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Aberrant neural reactivity to implicit processing of emotional words in youth with posttraumatic stress symptoms



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INTRODUCTION

- Experiencing trauma early in life is risk factor for many mental and physical health problems [1].
- Children that experience Posttraumatic Stress Symptoms (PTSS) are at increased risk for developing mood disorders later life [2].
- The insula, dorsolateral prefrontal cortex (DLPFC) and the anterior cingulate (ACC) constitute a network of brain regions involved in the pathophysiology of PTSS and vulnerability for developing mood disorders [3,4].
- This study was designed to investigate insula, DLPFC and ACC reactivity to emotional (threatening and depressing) words in youth that exhibit PTSS.
- This study may inform diatheses-stress models of mood disorders.

METHODS

Participants

- 18 children with Posttraumatic Stress Symptoms (PTSS): 12 females, mean age = 13.86 years, SD = 2.04.
- 11 Healthy Controls (HC): 7 females, age = 14.25 years, SD = 1.75.

Symptom measurement:

- Clinician Administered PTSD Scale: Child and Adolescent Version (CAPS-CA) [5].

fMRI task:

- Emotional counting Stroop [6]
- Threatening, Depressing and Neutral words

threatening	depressing	neutral
slaughtered	lonesome	tangent
		tangent
		tangent

Imaging Parameters:

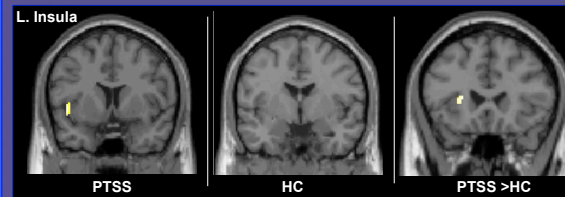
- 3T GE-Signa HDx scanner
- Gradient echo T2*-weighted echo-planar sequence
- TR = 2s, Flip angle 15°
- FOV = 200mm, thickness = 4.5mm

Analysis

- Symptoms: CAPS-CA
- fMRI: SPM8
- Significance threshold ($p < .005$, 12 voxel extent)
- ROIs: WFU PickAtlas: Insula, DLPFC and ACC

RESULTS

1. Threatening > Neutral

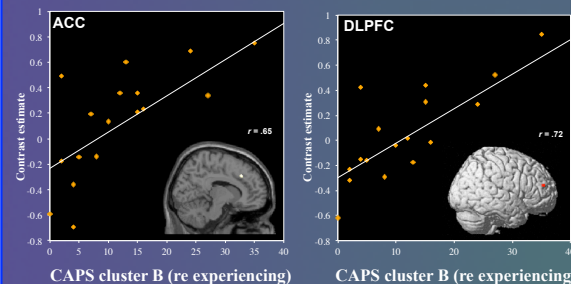


2. Depressing > Neutral

No significant differences within or between groups

3. Association with PTSS symptoms

PTSS group
Correlation with "Trauma symptoms"
Depressing > Neutral



CONCLUSIONS

- Children with PTSS exhibit increased insula reactivity to threatening words as compared to healthy controls.
- Children with PTSS do not (on average) exhibit greater insula, DLPFC or ACC reactivity to depressing words.
- Children with greater severity of "re-experiencing" PTSS symptoms exhibit greater ACC and DLPFC reactivity to depressing words.
- These results indicate the ACC and DLPFC may moderate depressive and re-experiencing related symptoms in response to trauma in children.

REFERENCES

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