Supplementary Table 1: Clinical assumptions and psychometric limitations in cognitive monitoring.

High-Frequency Digital Monitoring		
Common Clinical Assumption Tracking cognitive performance continuously via digital platforms isolates subtle disease progression.	Psychometric Reality Brief speed measures reflect transient states (acute anxiety, fatigue, sleep quality) and motor dexterity, limiting their specificity as indicators of underlying disease activity. Non-motor processing speed accounts for only 28% of SDMT variance.	Clinical Consequence Tracking high-frequency data without long retest norms amplifies ambient noise, capturing statistical fluctuations rather than reliable change attributable to disease progression.
The 50–70% Impairment Rule		
Common Clinical Assumption Cognitive impairment affects most individuals with MS and is expected to worsen over time.	Psychometric Reality Historical cohorts lacked base-rate corrections. In healthy adults, 20–73% fail at least one test by statistical variation alone. Modern relapsing-remitting risk is closer to ~32.5%.	Clinical Consequence Overestimating individual risk may promote hypervigilance and attribution of everyday cognitive lapses to disease progression.
Linear Progression Staging		
Common Clinical Assumption Dropping below a statistical threshold (e.g., −1.5 SD) means a patient has entered a progressive, irreversible clinical stage.	Psychometric Reality Long-term data (Wójcik et al.[77]) show that over 40% of staged patients remain stable or improve over time; trajectories are	Clinical Consequence Rigid statistical classification may encourage interpretation of cognitive change as progressive and irreversible despite heterogeneous trajectories.
	heterogeneous and non-linear.	

SDMT: Symbol Digit Modalities Test.