

Results of the MATRICS RAND Panel Meeting: Average Medians for the Categories of Each Candidate Test¹

The results of the RAND Panel meeting were evaluated by the Neurocognition Committee and a final decision was made on selection of measures for inclusion in the beta version of the battery for the Psychometrics study. The goal was to select two to three measures from each of the seven neurocognitive domains. The result was a beta version of the NIMH consensus battery that included 17 tests, which are listed in the table below. The Neurocognition Committee followed the ratings of the RAND Panelists in making the final selection for the battery unless there were special circumstances for ranking tests out of order. This occurred in one of the seven domains, verbal learning and memory, in which the Neurocognition Committee selected a list learning test that had more alternative forms (the Hopkins Verbal Learning Test), even though it had not been rated quite as high as other list learning tests that had one alternative form. The Committee believed that clinical trials with cognitive enhancing agents may benefit from having a test with more than one alternative form. The Neurocognition Committee also considered within each domain whether an additional test should be included (e.g., top 3 tests instead of top 2) to obtain a good range of types of highly rated tests for the beta battery (e.g., verbal and nonverbal tests of working memory).

Working Memory Candidate Tests	Test-Retest Reliability	Utility as a Repeated Measure	Relationship to Functional Outcome	Potential Changeability in Response to Pharmacological Agents²	Practicality and Tolerability
N-Back (2-Back, NIMH version)	4.5	6	1.5	7	7
N-Back (2-Back, Pittsburgh version)	4	7	1.5	5	6
BACS - Digit Sequencing	7	7	6.5	5.5	7
WMS-III Spatial Span	7	8	3.5	5	7
WAIS-III Letter-Number Sequencing	7	7	6.5	5	7
Spatial Delayed Response Task	4.5	5	5	6.5	5.5

Attention/Vigilance Candidate Tests	Test-Retest Reliability	Utility as a Repeated Measure	Relationship to Functional Outcome	Potential Changeability in Response to Pharmacological Agents	Practicality and Tolerability
3-7 Continuous Performance Test	6.5	8	6.5	5	7
Continuous Performance Test – Identical Pairs	7	5.5	6	5.5	6
Context A-X Continuous Performance Test	5	7	4	5	5

Verbal Learning and Memory Candidate Tests	Test-Retest Reliability	Utility as a Repeated Measure	Relationship to Functional Outcome	Potential Changeability in Response to Pharmacological Agents	Practicality and Tolerability
WMS-III Logical Memory	7	4	6	4.5	6.5
NAB - Daily Living Memory	6	6	5	5	7
NAB - List Learning	7	6	4.5	5	7
California Verbal Learning Test II	7	6	6	7	7
WMS - III Verbal Paired Associates	7	5	3	4.5	7
Hopkins Verbal Learning Test - Revised	6	6	4	5	7

Visual Learning and Memory Candidate Tests	Test-Retest Reliability	Utility as a Repeated Measure	Relationship to Functional Outcome	Potential Changeability in Response to Pharmacological Agents	Practicality and Tolerability
WMS-III Family Pictures	6	5	5	4	4.5
NAB - Shape Learning	5	6	6	5	6
Penn Face Recognition Task	3.5	3.5	3	4.5	6
WMS-III Visual Reproduction	5.5	5.5	5	3.5	5.5
Brief Visuospatial Memory Test - Revised	7	5.5	5	5	7
Visual Object Learning Task	4.5	4	4	5	6

Speed of Processing Candidate Tests	Test-Retest Reliability	Utility as a Repeated Measure	Relationship to Functional Outcome	Potential Changeability in Response to Pharmacological Agents	Practicality and Tolerability
Category Fluency	7	7.5	5.5	7.5	7.5
BACS - Symbol Coding	8	5.5	6	6	7
Trail Making A	7	7	5.5	6	7.5
WAIS III Digit Symbol-Coding	8	7	6	7	7.5
Symbol Digit Modalities Test	7	6	5	6	7.5

Reasoning and Problem Solving Candidate Tests	Test-Retest Reliability	Utility as a Repeated Measure	Relationship to Functional Outcome	Potential Changeability in Response to Pharmacological Agents	Practicality and Tolerability
WAIS-III Block Design	7	6.5	6	7	6
BACS - Tower of London	6	7	5.5	6	6
NAB – Mazes	6	7	5.5	6	6.5
Penn Conditional Exclusion Test	6	5	6	6.5	6
NAB – Categories	6	5.5	4	4.5	6
Delis-Kaplan Executive Functioning Scale - Sorting	5	6	4	5	6

Social Cognition Candidate Tests	Test-Retest Reliability	Utility as a Repeated Measure	Relationship to Functional Outcome	Potential Changeability in Response to Pharmacological Agents	Practicality and Tolerability
The Awareness of Social Inference Test	5	4	6	4	6
MSCEIT – Managing Emotions	7	6	6	4	7
MSCEIT – Perceiving Emotions	7	6	6	5	7
Emotion Recognition – 40	3	4	4	4	6

¹For Test-Retest Reliability, Utility as a Repeated Measure, and Practicality and Tolerability, RAND Panelists were asked to rate these test criteria on a 9-point scale (1 = Poor, 3 = Fair, 5 = Good, 7 = Very Good, 9 = Superb). For Relationship to Functional Outcome, the anchor points of the 9-point scale were slightly different (1 = None, 3 = Weak, 5 = Moderate, 7 = Strong, 9 = Very Strong). For 9-point scale in Potential Changeability, the 1-3 range indicated unlikelihood of sensitivity, 4-6 range indicated difficulty in judging, and 7-9 range indicated likelihood of sensitivity.

²Based on the suggestions of the RAND Panelists, the changeability criterion was not given as much weight as the other criteria in selection of tests for the beta version of the battery. There were two reasons for this decision. First, the anchors for this criterion were different from those used for the other criteria. Thus, 1 indicated a low likelihood of change and 9 a high likelihood, which the Panelists felt was difficult to predict in several instances in which cognitive measures had not been used in clinical trials. Second, the Panelists thought that it might not be advisable to give too much weight to ratings based on current data, because new types of drugs are expected to work via different neurochemical mechanisms and may have different cognitive effects than the ones that have been tested so far. Thus, even cognitive measures that had not shown change in clinical trials thus far may well do so in trials with new types of pro-cognitive agents.