

# Cognitive Crossroads: PTSD, Executive Function, and the Role of the Medical Speech-Language Pathologists

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## Introduction

- **Veterans with Post Traumatic Stress Disorder (PTSD) exhibit significant impairments in Executive Function (EF)**, including cognitive flexibility, decision-making, and self-regulation. Neuropsychological assessment scores consistently show reduced executive function performance in this population (Riley et al., 2019).
- PTSD is associated with a **1.6x increased risk** of developing neurocognitive disorders, including dementia (PTSD: National Center for PTSD, 2025).
- Despite the prevalence of PTSD-related EF impairments, intervention remains largely within the psychiatry and neurology domains. **MedSLPs are crucial in cognitive rehabilitation** by providing meta-cognitive training, compensatory strategies, and functional skill-based learning.
- **Literature Search Strategies:** PubMed, Google Scholar, *Journal of Psychiatric Research*, PTSD: National Center for PTSD, U.S. Department of Veterans Affairs Office of Research & Development.
- **Key Words:** Post-traumatic stress Disorder (PTSD), Executive Function (EF), Medical Speech-Language Pathologist (MedSLP), Neurocognitive Disorder (NCD), Veterans, Cognitive Impairments.
- **Aim:** This research project investigated the correlation of executive dysfunction in Veterans diagnosed with PTSD, and explored the role of the MedSLP in the assessment and treatment of cognitive-communication impairments associated with executive function.
- **Needs Assessment:** To develop, pilot, and standardize MedSLP interventions targeting EF-deficits in Veterans with PTSD. Interdisciplinary collaboration among MedSLPs, neurologists, and mental health professionals is essential to optimize treatment outcomes.

## Method

### Scientific Methods:

- A **mixed-methods approach** was used to review the literature systematically.
- Quantitative: Systematically reviewed studies that use standardized methods to measure executive function in Veterans with PTSD.
- Qualitative: Analyzed literature thematically to expand the discussion of EF impairments in the Veteran population and the role of MedSLPs in intervention.

### Type of Research: Applied

- Aimed to expand clinical implications for cognitive rehabilitation in Veterans and bridge a gap between research and clinical implications by synthesizing relevant findings.

## Results

- Across 18 studies (N = 1,080), Veterans with PTSD (n = 422) showed **significantly impaired EF** compared to trauma-exposed (n = 431) and healthy controls (n = 227) (Polak, et. al., 2012).

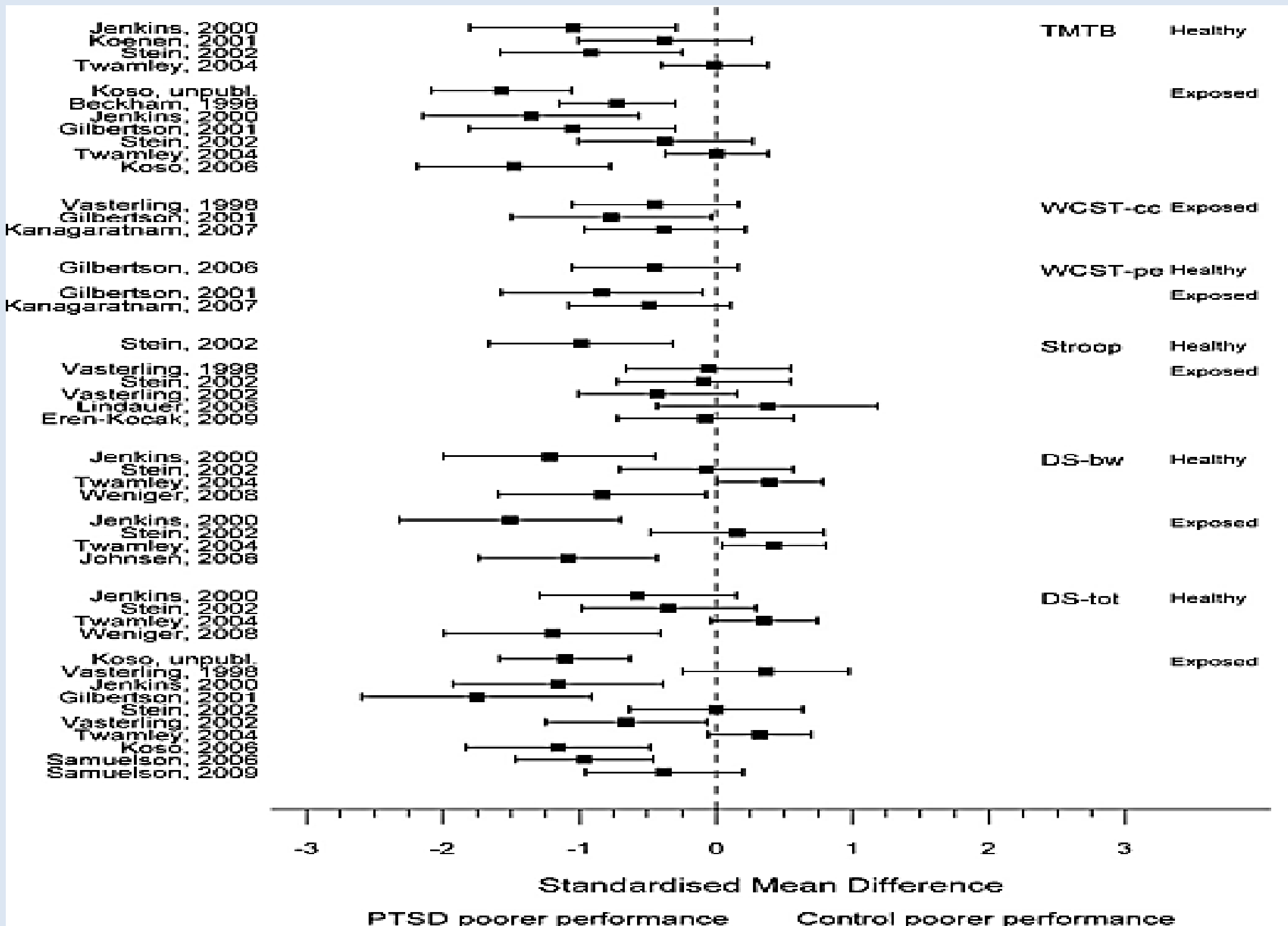


Fig. 1. Forest plot, showing scores on instruments of EF in PTSD groups compared to control groups. Higher scores indicate better EF.

- **PTSD participants performed significantly worse** on EF tasks such as the WCST and Stroop Test (Polak et al., 2012; Riley et al., 2019)



Fig. 2. Snapshot of the Stroop Test to assess response inhibition.

- Neuroimaging studies (Aupperle et al., 2012; Jagger-Rickels et al., 2022) found **PTSD-linked disruptions** in the prefrontal cortex, hippocampus, and frontoparietal control network, *impacting both emotional regulation and cognitive flexibility*

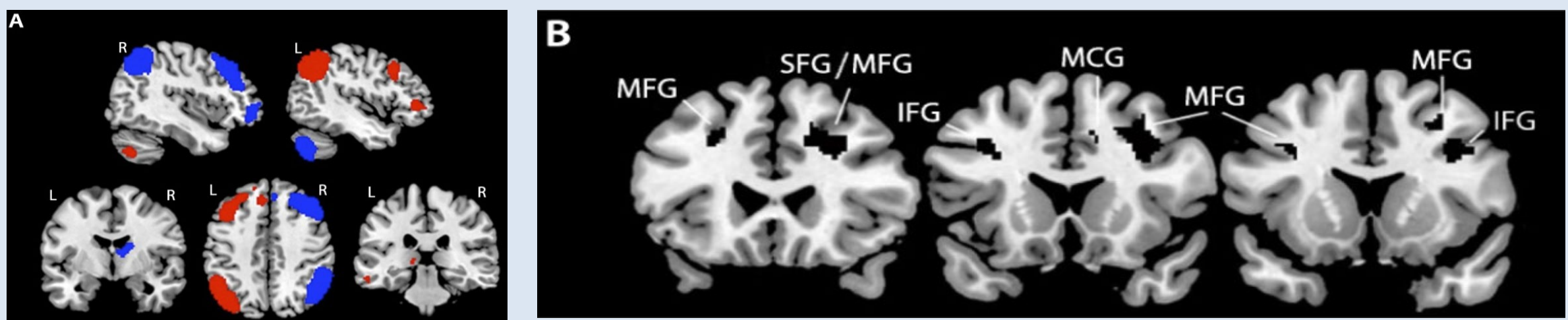


Fig. 3(A) Functional MRI activation maps hemisphere networks engaged during EF tasks. (B) Gray matter regions identified via voxel-based morphometry in which greater volume correlated with higher composite executive function scores on the battery.

- PTSD increases risk for neurocognitive disorders, **comorbidities like TBI, SUD, and cardiovascular issues further compound EF impairments** (Norman et al., 2021)
- Emerging interventions such as *goal management training* and *metacognitive strategy instruction* show promise for Veterans with PTSD and mTBI (Waid-Ebbs et al., 2023)

## Conclusions

This research underscores the need to address EF impairments in veterans with PTSD, particularly when compounded by co-occurring conditions. EF-deficits have an overall impact on the quality of life of Veterans and their functional level of independence.

### Limitations:

- Lack of MedSLP-led intervention research for EF-related PTSD
- Variability in assessments and tools across studies
- Inclusion criteria for research studies vary greatly (PTSD symptom onset, era and ages of veterans)

### Moving Forward:

- Design research-based, MedSLP-informed, standardized assessments and interventions.
- Promote cognitive rehabilitation with a trauma-informed care approach.

### Why This Matters:

- MedSLPs are challenged to serve this complex population with limited research and evidence-based practice to guide us.
- MedSLPs should be involved in PTSD and comorbid deficit rehabilitation given their cognitive-communication expertise.

### Acknowledgements

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### References

