

## Introduction

Studies of neuropsychology in Post-Traumatic Stress Disorder (PTSD) samples have focused on characterizing the cognitive deficits seen in patient populations. Overall intellectual functioning has been reported to be protective for the development of PTSD (Vasterling et al 1997). A myriad of other abnormalities, including in memory, attention, and executive functioning spheres have been reported. (Vasterling et al 2005). While the neuropsychology of PTSD literature has blossomed over recent years, relatively little research has looked at how the different symptom clusters that define PTSD (reexperiencing, hyperarousal, and avoidance) might be differentially related to the cognitive deficits observed in the disorder. There is evidence that the fractionation of symptoms may have different cognitive underpinnings. For example, response inhibition may be associated with reexperiencing and negatively associated with avoidance symptoms (Vasterling, 1998). The purpose of the current study was to explore the relationship between core PTSD symptom clusters and executive and intellectual functioning.

## Methods

Twenty-three mostly Vietnam war era veterans completed a PTSD symptom checklist (Weathers et al 1993) and selected executive function measures drawn from the Delis Kaplan Executive Function System (DKEFS; Delis et al, 2001) as a part of a broader emotional and neuropsychological evaluation. Patients were recruited from the Trauma Recovery Program at the MEDVAMC. Demographic information is presented in Table 1.

Figure 1: Mean Performances Across DKEFS Measures

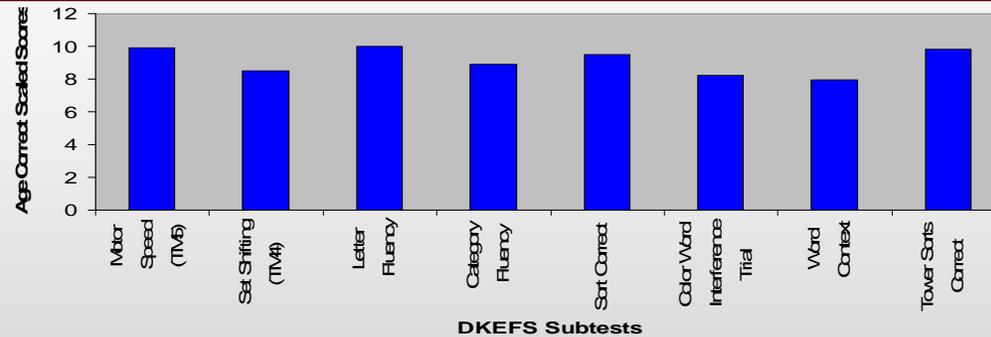


Table 1: Demographic Information

Variable		%
Gender	Male	100.0
Education	Less than HS	21.7
	HS	21.7
	Some College	43.3
	College Graduate or More	13.0
Handedness	Right	91.3
Variable	Mean	SD
PCL Total	67.26	9.08
WTAR estimated FSIQ	94	11.84

Table 2: DKEFS and PCL Correlations

DKEFS Subtest	PCL Total	Reexperiencing Symptoms	Avoidance Symptoms	Hyperarousal Symptoms
Trailmaking Set shift (Trial 4)	-.62**	-.52*	-.55**	-.55**
Trailmaking Motor Speed Trial 5)	-.23	-.19	-.20	-.23
Category Fluency	-.45*	-.21	-.46*	-.49*
Letter Fluency	-.39	-.39	-.26	-.39
Stroop Interference Trial	-.43*	-.42	-.38	-.35
Sort Total Correct	-.53*	-.45*	-.44*	-.53*
Word Context	-.29	-.31	-.25	-.20
Tower	-.20	-.17	-.316	-.22

\*\* Correlation is significant at the 0.01 level (2-tailed).  
 \* Correlation is significant at the 0.05 level (2-tailed).

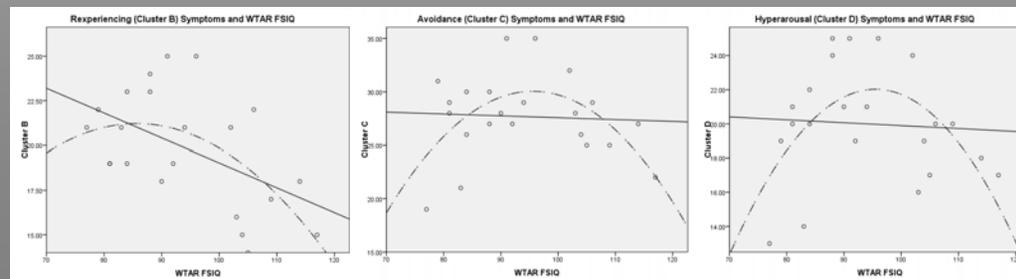
## Results

Overall, executive functioning was within normal limits in this sample. PTSD severity was negatively correlated with set-shifting and conceptualization variables across all domains. Category fluency, but not letter fluency, seemed to be more uniquely associated with avoidance and hyperarousal symptoms. Estimated premorbid FSIQ, consistently viewed as a protective factor in PTSD studies was found again to be associated with fewer reexperiencing symptoms in a linear fashion, but a curvilinear relationship was found for hyperarousal and avoidance symptoms, suggesting a more complex relationship between these variables.

## Conclusion

- Overall executive functioning was within normal limits in this sample. However, veterans with more PTSD symptoms tended to have more difficulty with speeded set-shifting and concept formation.
- Category fluency, a task thought to tap both frontal/executive and temporal semantic networks was found to be associated with hyperarousal and avoidance, but not reexperiencing symptoms.
- Estimated FSIQ appeared to have a differential relationship across symptom clusters, a finding that is relatively novel to the literature. This finding suggests that higher FSIQ is protective for some but not all aspects of PTSD. Higher IQ individuals may present a phenotypically different pattern of PTSD.

Figure 2: Relationship of WTAR FSIQ and PTSD Symptom Clusters



## Acknowledgement

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