

Fronto-Striatal Systems in Depression & Gulf War Illness

- Depression is a prevalent complaint in GWI
- The extent to which it is primary, part of the GWI, or reactive is an ongoing topic of debate
- Basal ganglia ("striatal") dysfunction and altered central dopamine have been documented in GWI
- Striatal systems have been implicated in depression in other basal ganglia diseases
- Recent advances suggest depression may involve problems in connections between basal ganglia and prefrontal cortex.

Frontostriatal Systems

Dorsal Striatum – Dorsolateral PFC (DSDL)

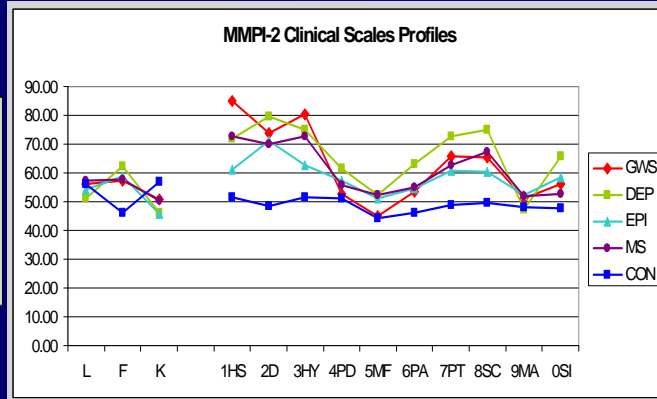
- Cognitive symptoms of depression
- Monitoring and directing responses to external stimuli (Coping)

Ventral Striatum – Ventromedial PFC (VSVM)

- Experience of emotion
- Mediates emotional approach-withdrawal reflex

Depression in GWI

	<u>GW</u>
MDD	0.79
EPI	0.75
MS	0.96
CON	0.17



Methods

- Event related fMRI procedure developed to differentially engage VSVM and DSDL systems
- Periodic self-rated mood checks
- Researchers were blinded to group identities

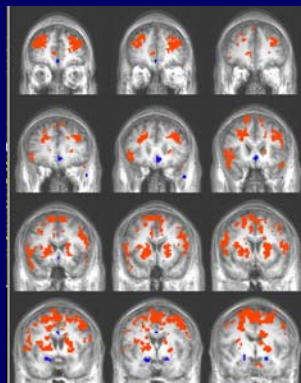


Results: Pos & Neg

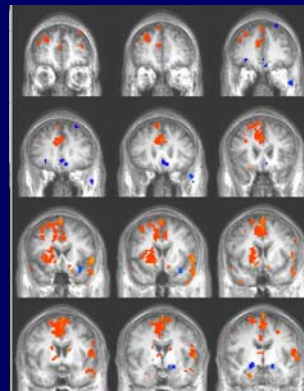
- Positive – Group B: R > L
- Negative – Group B: L > R

- Positive – Group A: Bilateral
- Negative – : R(+) & BILAT (-)

Results: Mood Rating



Group B: Pos activation in bilateral anterior dorsolateral prefrontal cortex, dorsal posterior anterior cingulate, bilateral striatum and left thalamus. Neg activation in ventral medial prefrontal cortex and bilateral amygdala.



Group A: Pos activation primarily in medial dorsal prefrontal cortex, as well as posterior anterior cingulate and right striatum. Neg activation in ventral medial prefrontal cortex and bilateral amygdala.

Conclusions

- This fMRI test shows that the brains of GWI Group A, who commonly have depressive symptoms, react differently to emotional pictures than Group B.
- The main differences in brain function are in the DSDL and VSVM systems, known to be involved in other depressive illnesses.
- Correlating these findings with other tests in this study may uncover the reason for the common depressive symptoms in ill GW veterans.