



THE MENTAL SCREENING-360° (MS-360°)

*A SCREENING TEST FOR AN ECOLOGICAL
ASSESSMENT OF EVERYDAY COGNITIVE
FUNCTIONING*

Presenter:

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Introduction

Low Predictive Power of Neuropsychological Tests



- Low Ecological Validity: limited generalizability of the results



A Possible Solution: Immersive Virtual Reality



- Immersivity (technology) and presence (psychology) can motivate the patients to act in a naturalistic way within a simulated environment

The Mental Status – 360°

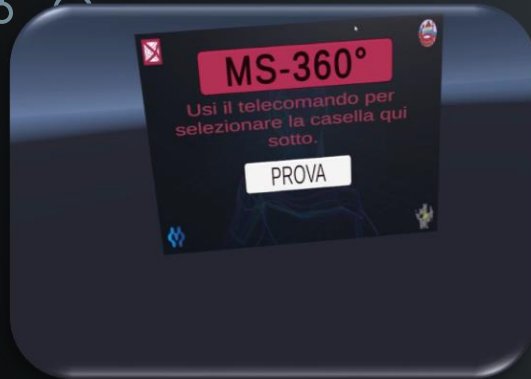
- A pilot screening tool
 - 14 scenarios
- Tasks resembling everyday activities
- Familiarization Phase → Test Phase
 - Administration: 20 minutes



- MoCA (Montreal Cognitive Assessment, Nasreddine et al., 2005)
- SSQ (Simulator Sickness Questionnaire, Kennedy et al., 1993)
 - SUS (System Usability Scale, Brooke, 1986)

MS-360°: Tasks and Administration

Familiarization Phase



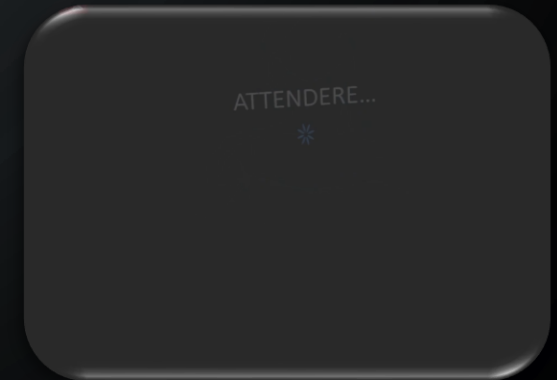
Test Phase



Tasks



Target Selection Task



Story Recall Task

1 Visual Exploration	2 Target Selection	3 Object Naming	4 Object Recall (Immediate)	5 Story Recall (Immediate)	6 Words Reading	7 Verbal Production
8 Cognitive Estimates	9 Action Planning	10 Written Comprehension	11 Sustained Attention	12 Object Recognition	13 Object Recall (Delayed)	14 Story Recall (Delayed)

Tasks included in the MS-360°



MS-360°: Performance

Participants

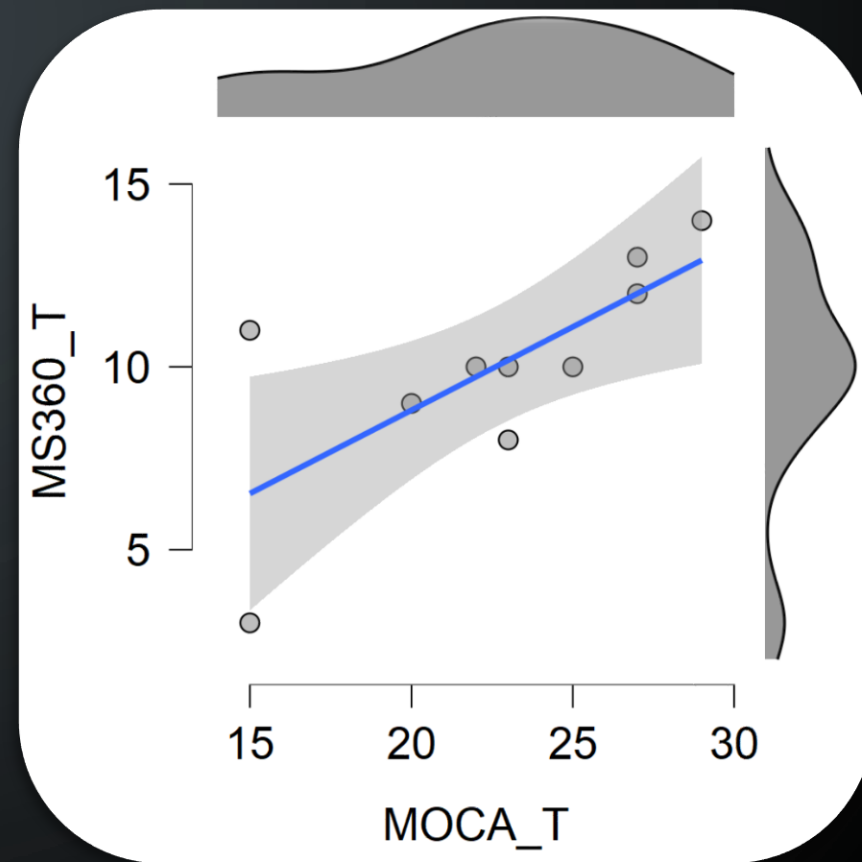
Patients reporting Subjective Cognitive Decline (SCD)

Descriptive Statistics

	Age	Edu	MOCA_T	MS360_T
Valid	10	10	10	10
Missing	0	0	0	0
Mean	69.700	11.100	22.600	10.000
Std. Deviation	9.730	6.437	4.812	3.055
Minimum	56.000	3.000	15.000	3.000
Maximum	85.000	24.000	29.000	14.000

Abbreviations:

- **MOCA_T = MOCA Total Raw Score (out of 30)**
- **MS360_T = MS-360° Total Score (out of 14)**



Pearson's Correlations ▼

		Pearson's r	p
MOCA_T	- MS360_T	0.718**	0.010

Note. All tests one-tailed, for positive correlation
 * p < .05, ** p < .01, *** p < .001, one-tailed

MS-360°: Simulation Sickness

Post-Exposure SSQ Scores

Descriptive Statistics				
	SSQ_N	SSQ_O	SSQ_D	SSQ_TS
Valid	10	10	10	10
Missing	0	0	0	0
Mean	<u>7.632</u>	<u>8.338</u>	<u>2.784</u>	<u>7.854</u>
Std. Deviation	9.853	8.342	5.869	8.165
Minimum	0.000	0.000	0.000	0.000
Maximum	28.620	22.740	13.920	22.440

Abbreviations:

- N = SSQ Nausea Scale
- O = SSQ Oculomotor Scale
- D = SSQ Dizziness Scale
- TS = SSQ Total Score

Percentile Point	SSQ Scale Value			
	N	O	D	TS ^a
40	0.0	0.0	0.0	0.0
45	0.0	0.0	0.0	3.7
50	0.0	7.6	0.0	3.7
55	0.0	7.6	0.0	3.7
60	0.0	7.6	0.0	7.5
65	<u>9.5</u>	<u>7.6</u>	0.0	<u>7.5</u>
70	9.5	15.2	0.0	11.2
75	9.5	15.2	<u>0.0</u>	15.0
80	9.5	22.7	13.9	22.5
85	19.7	27.7	13.9	22.5
90	28.6	30.3	27.8	30.0
95	38.2	45.5	41.7	44.9
96	38.2	45.5	41.7	44.9
97	47.7	53.1	55.7	48.7
98	57.2	53.1	55.7	56.2
99	66.8	60.7	83.5	75.9
M	7.7	10.6	6.4	9.8
SD	15.0	15.0	15.0	15.0
Minimum	0.0	0.0	0.0	0.0
Maximum	124.0	90.9	97.4	108.6
n	1101	1111	1109	1099

Kennedy et al., 1993

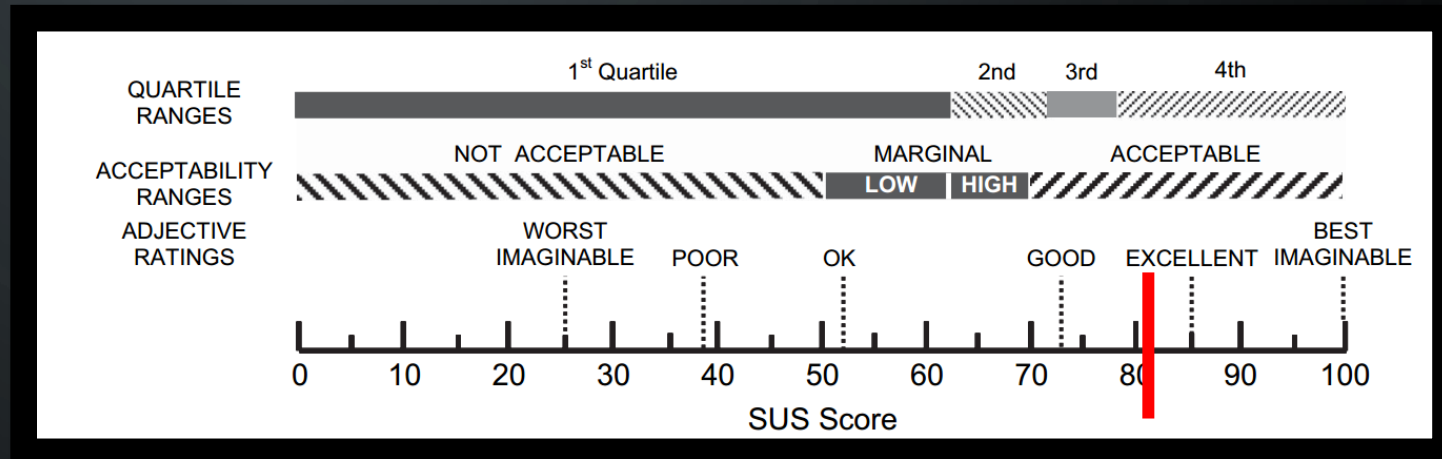
MS-360°: Usability Assessment

Descriptive Statistics ▼

	SUS_T
Valid	10
Missing	0
Mean	<u>82.500</u>
Std. Deviation	15.000
Minimum	50.000
Maximum	100.000

Descriptives of the SUS Scores

MS-360° SUS Mean Score



SUS Adjective Rating Scale - Bangor et al., 2009

THANK YOU FOR YOUR ATTENTION



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