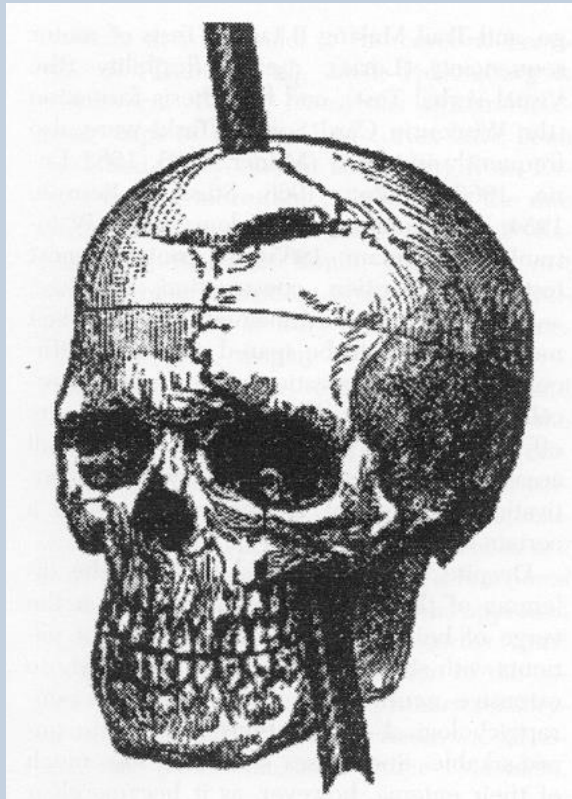# Screening for deficits in social cognition

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- Following stroke and brain injury problems in social cognition and behaviour can be major determinants of recovery of function

Phineas Gage (Harlow, 1868)

'The equilibrium ..between 'his intellectual faculties and animal propensities seems to have been destroyed. He is fitful, irreverent, indulging at times in the grossest profanity……at times pertinaceously obstinate, yet capricious and vacillating… devising plans that are no sooner arranged than abandoned'

- Currently few standard procedures for clinical measures of social cognition

- Our understanding of the factors involved in social cognition remains poorly formulated – though both functional brain imaging and neuropsychological studies indicate that there can be separate, localised functions

- In addition, other domain-general functions can also contribute (e.g., executive contributions to ToM)

- Need for clinical measures which can detect domain-specific problems, distinct from domain-general effects, and which can predict outcome

What might constitute the 'modules' of social cognition?

Self prioritization

Theory of Mind   Emotion

Moral reasoning   Social attention

Empathy

Motivation

Impulsivity

Social rules (faux pas)   Humour

Cue inference (attitudes)

At least some of these 'modules' can be linked to specific
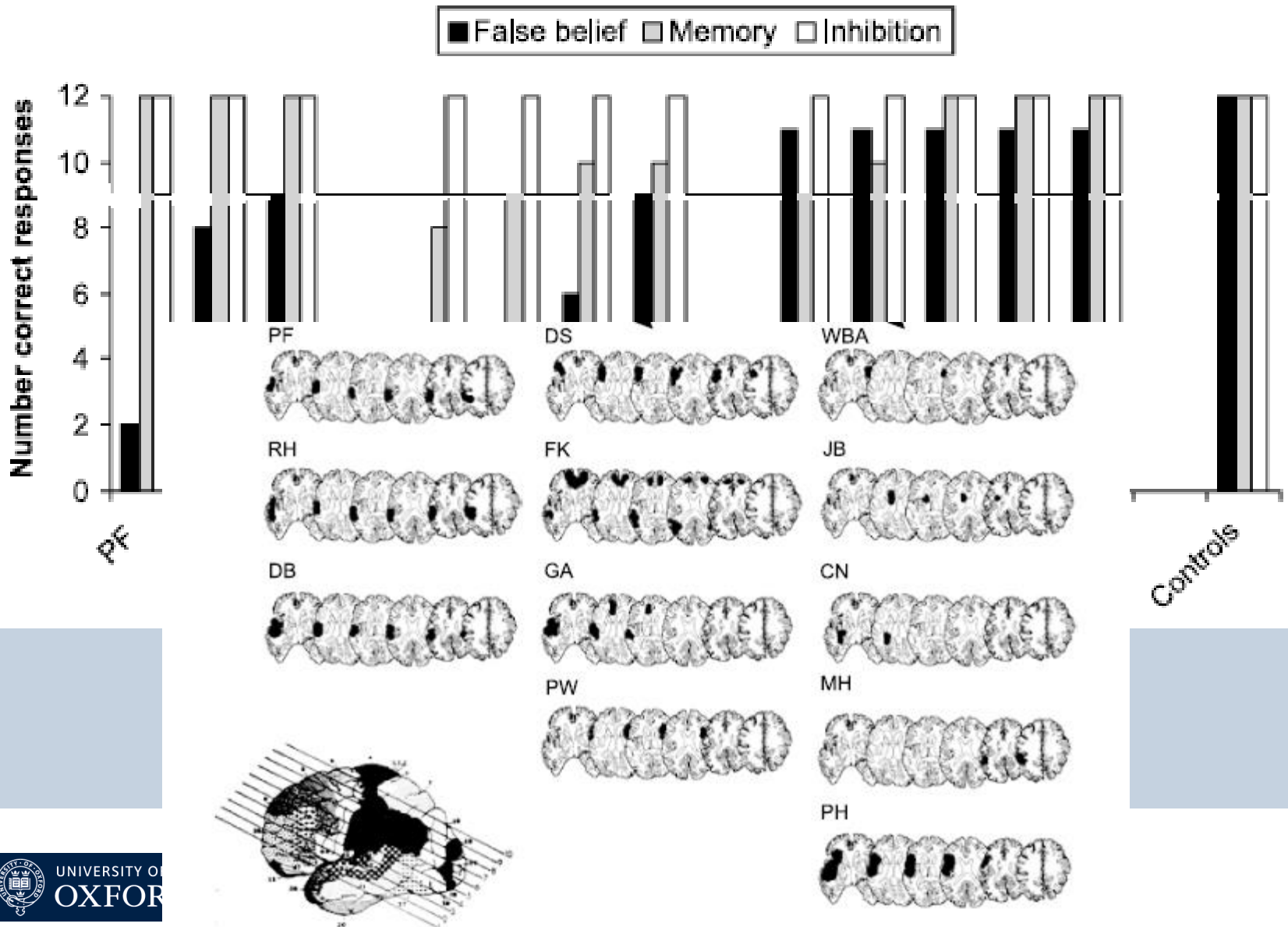 neural regions …….eg ToM

Example Theory of Mind Story

A burglar who has just robbed a shop is making his getaway. As he is running home, a policeman on his beat sees him drop his glove. He doesn't know the man is a burglar, he just wants to tell him he dropped his glove. But when the policeman shouts out to the burglar, 'Hey, you! Stop!', the burglar turns round, sees the policeman and gives himself up. He puts his hands up and admits that he did the break-in at the local shop.

Q: Why did the burglar do that?
Example responses scored:
2: 'Because he thought the policeman knew he had robbed the shop'
1: 'Because he thought he was caught'

Happe et al., 1999

False belief   Memory   Inhibition

Number correct responses

PF   DS   WBA

RH   FK   JB

DB   GA   CN

PW   MH

PH

PF   Controls

Task 1:ToM, fairness, empathy

Start trial: This Is:

Just show 2 who appear on the trial

John (He looks neutral)

1 ↑ 10

Rick (He looks dubious)

1 ↑ 10

Bertie (He looks gullable)

1 ↑ 10
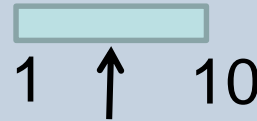
Task 2: Standard ToM scenarios

Scenario 1 (Knowledge of object manipulation)

John is in the room with **Rick** who has two suitcases. **John** sees **Rick** put a wad of money in **suitcase 2**. **John** leaves the room and **Rick** switches the money into **suitcase 1.** **John** returns to the room.
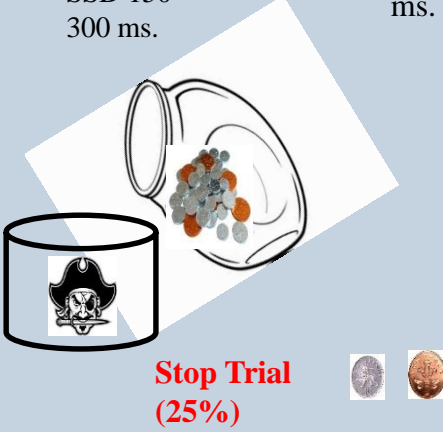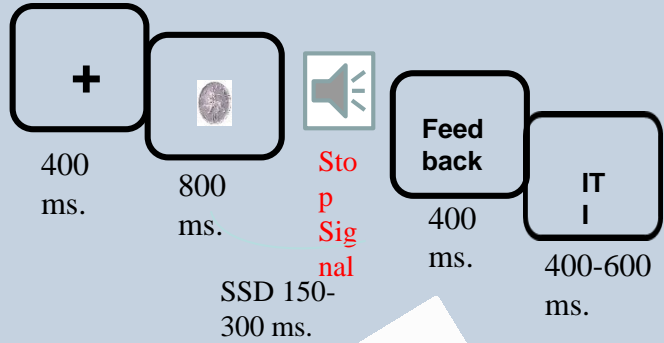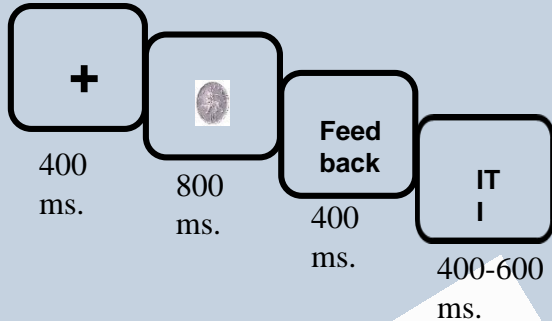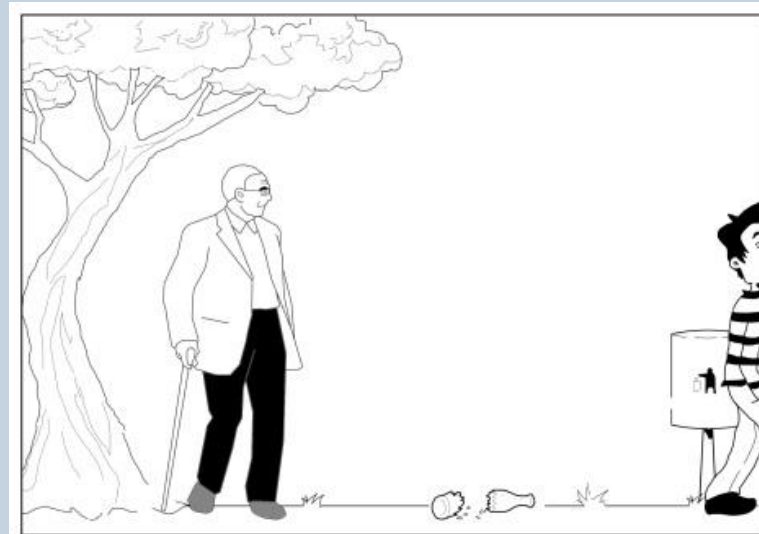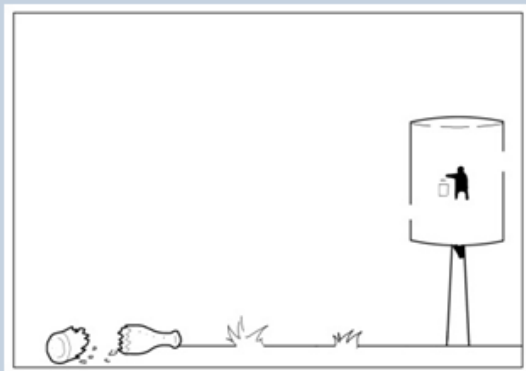**ToM question** 1- Where will **John** look?
Memory control 2- Where was the money before John leaves the room?
Empathy 3- How much do you like
John? **Moral question** 4- How much do you like **Rick**?

Task 2: Reward sensitivity, impulsivity and inhibition control

400 ms. 800 ms. Feedback 400 ms. ITI 400-600 ms.

Go Trial (75%)

400 ms. 800 ms. Stop Signal SSD 150-300 ms. Feedback 400 ms. ITI 400-600 ms.

Stop Trial (25%)

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Admiring   Disappointed   Afraid

Moral reasoning – forced-choice
selection and attribution judgement
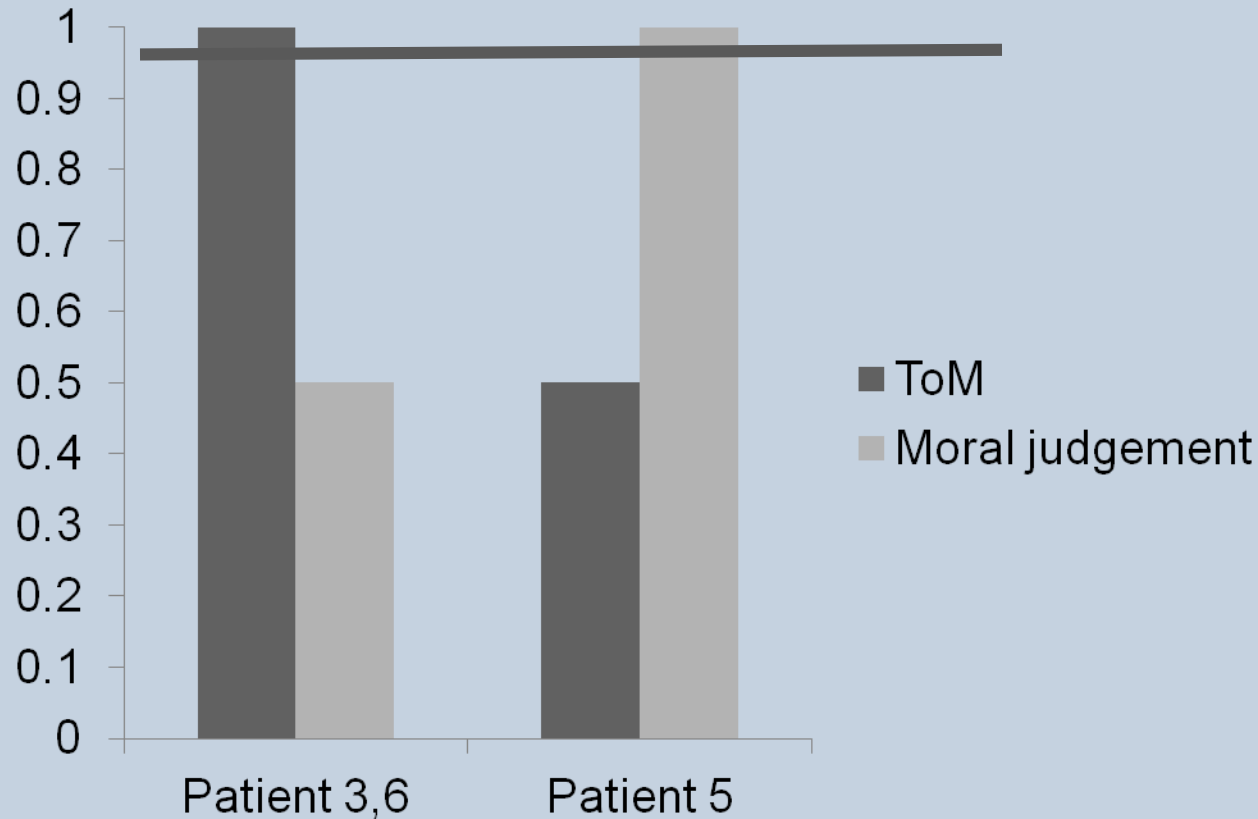
OXFORD

amused

sad

Kind

afraid

angry

relaxed

energetic

angry

ToM vs. moral judgements

Poor ToM can dissociation from impaired moral judgement

Conclusions:

First attempt to generate overall screen for social cognition

Learn about the relations between these different aspects of social cognition

Learn about how these deficits vary over time – which problems can be predicted