

Subjective Vision and Cognitive Function in Older Adults: The Role of Processing Speed

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INTRODUCTION

Subjective Vision Impairment (VI) is common in aging

- May hinder cognitive function
- Emerging evidence links subjective VI with:
 - Processing speed
 - Attention
 - Executive function
- Prior studies limited by:
 - Small sample sizes
 - Limited cognitive testing

OBJECTIVE

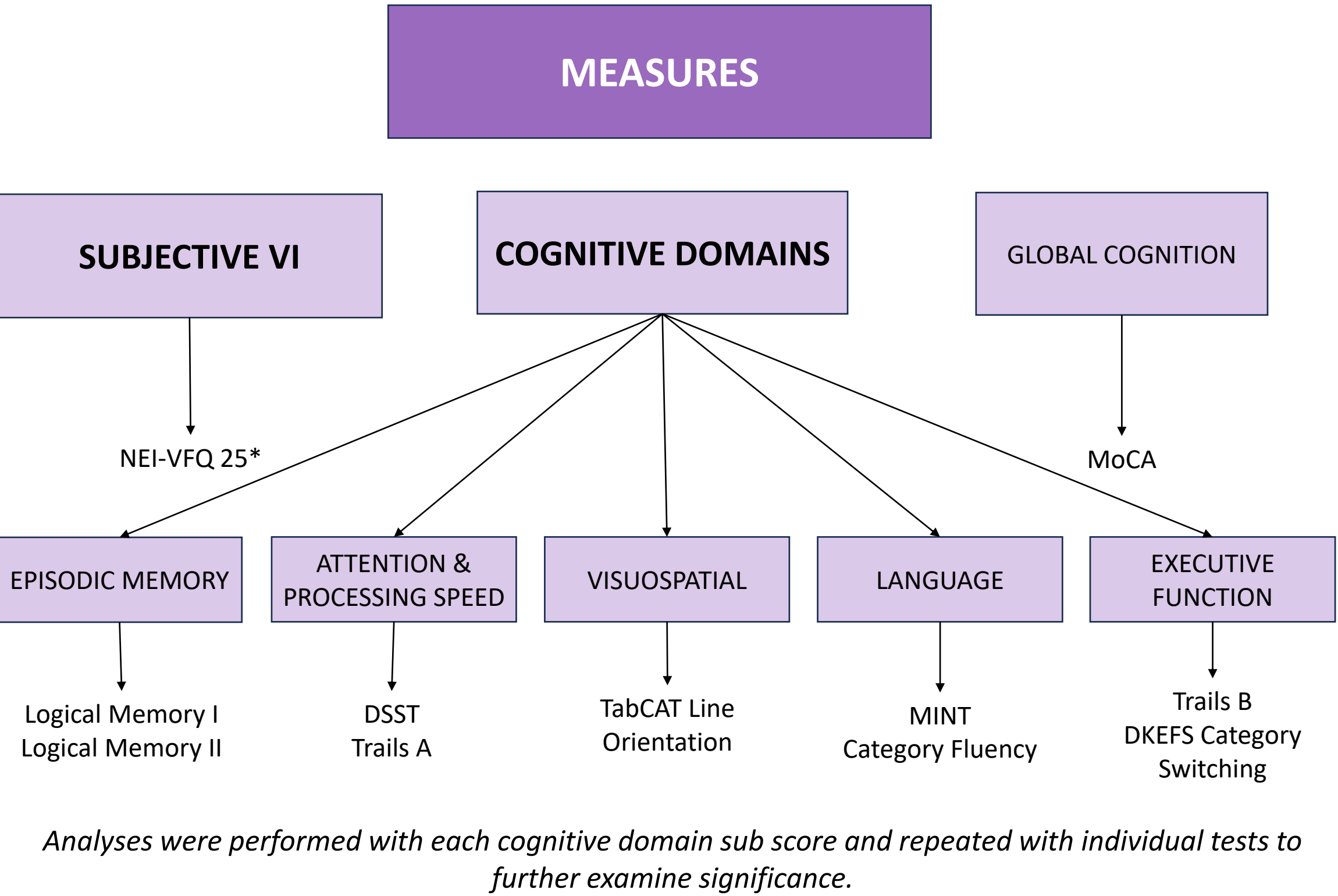
Examine associations between subjective VI and cognition in older adults with and without MCI.

METHODS

Participants

	Cognitively Unimpaired (n=111)	Cognitively Impaired (n=32)	Total Sample (N=143)
Age, mean(SD)	65-80 years old Mean = 72 (4)	60-80 years old Mean = 72 (4)	Mean=72 (4)
Female n (%)	79 (55.2)	16 (11.2)	95 (66.4)
Education, mean(SD), years	16.7 (1.9)	16.7 (2.4)	16.7 (2)
MoCA mean(SD)	≥ 26 Mean = 27 (2)	= 18-25 Mean = 24 (2)	Mean = 26.5 (2.4)
CDR	0	0.5-1	

MEASURES



*Subjective visual impairment was measured using the NEI-VFQ-25 composite score, which assesses self-reported visual functioning and the impact of vision on everyday activities.

ANALYSES

- Normality assessed using histograms and Q-Q plots
- Pearson correlations: Cognitive measures and VFQ
- Spearman correlations: Sensitivity analysis, VFQ ceiling effect and non-normal distribution
- Multiple linear regression: adjusted for age, sex, cognitive status, and education, HC3 robust SEs applied
- Exploratory regression: between-group differences in CU Aβ+ subgroup

RESULTS

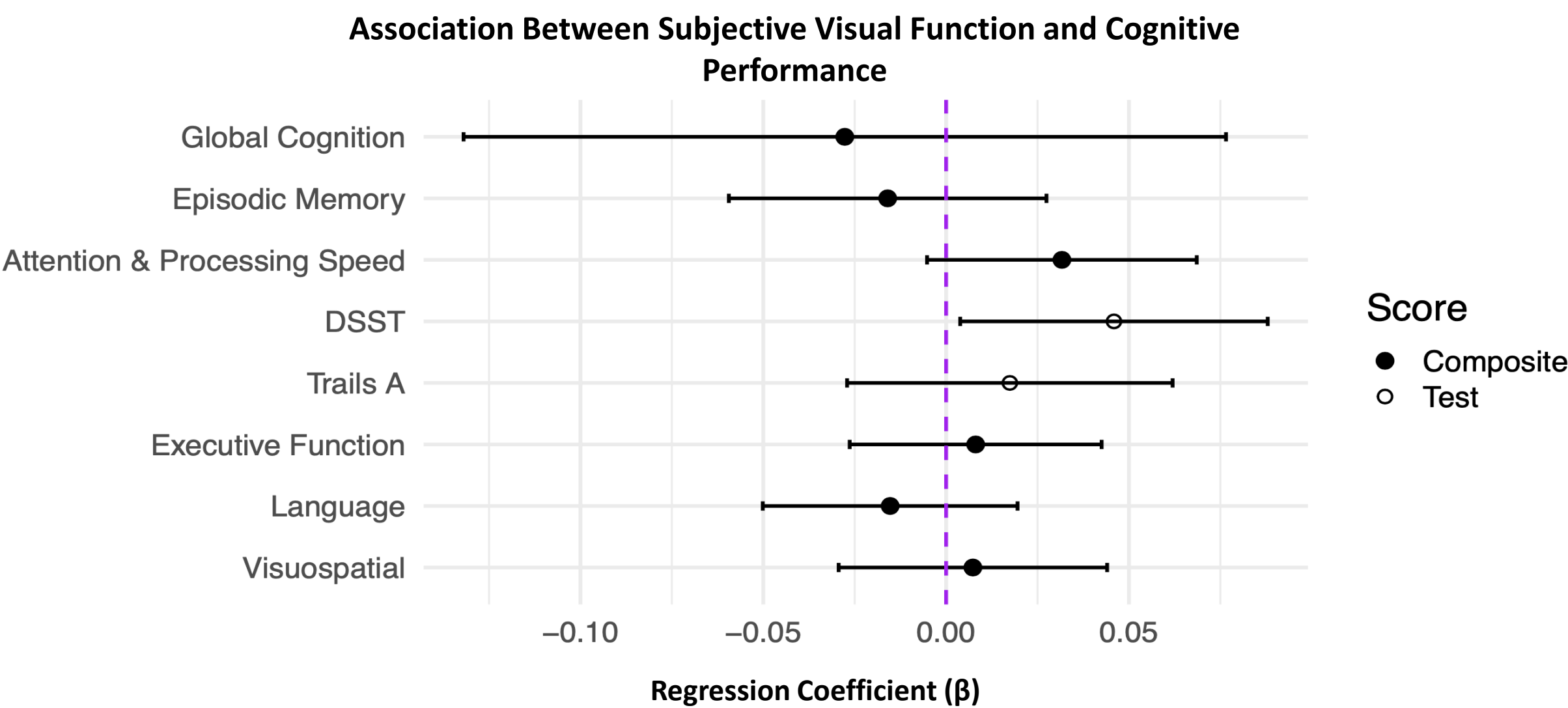
- Processing speed (DSST) was associated with subjective visual impairment (Pearson r = 0.17, *p* = 0.04; Spearman ρ = 0.25, *p* = 0.003)
- In linear regression, DSST remained significantly associated with subjective VI
 - β = 1.19, *p* = 0.005 (robust HC3 SE *p* = 0.005).
- Cognitive performance, besides DSST, explained little variance in subjective VI (*r*² = 0.086)
- Subjective VI within CU Aβ+ subgroup (n = 55) showed trends with:
 - DSST (*p* = 0.085)
 - [TabCAT] Visuospatial skills (*p* = 0.088)

KEY FINDING

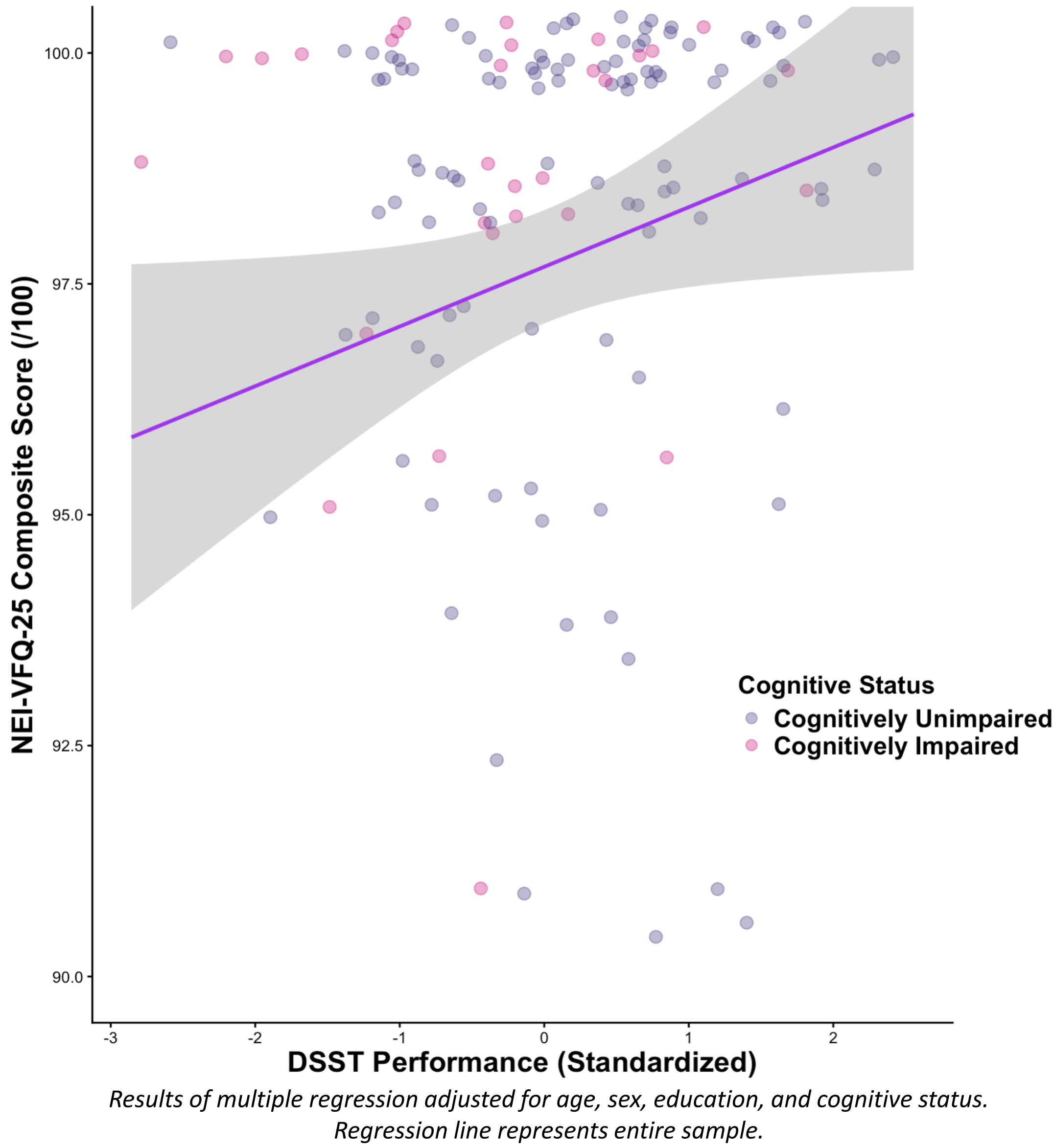
Poorer DSST performance was associated with worse subjective VI.

Cognitive Test	Cognitively Unimpaired (n=111)	Cognitively Impaired (n=32)	Total Sample (N=143)
DSST	ρ = 0.244 <i>p</i> = 0.010	ρ = 0.275 <i>p</i> = 0.128	ρ = 0.250 <i>p</i> = 0.003
Trails A	ρ = 0.016 <i>p</i> = 0.864	ρ = 0.191 <i>P</i> = 0.294	ρ = 0.048 <i>p</i> = 0.573

Spearman correlations between the NEI-VFQ composite score and all cognitive variables controlling for age, sex, education, and group assignment for the total sample.



RESULTS



DISCUSSION

- Subjective visual impairment was associated with performance on the attention/processing speed composite.
- Follow-up analyses identified the Digit Symbol Substitution Test (DSST) as the primary driver of this association.
- The DSST is a visually demanding task requiring rapid visual scanning and symbol matching, suggesting that poorer subjective visual function may directly influence test performance.
- Findings replicate prior work in preclinical Alzheimer's disease using a more comprehensive cognitive battery.
- Longitudinal follow-up will determine whether subjective visual impairment has prognostic value for cognitive decline.
- Limitations:
 - Ceiling effect for VFQ data may limit variability and underestimate strength of observed association
 - Future studies should further examine this association with longitudinal data
 - Incorporate other measures of vision in addition to self-report