

Can cognitive neuroscience improve our treatments of the emotional disorders?

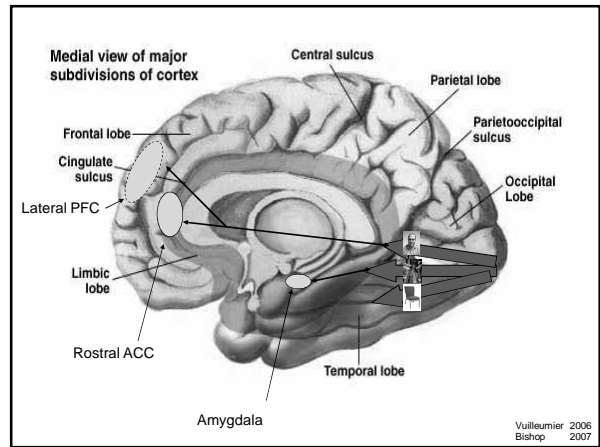
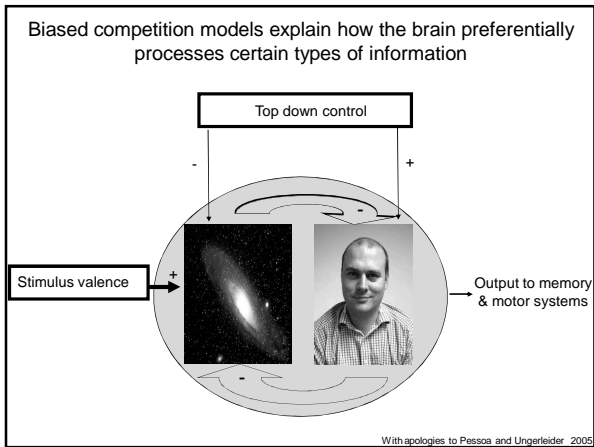
Michael Browning
Dept. of Psychiatry

May 2010

Cognitive Bias

- The brain prioritises certain types of information at the expense of others

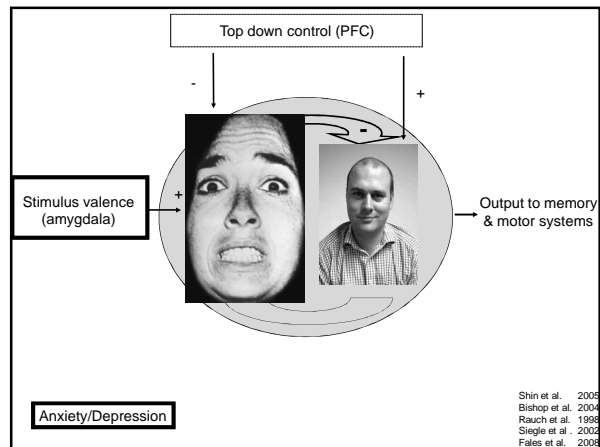
Mathews and MacLeod 2005



Cognitive Bias in the Emotional Disorders

- Depression and anxiety = cognitive bias for negative information

Mathews and MacLeod, 2005

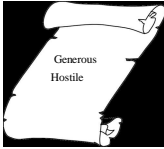


Treating Mood Disorders by Altering Bias

- Does treatment reduce negative bias?

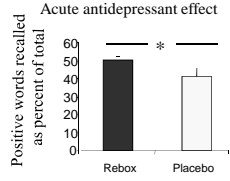
Antidepressant Medication

Emotional Memory



*Remember as many of the descriptors as you can

Acute antidepressant effect

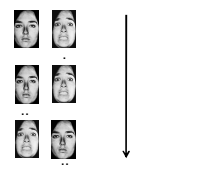


*An increased memory for positive affective information

Harmer et al., 2004

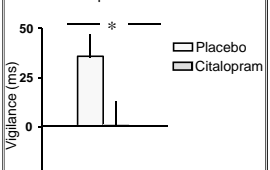
Antidepressant Medication

Attention to emotional stimuli



• Are one or two dots presented?

Anti-depressant effect

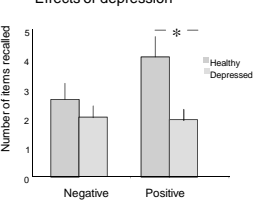


*Decreased attention to negative stimuli

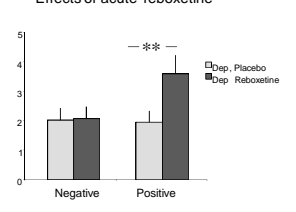
Murphy et al., 2009

Effect in Depression

Effects of depression

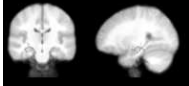


Effects of acute reboxetine



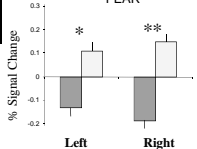
Harmer et al., 2009

Antidepressant Medication

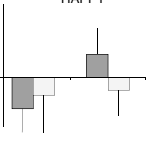


Amygdala responses

FEAR



HAPPY



* Citalopram reduced amygdala responses to fearful but not happy facial expressions

Harmer et al., 2006
Murphy et al., 2009
Fu et al., 2004

Cognitive Therapy

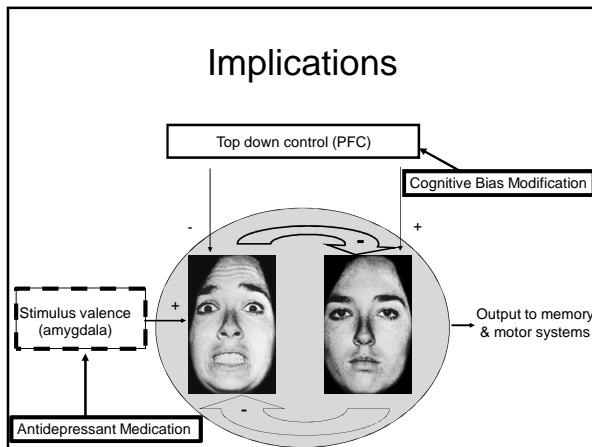
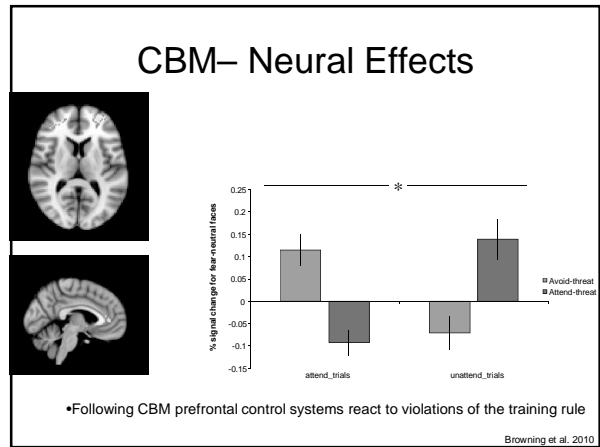
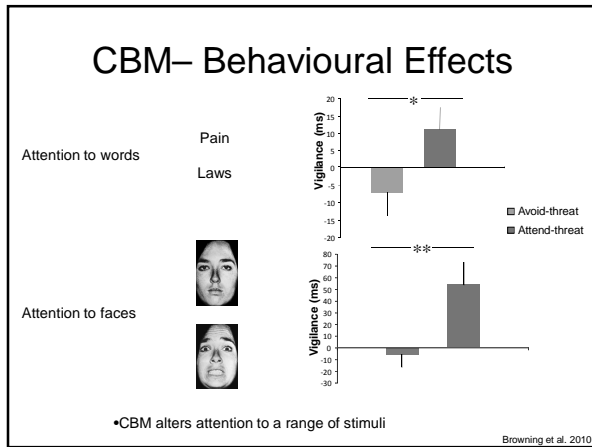
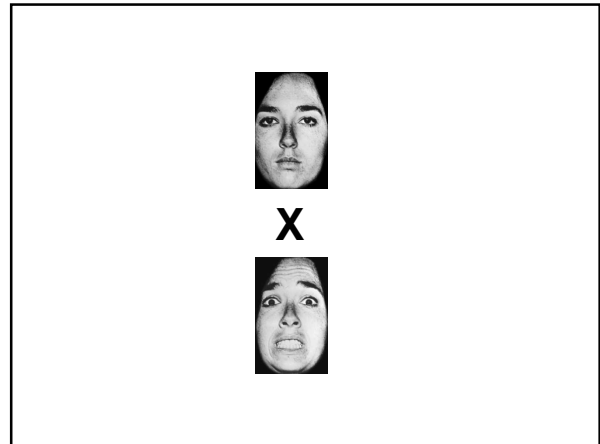
- Does cognitive therapy alter cognitive bias?
- Possibly, but results are confounded by mood state

Mathews et al., 1995
Mogg et al., 1995

Cognitive Bias Modification

- Experimental tasks designed to alter cognitive bias
 - Can be used in non-clinical populations
 - Can be tightly experimentally controlled
 - Alter cognitive bias
- Improve clinical status

MacLeod et al. 2002
Amir et al 2009
Wells & Beavers 2009
Browning et al. 2010



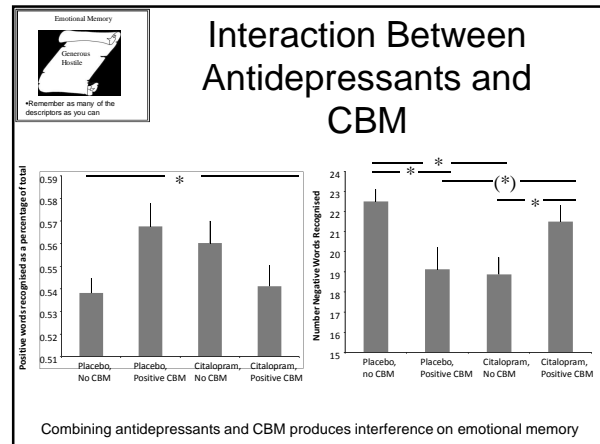
Implications

- Pharmacological and cognitive interventions may alter cognitive biases via effects on different neural systems
- How do these interventions interact?

Testing Treatment Interaction

- 62 non-clinical volunteers
- Cognitive bias measured after one week of treatment

	Citalopram	Placebo
Positive CBM	16	15
Neutral CBM	15	16



Conclusions

- Neurocognitive models provide a framework for exploring how treatments work in anxiety and depression
 - e.g. pharmacological and cognitive interventions initially alter distinct control systems

Conclusions

- Insights from these models can inform experimental studies of novel treatment strategies
 - e.g. testing treatment interactions