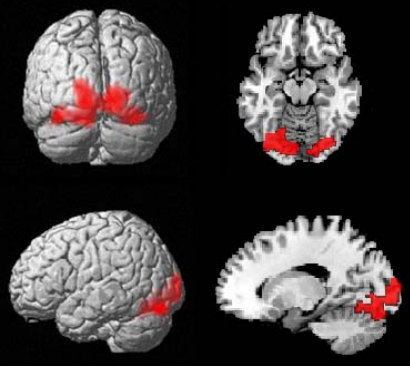
Emotional Memory Circuit Project

- Hyperarousal to emotional stimuli is a reported problem
- Patients have met criteria for PTSD but acknowledge that they don't have it
- They have the hyperarousal component but not the traumatic, life threatening experience or "flashback"
- We term this "PTSD without the T"
- Assessed hyperarousal to emotional stimuli on Mississippi PTSD scale
- Threat stimuli fMRI and ERP studies also conducted

Visual Object Semantic Memory

Threatening > Nonthreatening

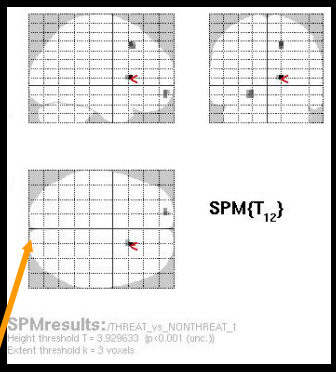
Normal Young Controls



VISUAL ITEM SEMANTIC MEMORY

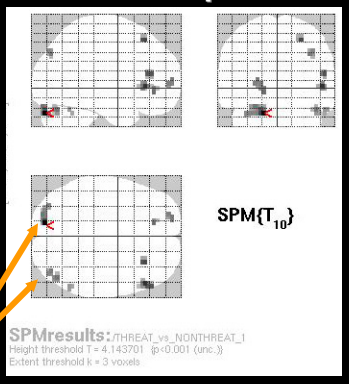
Threatening > Nonthreatening

Group A



Absence of activation in what system threat area

Group B

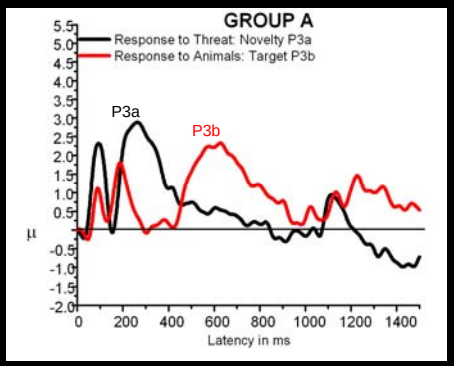


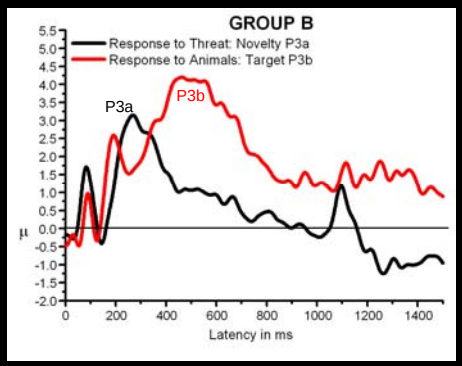
Typical activation in what system threat area

Visual Threat ERP

Group B - P3a (black) < P3b (red) → typical

Group A - P3a (black) > P3b (red) → hyper-arousal





Black (P3a) - unattended threat oddball (combat scenes)

Red (P3b) - attended threat target (dangerous and non-dangerous animals)

Conclusions

- Significant difference with more reported hyperarousal to threat in Group A ($p < .0001$)
- Absence of typical activation in visual threat memory area for Group A
- Hyperarousal P3 response to all threatening stimuli, not just combat-related for Group A

Implications

- Implication is that amygdala is over-responsive or gating system to amygdala is "leaking" (orbitofrontal-amygdala circuit)
- Further delineate the disrupted aspect of mechanism
- Therapeutic will focus on these targets