mindshaping.*

Definition of Mindshaping

- Mindshaping as a relation among four relata: a model, a target, a mechanism, a set of respects in which the target can match the model.
- Mindshaping must involve more than aiming at just a onetime behavioral match between some target and model.

Human mindshaping is different

- Variety of respects: imitation (goal, cognitive), pedagogy, norm-following, etc.
- Only humans find matching models intrinsically motivating.
- Mindshaping is socially distributed (teachers, peers, etc).
- Ontological models: fictional characters, idealized agents.

Mechanisms of Conformity in Humans

- (i) Low-level, unconscious, and automatic matching behavior like the “Chameleon Effect” (Chartrand & Bargh, 1999);
- (ii) Norm cognition and enforcement (intrinsic motivation, punishment and reward)
- (iii) The regulative use of language, in group and self-constitution (narrative, law)

Intentional Stance VS Sophisticated Mindreading

- **Intentional Stance (Dennett):** Agency can be read directly off behavior (behavior has intention), parsing bouts of behavior into goals and rationally and informationally constrained means of achieving them.
 - Low-level mindreading
 - No need for “inner life”/underlying mental reality
 - How do we explain irrational behavior?
 - Sufficient for most components of human sociocognitive syndrome.
- **Sophisticated Mindreading:** Full-blown propositional attitudes. Understanding others’ behavior as the product of unobservable causes, which represent situations under individually variable modes of presentation, and influence behavior via interaction with large networks of other mental states.
 - Solve philosophical problem of other minds
 - Inferences of behavior from unobservable, potent mental states.
 - Mental reality different from behavioral appearance.
 - Slow, conscious, reflective interpretation.

What amount of ToM is needed to learn a language?

- Human children can attribute propositional attitudes before learning a language (Scott & Baillargeon, 2009; Buttelmann et al., 2009) and they cannot learn a language without first being able to attribute communication relevant propositional attitudes to adult models (Bloom, 2000, 2002).
- *Response*: Infants are born with sociocognitive capacities not share with our primate cousins. These capacities are a version of the intentional stance (infants take into account information differentials when forming expectations about what course of behavior is rational for a given agent), not mindreading. However, not a clear answer....?
- Full-blown propositional attitude attribution presupposes competence in a public language (ch. 7)

ToM as a result of abilities to form other minds

- Book takes cooperative stance: *Propositional attitude attribution is a powerful mechanism for maintaining or rehabilitating social status in the wake of apparent renegeing on publicly expressed commitments.*
- Negotiate anomalous behavior of agent in the eyes of the group: exculpatory or justificatory (behavior excused if mitigated by mental factors).
- Impression management: present yourself in positive light.
- Normative judgement influences propositional attitude attribution.
- Regulation of others' behavior (stereotypes)
- Self-regulation (self-constituting narratives)