

# Development and validation of the MEYOCS-Plus: an automated tablet-based cognitive screening tool for early detection of cognitive impairment

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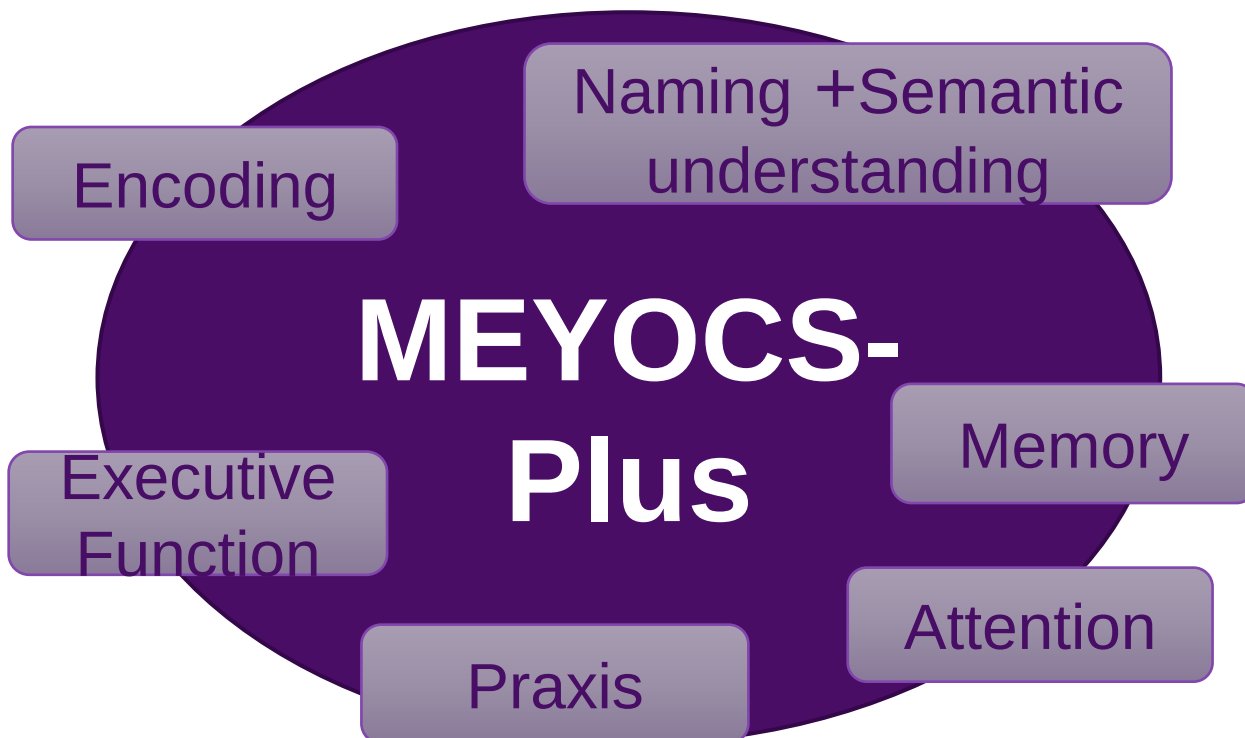
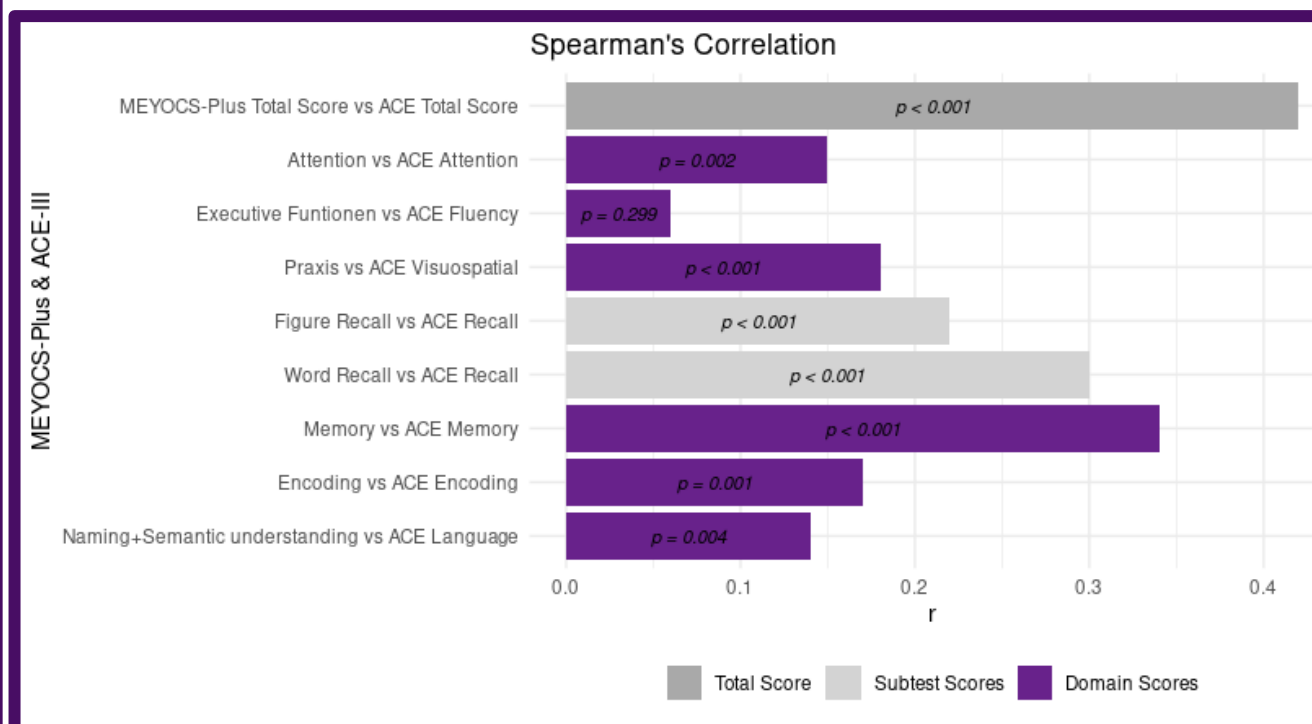
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The MEYOCS-Plus is a valid, automated and resource-efficient cognitive screening tool that can identify older adults at risk for dementia and is suitable for large-scale use in rural settings.

| INTRODUCTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | METHODS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | RESULTS | CONCLUSIONS |     |     |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |   |   |             |                    |   |
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| <p>Early detection of Mild Cognitive Impairment (MCI) enables the assessment of an individual’s risk of developing dementia and provides the basis for preventive and intervention measures. However, traditional paper-based tests are time-consuming, require trained personnel, and are only available to a limited extent, particularly in rural areas.</p> <div> vs. </div> <p><b>Aims:</b></p> <ul style="list-style-type: none"><li>Development of an automated tablet-based screening tool (MEYOCS-Plus), based on the Oxford Cognitive Screen-Plus<sup>1</sup>.</li><li>Standardization for individuals aged 50 years and older, validation through comparison with established tests and evaluation of diagnostic accuracy in a rural sample.</li></ul> | <p><u>Norm sample:</u> <i>N</i> = 360 participants (221 female, 139 male, aged 50-87)</p> <table><tr><td>50-59</td><td>60-70</td><td>70+</td></tr><tr><td>108</td><td>124</td><td>128</td></tr></table> <p><u>Instruments:</u> MEYOCS-Plus (9 tasks, 25 min., 6 domains), Addenbrooke’s Cognitive Examination III (ACE-III) and Hospital Anxiety and Depression Scale (HADS) as well as CERAD-plus and CDR interview for the rural sample (<i>N</i> =56)</p> <p><u>Analysis:</u> Correlation to assess convergent and divergent validity, and positive predictive value (PPV) in rural areas.</p> <div></div> | 50-59   | 60-70       | 70+ | 108 | 124 | 128 | <ul style="list-style-type: none"><li>Normative data were established for 3 age groups.</li><li>Correlations with the overall score &amp; the Memory domain of the ACE-III support <b>convergent validity</b>.</li><li>Weak but significant associations with other domains, as well as the absence of an association with executive functions, may be explained by a limited conceptual overlap and the restricted variance in the healthy sample.</li><li>No associations were found with anxiety and depression (HADS), supporting <b>divergent validity</b>.</li><li>PPV=0.93 for participants from the rural area.</li></ul> | <div></div> <div></div> <table><tr><th>CERAD+ &amp; CDR</th><th>+</th><th>-</th></tr><tr><th>MEYOCS-Plus</th><td>6 demented, 45 MCI</td><td>4</td></tr></table> <p>MEYOCS-Plus demonstrates encouraging evidence of validity, high usability, and strong potential as a resource-efficient cognitive screening tool for older adults. It seems well-suited for broad clinical use, particularly in rural and underserved settings.</p> <p><b>References</b></p> <p>1 Demeyere, N., Haupt, M., Webb, S. S., Strobel, L., Milosevich, E. T., Moore, M. J., Wright, H., Finke, K., &amp; Duta, M. D. (2021). Introducing the tablet-based Oxford Cognitive Screen-Plus (OCS-Plus) as an assessment tool for subtle cognitive impairments. Scientific reports, 11(1), 8000.</p> | CERAD+ & CDR | + | - | MEYOCS-Plus | 6 demented, 45 MCI | 4 |
| 50-59                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 60-70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 70+     |             |     |     |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |   |   |             |                    |   |
| 108                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 124                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 128     |             |     |     |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |   |   |             |                    |   |
| CERAD+ & CDR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | +                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | -       |             |     |     |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |   |   |             |                    |   |
| MEYOCS-Plus                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 6 demented, 45 MCI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4       |             |     |     |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |   |   |             |                    |   |
| <h3>CONTACT</h3> <p>Ekaterina Münch, PhD student<br/>Jena University Hospital<br/>Mail:<br/><a href="mailto:ekaterina.muench@med.uni-jena.de">ekaterina.muench@med.uni-jena.de</a></p> <div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |             |     |     |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |   |   |             |                    |   |