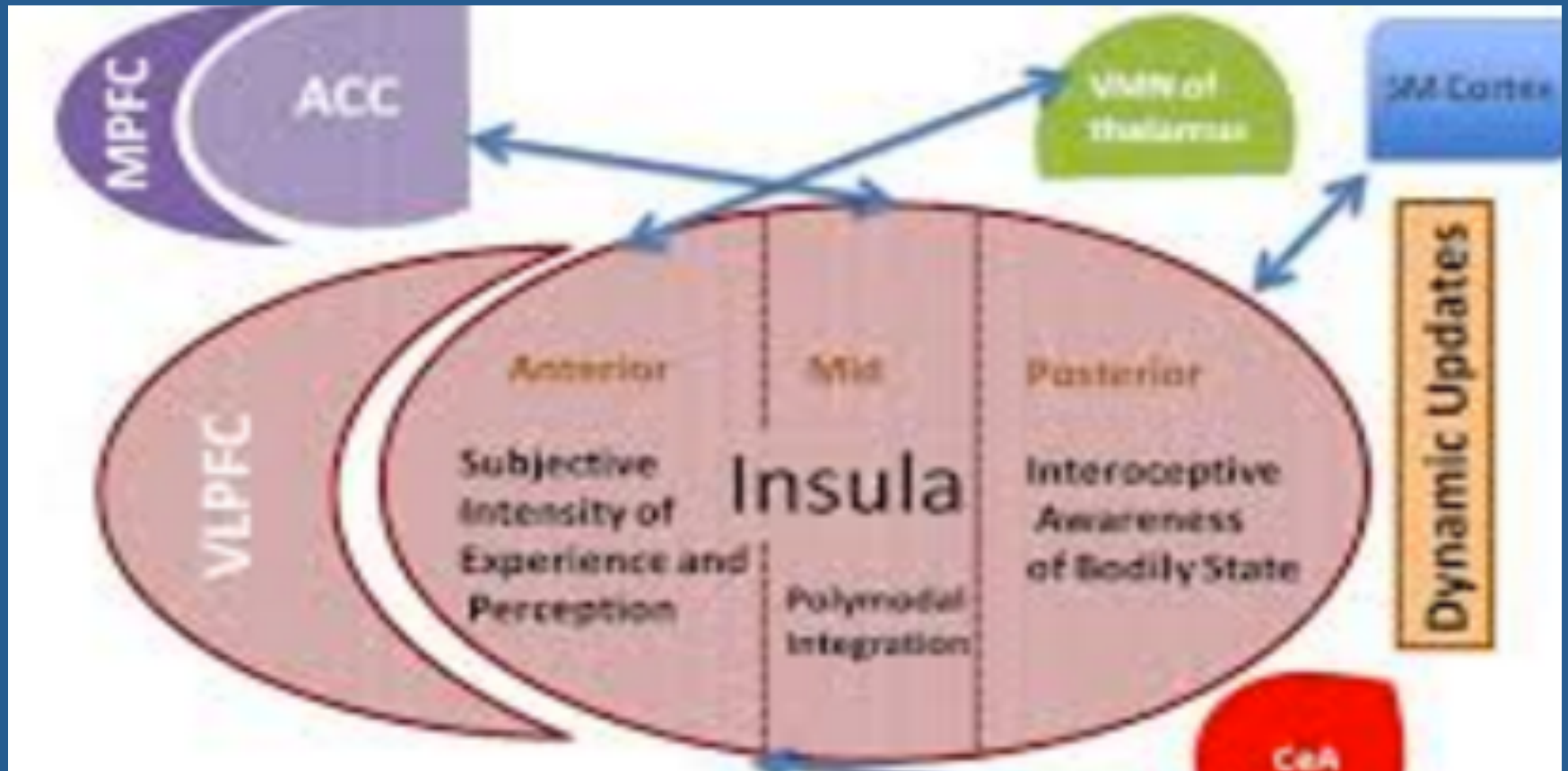


Neurobiological Theories of BPD

- 1) dysfunction in specific brain structures (e.g. insula)
- 2) dysfunction in the communication between brain regions (e.g. hyper-arousal dyscontrol syndrome)
- 3) dysfunction in various brain network connections

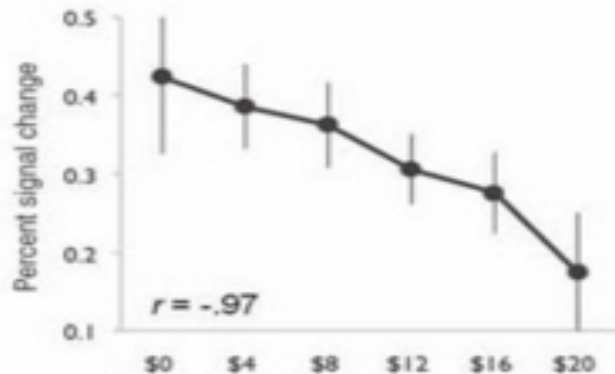
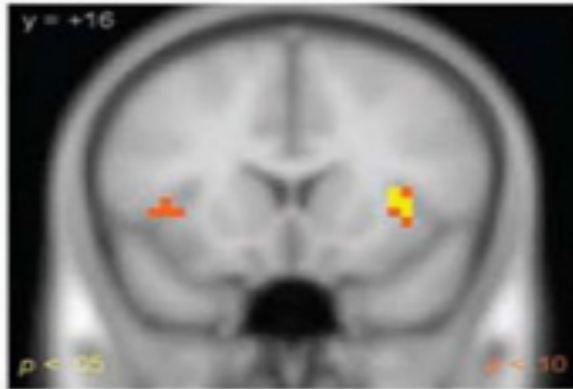
1. Specific Region Dysfunction:

for ex. Insula- responsible for interoception, awareness of bodily states, sense of self, integration



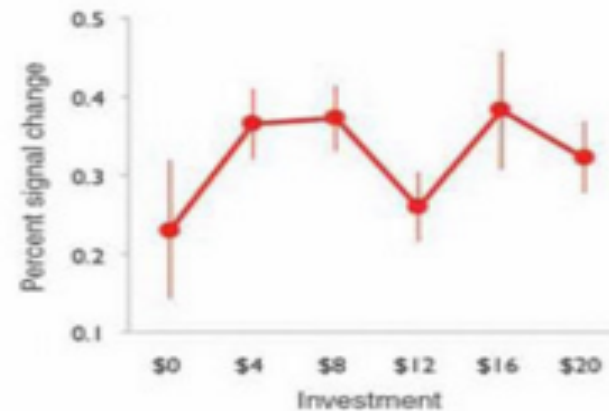
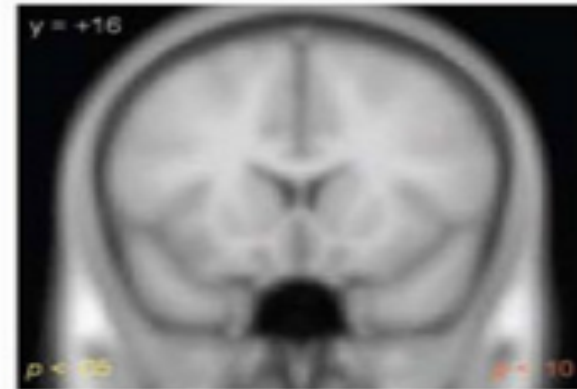
Insula- brain activity during economic trust game- biomarker for BPD?

healthy trustees (n = 38)
(low investment - high investment)_{healthy}



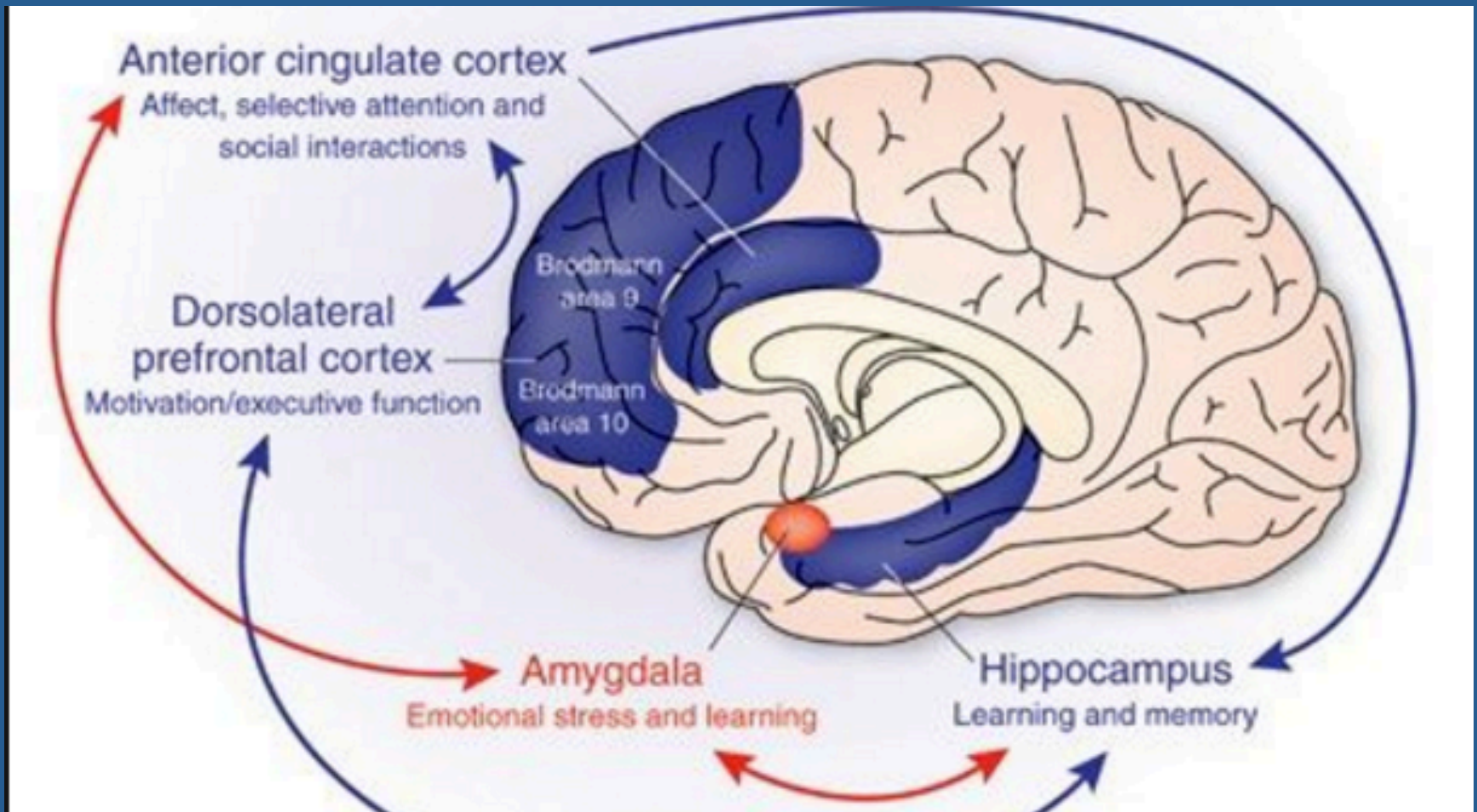
Normal subjects show inc
Insula activity with perception of
unfair treatment

BPD trustees (n = 55)
(low investment - high investment)_{BPD}

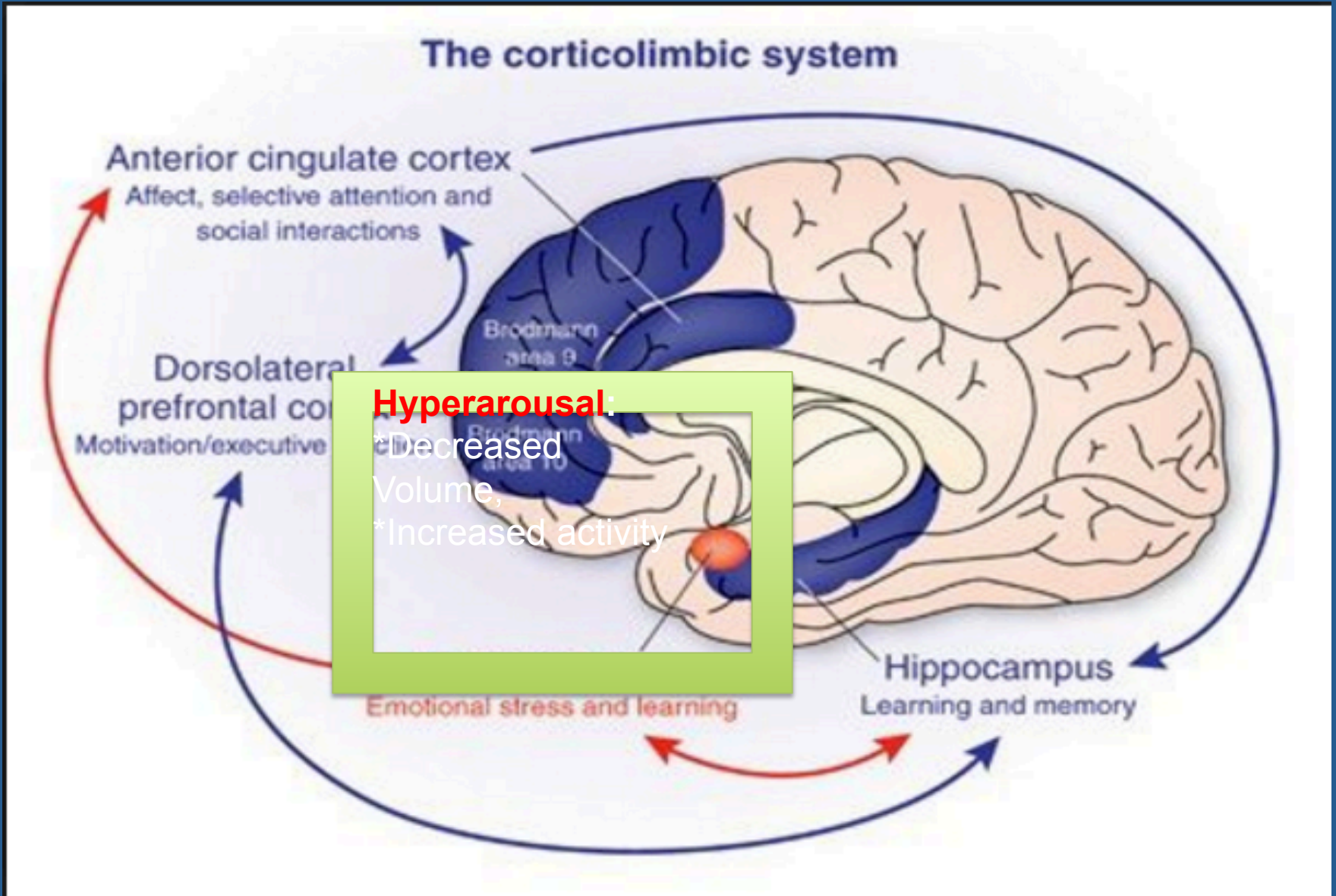


BPD
subjects
have
different
insula
activation
patterns,
don't
recognize
social
norms

2. Dysfunction in the communication between brain regions (e.g. hyper arousal dyscontrol syndrome).



2. Dysfunction in the communication between brain regions (e.g. hyper arousal dyscontrol syndrome).



The corticolimbic system

Dyscontrol

Anterior cingulate cortex

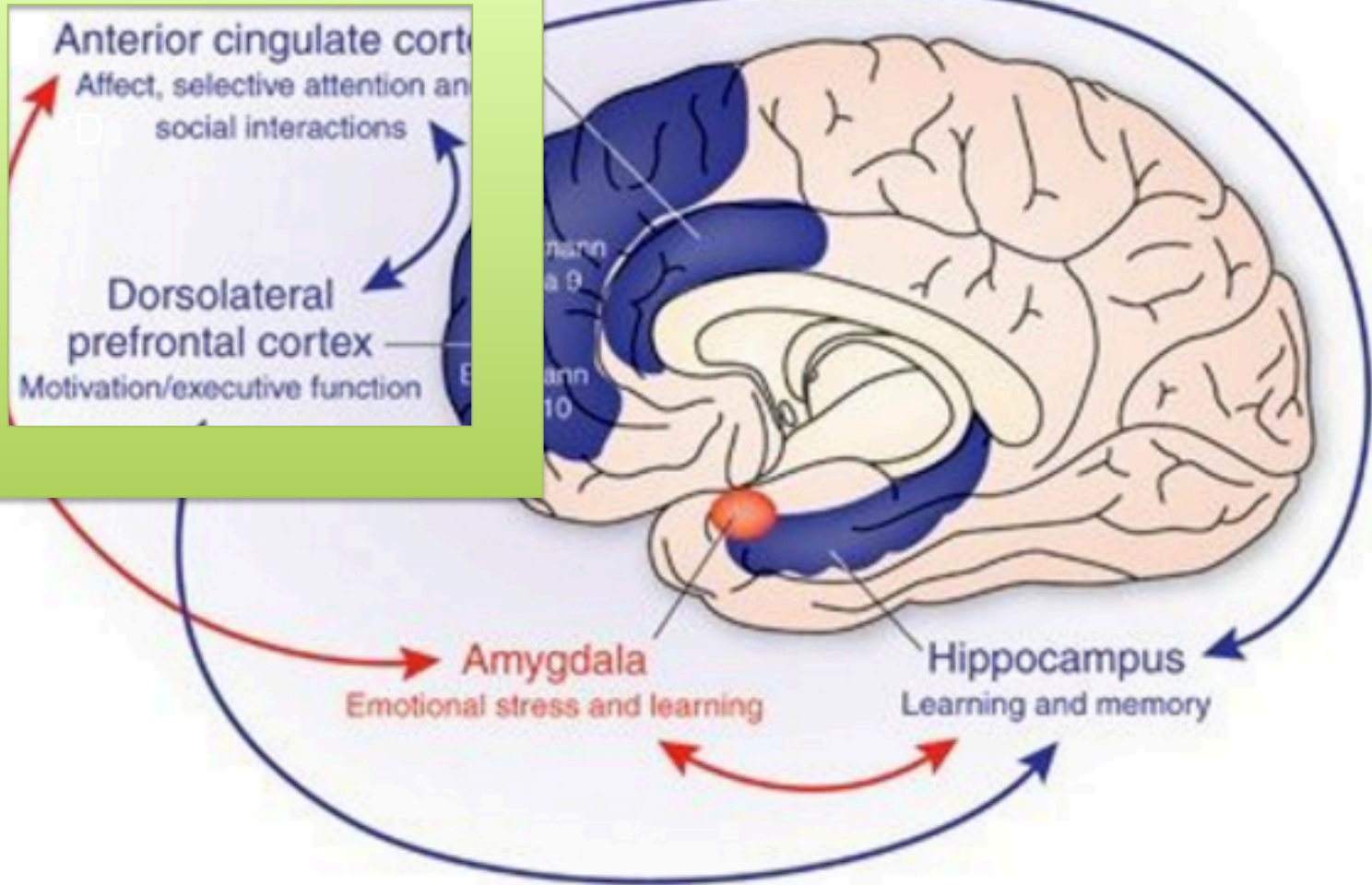
Affect, selective attention and social interactions

Dorsolateral prefrontal cortex

Motivation/executive function

Amygdala
Emotional stress and learning

Hippocampus
Learning and memory



Networks and BPD

- The 3 networks most salient in BPD are:
 - 1) The default mode: a network activated when the brain is at rest, influenced by the medial prefrontal cortex and posterior cingulate cortex, and responsible for self-referential thinking
 - 2) The salience network including the orbital frontal insula and the dorsal anterior cingulate cortex
 - 3) The medial temporal lobe network responsible for processing negative emotions.

Networks and BPD

In BPD, alterations in the connections between these 3 networks exist

- particularly problematic connectivity between
 - salience detection and
 - self-referential encoding
- resulting in
 - misidentification with neutral stimuli
 - as well as a failure to integrate salience information with internal representations.