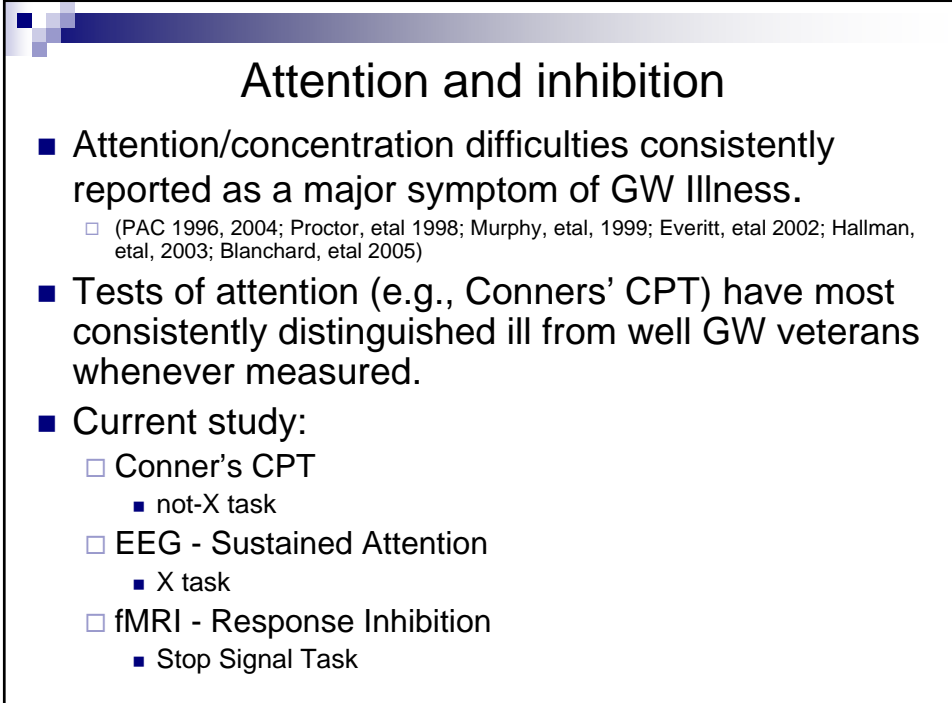


TO 4.12 Attention (CPT) Inhibition (SST)

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Attention and inhibition

- Attention/concentration difficulties consistently reported as a major symptom of GW Illness.
 - (PAC 1996, 2004; Proctor, etal 1998; Murphy, etal, 1999; Everitt, etal 2002; Hallman, etal, 2003; Blanchard, etal 2005)
- Tests of attention (e.g., Conners' CPT) have most consistently distinguished ill from well GW veterans whenever measured.
- Current study:
 - Conner's CPT
 - not-X task
 - EEG - Sustained Attention
 - X task
 - fMRI - Response Inhibition
 - Stop Signal Task

RESULTS – CPT tasks

CPT not-X task

H K L F E X T F W K T L X H T ...

Variable	Group A	Group B	p value
CPT hits raw	314.13	320.67	0.0189
CPT hits %tile	95.71	98.12	0.2883
CPT omission raw	9.38	2.44	0.0164
CPT omission %tile	80.07	45.00	0.0138
CPT commission raw	15.25	5.78	0.0013
CPT commission %tile	59.78	20.68	0.0013
CPT hit RT raw	464.80	431.64	0.2780
CPT hit RT %tile	47.04	73.81	0.0892
CPT attn raw	1.13	1.38	0.5347
CPT attn %tile	69.92	24.72	0.0012
CPT risk raw	0.74	1.85	0.1586
CPT risk %tile	71.67	84.17	0.4771

CPT X task

H K L F E X T F W K T L X H T ...

Variable	Group A	Group B	p value
HITS	276.00	292.60	0.4289
Hits RT	440.24	436.74	0.8880
Std Dev	90.88	81.23	0.4114
Std Error	27.12	23.89	0.4261
Minimum	326.74	337.43	0.5115
Maximum	627.30	605.05	0.6082
Coeff Var	20.33	18.03	0.2295
Aprime	0.96	0.98	0.4548
Commissions	13.13	9.70	0.4703
Omissions	36.00	19.33	0.4289

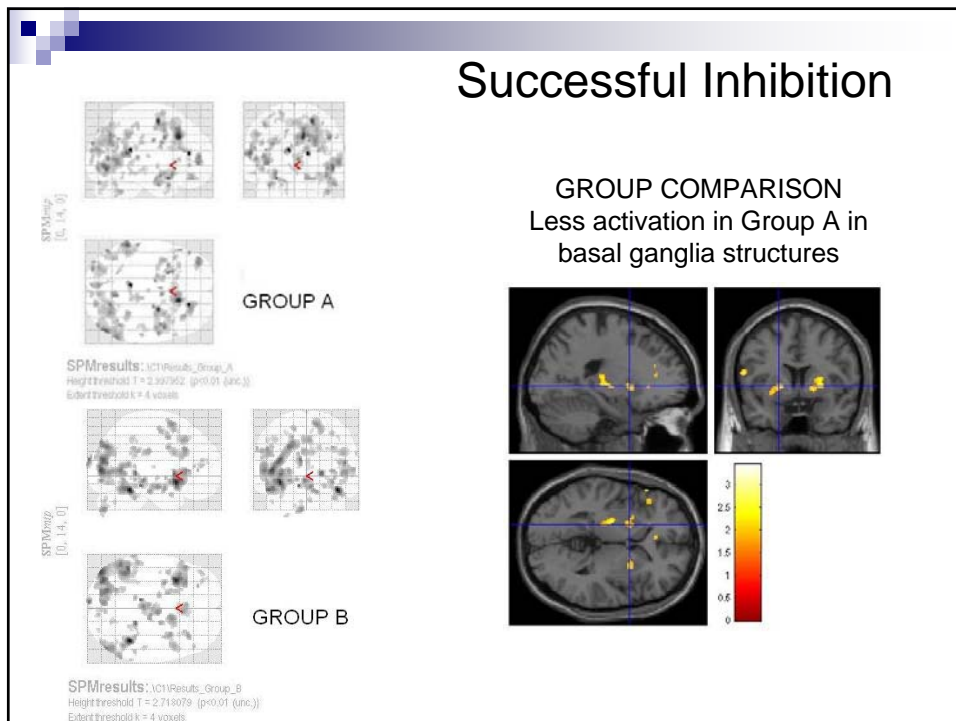
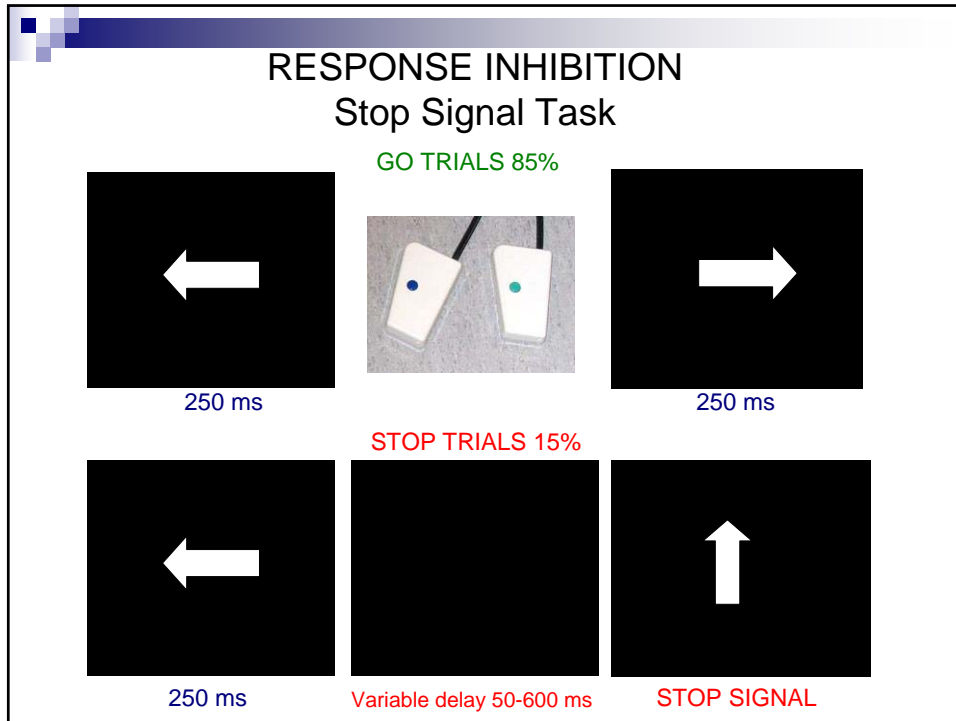
Conners' CPT

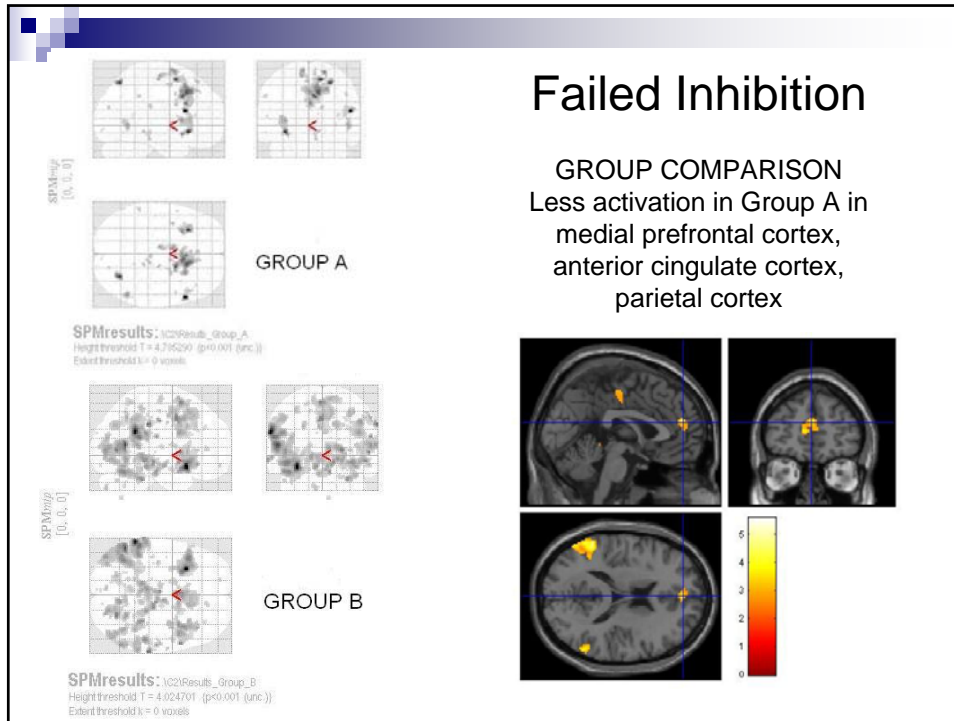
Group A, attention problems in 7 out of 8 subjects

Group B, potential attention problems in 2 out of 9 subjects

Different on not-X, but not on X?

- Conners' CPT not-X task
 - Group A impaired.
 - Large number of false alarms suggest problems with response inhibition.
- EEG CPT X task
 - No difference between groups A and B.
 - Sustained attention is not impaired?
 - Look beyond overall averages.
 - Performance changes from block to block, quarter to quarter
 - Group A subjects completed the task, but it required much greater effort...





In summary,

- Conners' CPT not-X task
 - "Attention problems" are prevalent in Group A
 - Problems are with response inhibition, not sustained attention.
- EEG CPT X-task
 - Data analyses in progress
 - Group A may be working harder...
- Stop Signal Task (SST)
 - Also suggests problems with response inhibition
 - During successful inhibition, Group A shows less activation in:
 - Basal ganglia
 - Medial frontal cortex
 - Subthalamic nucleus