



**CRITICAL PATH
INSTITUTE**

collaborate · innovate · accelerate



**Cerebral
Assessment
Systems™**

Cognivue®

Charles J. Duffy, MD, PhD

Founder and CEO

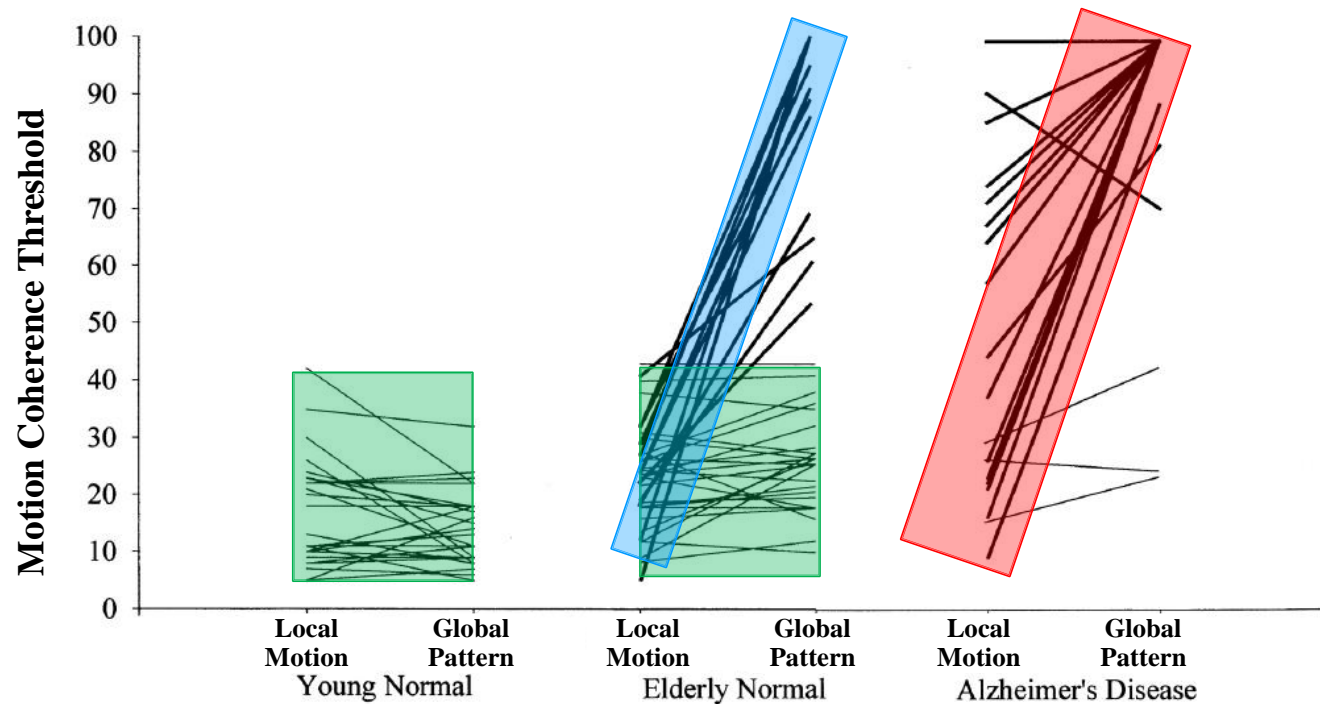
May 10, 2017

COGNIVUE ENABLES CARE

- *Cognivue* is an artificial intelligence neurological tool, not a computerized psychological questionnaire
- *Cognivue* promotes cost-effective dementia care in primary care office practices
- *Cognivue* aligns patients, families, and practitioners by moving beyond dementia as an accusation

ORIGINS OF COGNIVUE

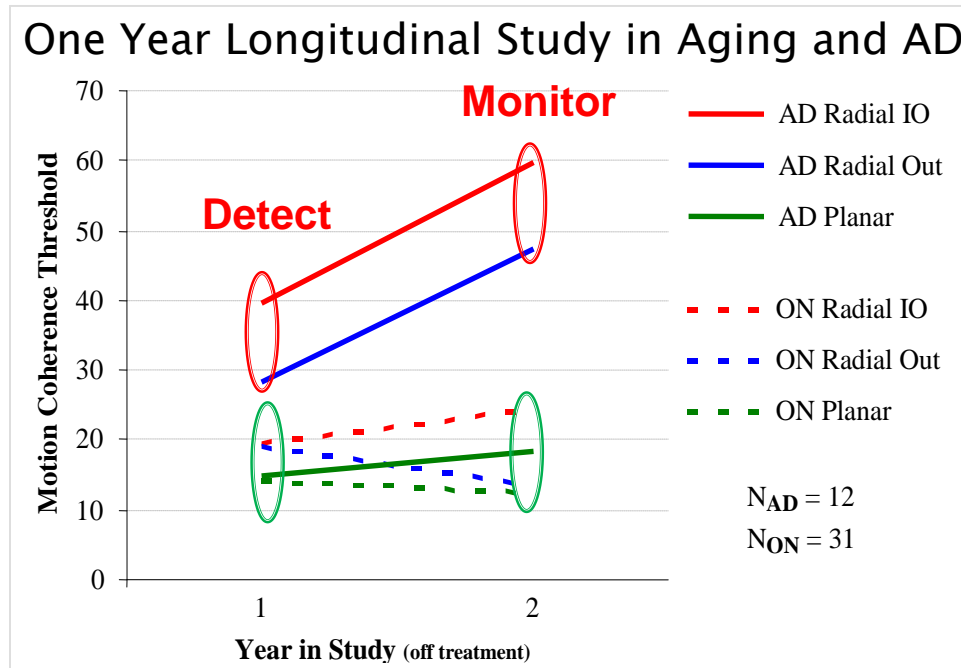
Left/Right FOE Radial Motion Thresholds



Psychophysics Distinguishes Aging and AD

UTILITY OF COGNIVUE

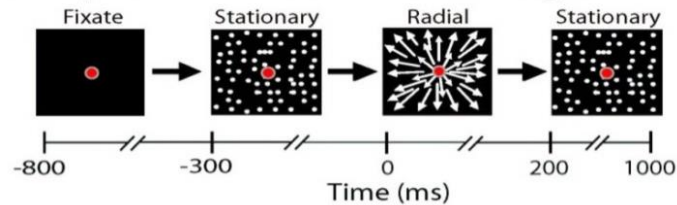
Detect and monitor disease neurological deficits



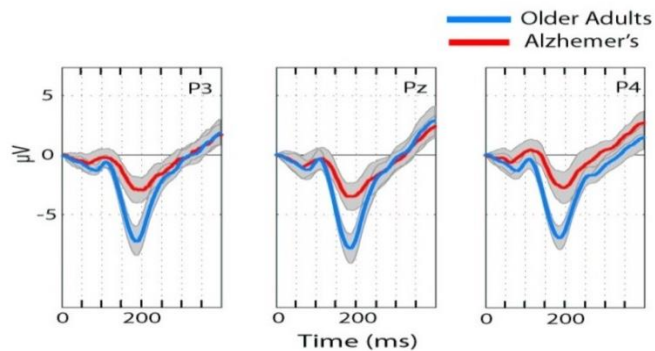
Stability in normal aging
 Decline in early Alzheimer's

NEURAL MECHANISMS OF COGNITIVE

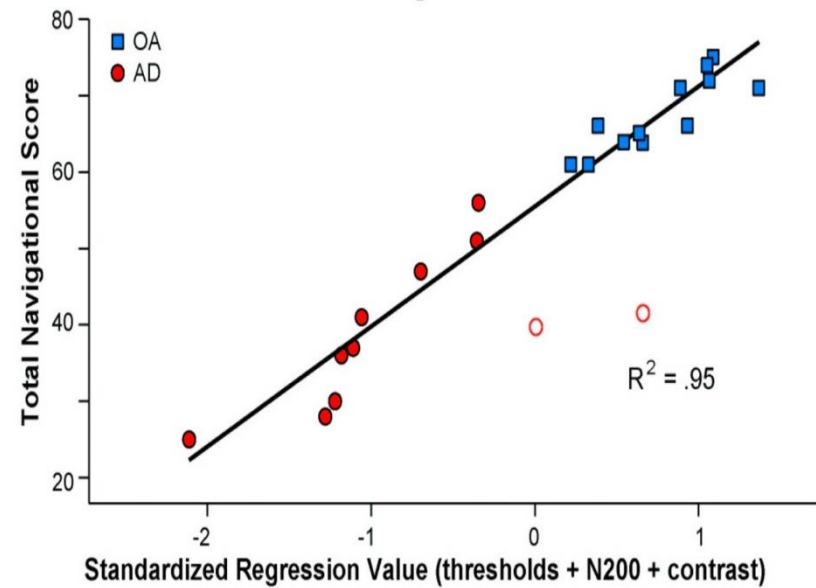
A Optic Flow Stimulus Paradigm



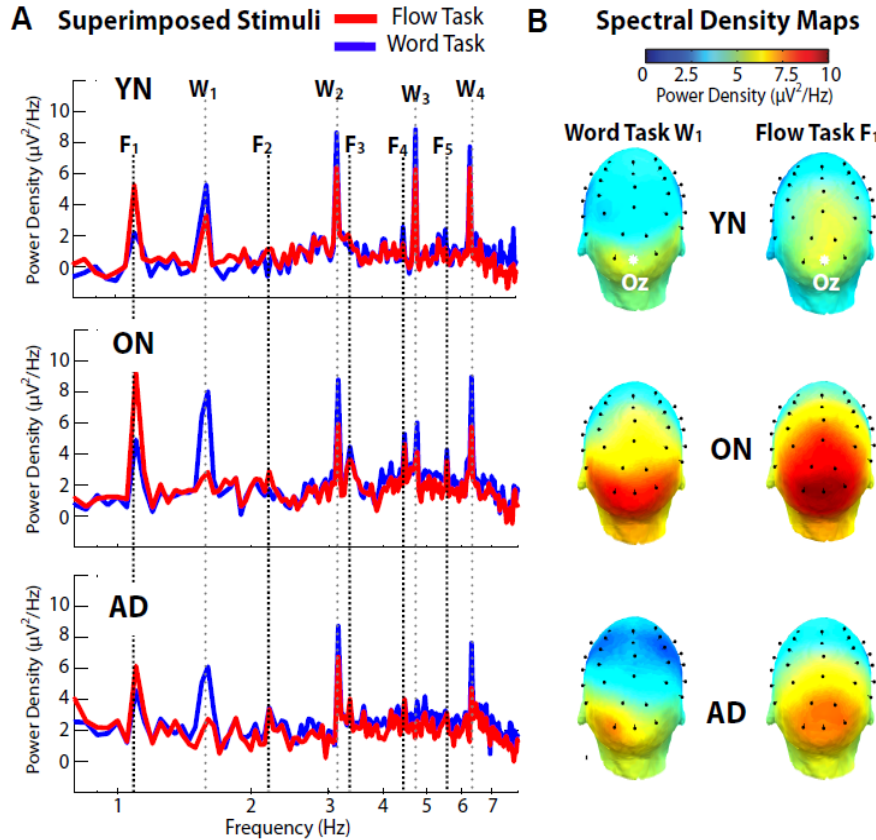
B Optic Flow Field Evoked Responses



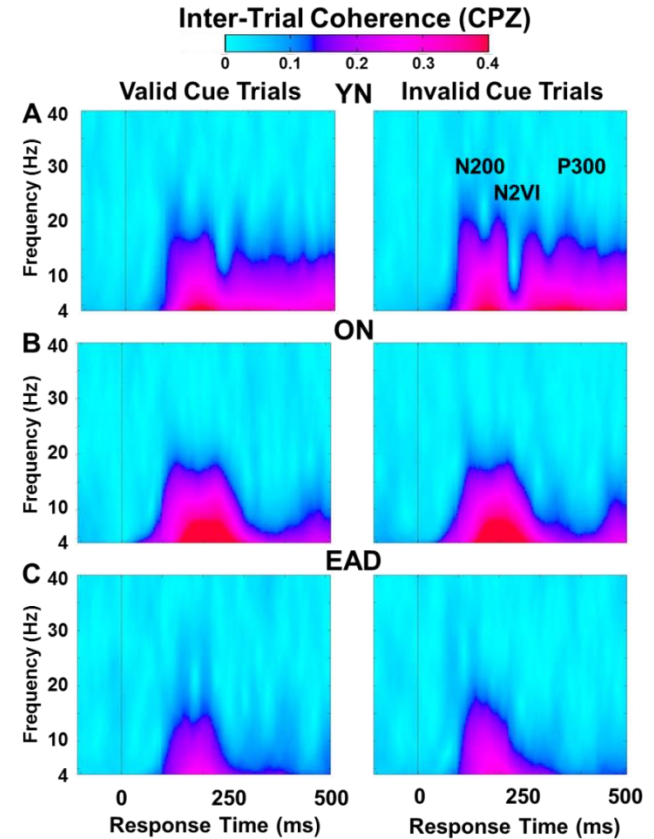
Correlates of Navigational Performance



LINKS TO AGING AND ALZHEIMER'S



Hyperactivity of soluble A β
Loss of activity with A β plaques



Loss of signal coherence
in aging and early AD

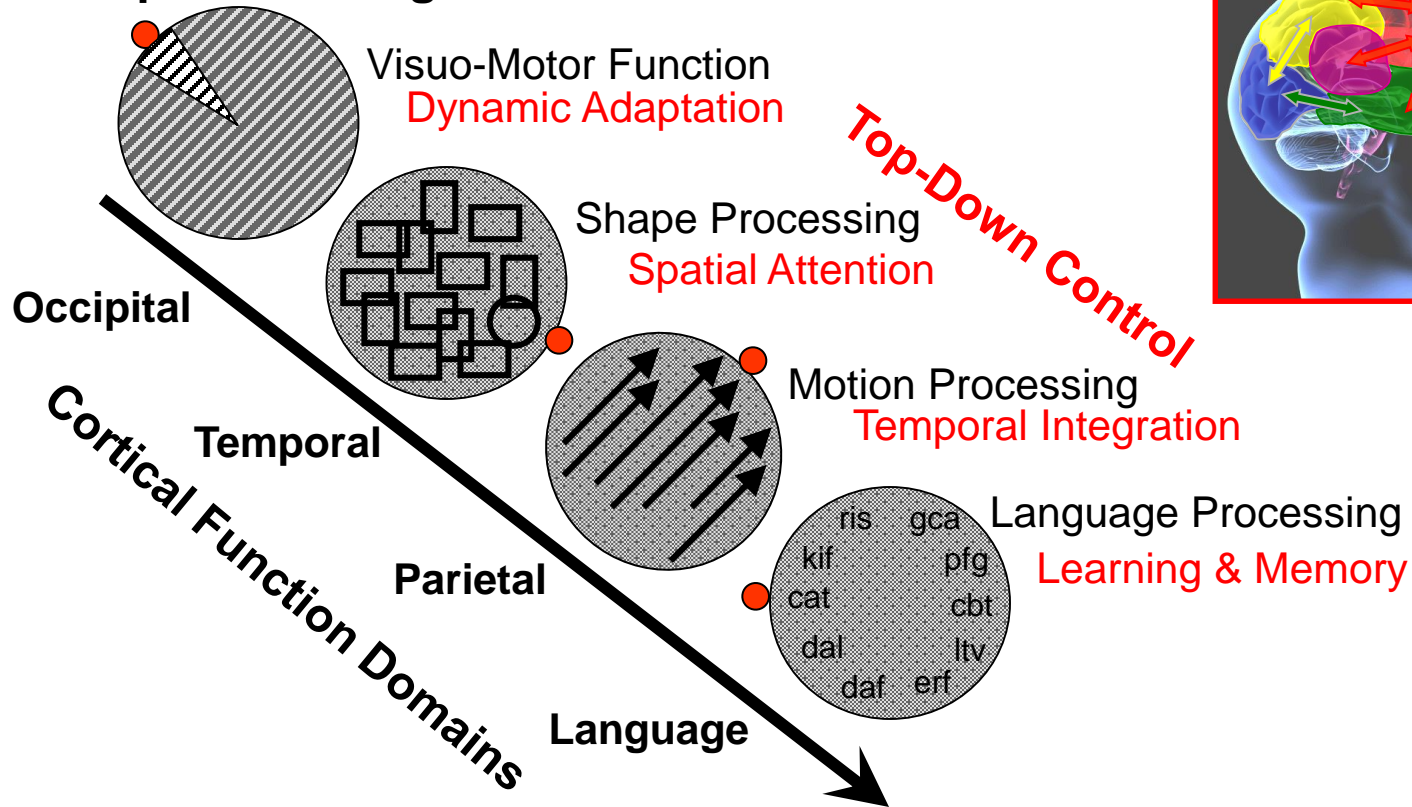


SIX KEY POINTS

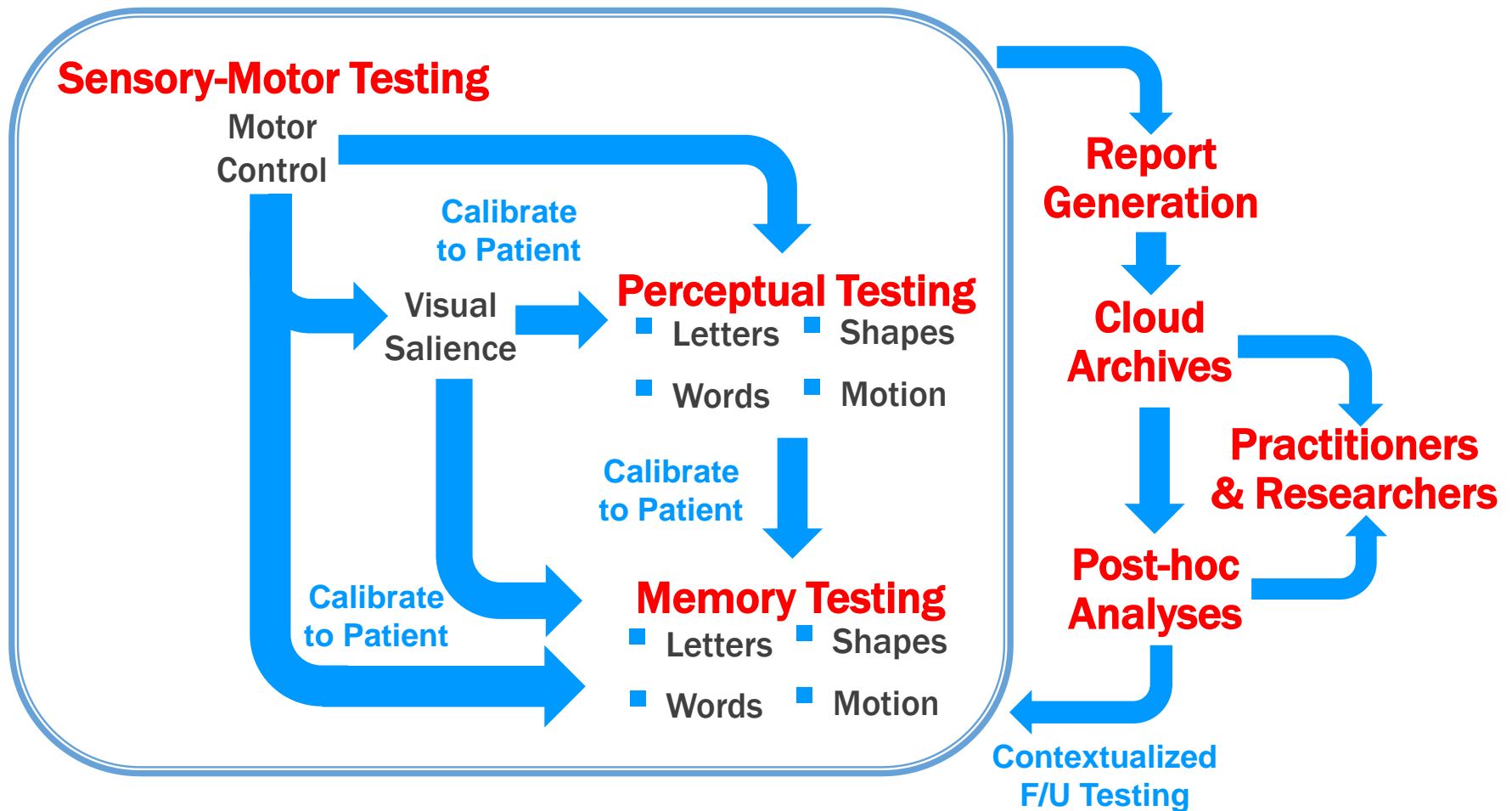
1. Detect functional impairment
2. Monitor disease progression
3. Assess therapeutic efficacy
4. Access neural mechanisms
5. Foundation of complex behaviors
6. Domain-specific impairment measures

COGNIVUE COMMERCIALIZATION

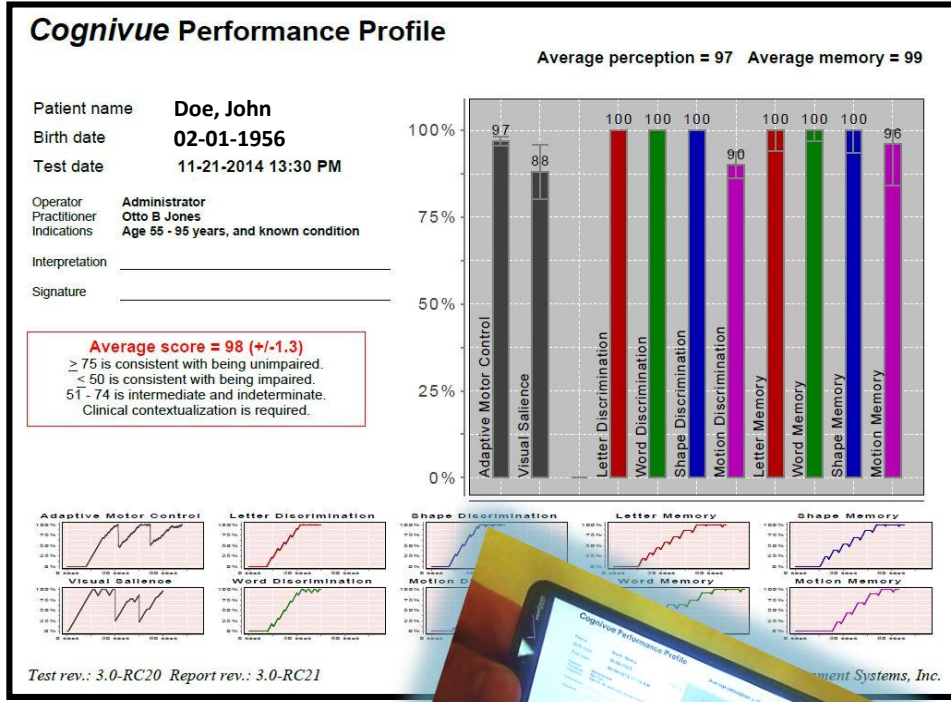
Bottom-Up Processing



COGNIVUE PSYCHOPHYSICAL TESTING



THE COGNIVUE SYSTEM



Secure access on *Cognivue*, desktops, and portable devices



Cognivue - 10 Tests in 10 Minutes

COGNIVUE'S FDA VALIDATION

3rd FDA Validation Study

N = 401 subjects 55– 95 yo
impaired vs. unimpaired

Cognivue vs. SLUMS

PPA & NPA

.82 & .98

3rd FDA Reliability Study

N = 356 subjects tested twice

Cognivue re-test correlation = .90

PPA = .89, NPA = .93, ICC = .94

SLUMS re-test correlation = .82

PPA = .87, NPA = .87, ICC = .87

COGNIVUE'S ADVANTAGES



- 1) Objective psychophysics
- 2) Neurological assessment
- 3) Linked to brain electrical activity
- 4) 10 minute testing in doctor's office
- 5) Simple test interpretation algorithm
- 6) Easily explained to patients and families

PLATFORM TECHNOLOGY TARGETS



- Cognitive Disorders – Dementias, Deliriums, Syndromes
- Movement Disorders – Parkinsonism and overlap syndromes
- Affective Disorders – Depressions, Manias, Psychoses
- Acquired Disorders – Head injury and medicinal SEs
- Developmental Disorders – Conditions and Pathopotential

COGNIVUE CONTINUING EXPANSION



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TECHNOLOGY ATTRIBUTES & GAPS

Concept-of-Interest Measured: Domain-specific cortical function



CONSIDERATION	ATTRIBUTE	GAP	COMMENTS
510K Compliant	De novo clearance 2015		3 <u>clin trls</u> over 6 <u>yrs</u>
FDA Cleared for Specific Use Case	Detect and monitor older adults		
Time Stamp of Data Acquisition	yes		HIPAA compliant real time access
Biometric Validation of User	no		
Analytical Validation	yes		Analysis services
Clinical Validation	yes		Clinical trials
Secure Data Transfer	yes	pend	Encrypted cloud
GCP Compliant for Audit Trail	yes		
Use Case in Other Patient Populations	yes	pend	



**Cerebral
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Bringing cognitive care to primary care