

The network structure of cognitive impairment:
from Subjective Cognitive Decline to Alzheimer's
Disease

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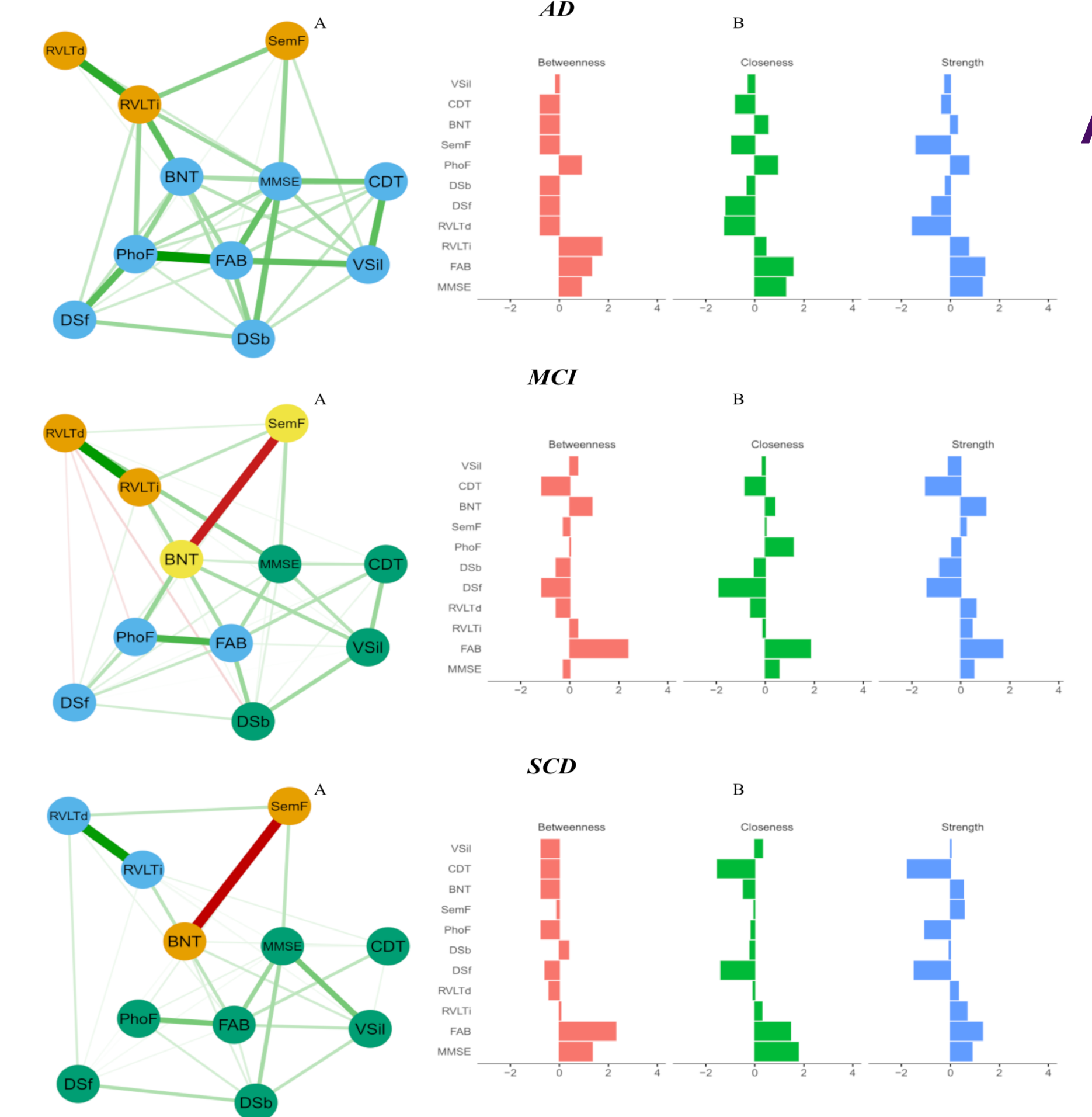
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Systemic Reorganization: Cognitive impairment in dementia is characterized by a **restructuring of the relationships** between cognitive domains, rather than a mere decline in individual test scores. Dementia leads to a **systemic reorganization** of the cognitive system, resulting in a **simplified architecture**.

Memory Isolation in AD: In Alzheimer's Disease, **memory functions become disengaged** and isolate from the global network of other cognitive abilities.

MCI Instability: The Mild Cognitive Impairment (MCI) stage exhibits a **noisy and unstable network architecture**, mirroring the clinical heterogeneity of this category.

INTRODUCTION	METHODS	RESULTS	CONCLUSIONS	REFERENCES
Cognitive functioning is a dynamic system where various processes interact. Cognitive decline not only reduces performance but alters the balance and interplay between neuropsychological domains. Goal: To investigate the reorganization of cognitive architecture across the continuum from Subjective Cognitive Decline (SCD) to MCI and AD using a network approach	Participants: N=638 individuals: SCD (n=155), MCI (n=242), and AD (n=241). Assessment: Battery covering general cognition (MMSE), executive functions (FAB), memory (RVLT), language (BNT, Fluency), and visuospatial abilities (VOSP, CDT). Analysis: Network Exploratory Graph Analysis (EGA) was used to identify cognitive communities (clusters). Robustness & Comparison: Bootstrap analysis evaluated findings' stability, and the Network Invariance Test (NCT) directly compared the structures between groups	 Connections between immediate and delayed memory recall were significantly weaker in AD compared to SCD and MCI ($p < 0.05$). Centrality: The Frontal Assessment Battery (FAB) emerged as the most central and influential node across all clinical groups.	AD (Simplified Architecture) Showed a distinct reorganization where memory scores detached from all other cognitive domains. MCI (Transition/Instability) Exhibited an unstable pattern with four clusters, suggesting a less cohesive cognitive architecture. SCD (Stable Baseline) Revealed a stable organization into three clusters: memory, language, and general cognition/executive functions.	Tosi G, et al. (2024). <i>The network structure of cognitive impairment.</i> J Neurosci. Golino HF, & Epskamp S. (2017). <i>Exploratory graph analysis.</i> PLoS One. Tosi G, et al. (2020). <i>Complexity in neuropsychological assessments.</i> Cortex.
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