

St. Catherine University

SOPHIA

Graduate Occupational Therapy Research and
Projects

Occupational Therapy

4-2019

Assessments for Mild Cognitive Impairment (MCI) and Functional Cognition: An Evidence-Based Practice Project

Margaret Hiniker

Hannah Kleschult

Erica Norton

Libby Reger

Natalie Ristau

See next page for additional authors

Follow this and additional works at: https://sophia.stkate.edu/ot_grad



Part of the [Occupational Therapy Commons](#)

Author

Margaret Hiniker, Hannah Kleschult, Erica Norton, Libby Reger, Natalie Ristau, Kate Skluzacek, Seng Vang, Tiffany Vang, and Julie D. Bass

Assessments for Mild Cognitive Impairment (MCI) and Functional Cognition: An Evidence-Based Practice Project

Margaret Hiniker, Hannah Kleschult, Erica Norton, Libby Reger, Natalie Ristau,
Kate Skluzacek, Seng Vang, & Tiffany Vang

Faculty Advisor: Julie D. Bass, PhD, OTR/L, FAOTA
St. Catherine University

EBP Project completed in partial fulfillment of the requirements
for the Evidence-Based Practice Course
in the Graduate Occupational Therapy Programs

Spring, 2019

Recommended APA citation:

Hiniker, M., Kleschult, H, Norton, E., Reger, L., Ristau, N., Skluzacek, K., Vang, S., Vang, T., & Bass, J.D. (2019). *Assessments for functional cognition and Mild Cognitive Impairment (MCI): An evidence-based practice project*. Retrieved from <https://sophia.stkate.edu/>

Keywords: mild cognitive impairment, mild neurocognitive disorder, functional cognition, occupational therapy, screening, assessment

Table of Contents

Introduction..... 3

 Evidence Based Practice 3

 The EBP Project 3

 The EBP Process 3

 Four EBP Projects: Mild Cognitive Impairment and Functional Cognition 4

 EBP Practical Dilemma: Mild Cognitive Impairment and Functional Cognition..... 4

 Appraisals of Best Evidence, Themes, and Recommendations 5

 References 7

EBP Question 10

Executive Summary 11

 Minnesota Occupational Therapy Association Continuing Education Presentation..... 11

 Themes 15

 Summary and Implications for Practice 22

 Table of EBP Resources 24

 References 27

Appendix A. Initial Appraisals 35

Introduction

Evidence Based Practice

Evidence based practice is defined as the integration of knowledge from professional and clinical expertise, patient/client unique values and circumstances, and best research evidence (Straus, Richardson, Glasziou, & Haynes, 2005). The EBP courses in the St. Catherine University occupational therapy programs emphasizes skill building in finding, analyzing, and synthesizing research.

A definition of Evidence-Based Practice (EBP)



(Straus, Richardson, Glasziou & Haynes, 2005)



The EBP Project

Occupational therapy graduate students at St. Catherine University complete an EBP project in partial fulfillment of the requirements for a course on Evidence-Based Practice.

The EBP Process

- Begins with a practice dilemma
- Dilemma is framed as an EBP question and PICO
P (population/problem) I (intervention) C (comparison group) O (outcome(s) of interest)
- Background learning
- Search for the best evidence
- Initial appraisal and critical appraisal of the evidence
- Summary of themes from the evidence
- Recommendations for practice
- Next steps – implementation in practice

Four EBP Projects: Mild Cognitive Impairment and Functional Cognition

1. Descriptive, predictive, and risk factors
2. Perspectives and experiences
3. Screening and assessment
4. Interventions and programs

EBP Practical Dilemma: Mild Cognitive Impairment and Functional Cognition***Hypothetical EBP Case Related to Mild Cognitive Impairment and Functional Cognition***

Juan is a 75- year old male who has been diagnosed with mild cognitive impairment. Juan is in good general health but his family has noticed problems that are typical of functional cognition impairment. The health care agency you work for has seen a growing number of individuals with this diagnosis and is asking occupational therapy to become involved in program development for this population.

You have been asked to provide an in-service to staff on mild cognitive impairment and functional cognition and assist in the development of an evidence-based program for individuals with mild cognitive impairment. You are asked to gather evidence related to:

- Descriptive, predictive, and risk factors
- Perspectives and experiences on the lived experience
- Screening and assessments
- Interventions and programs

Background Information on Mild Cognitive Impairment and Functional Cognition

Functional cognition has been defined as:

- “how an individual utilizes and integrates his or her thinking and processing skills to accomplish everyday activities in clinical and community living environments” (AOTA, n.d.)
- “fundamental to the performance of complex everyday activities, which are more commonly referred to as instrumental activities of daily living (IADL)” (Wesson et al., 2016)

The occupational therapy lens on functional cognition became more important after the passage of the Centers for Medicare & Medicaid Services (CMS) IMPACT Act. The CMS IMPACT Act requires data collection in the “areas of functional status, cognitive status, falls, and skin integrity” (AOTA, 2015). The American Occupational Therapy Association (AOTA) has advocated that CMS collect data on functional cognition (functional status, cognitive status, and changes in functional and cognitive status) (AOTA, 2015). Recent occupational therapy initiatives related to functional cognition have focused on conducting quantitative and qualitative research on functional cognition, developing performance-based assessments on functional cognition, and developing evidence-based interventions to address functional cognition.

Mild cognitive impairment (MCI) is also known as mild neurocognitive disorder, mNCD, in the DSM 5 (American Psychiatric Association, 2013). The prevalence of mNCD is estimated as low as 6-7% (Sachdev, 2015) and as high as 15-20% (Minnesota Board of Aging, 2019). MCI has been defined as:

- "...changes in cognition exceeds the normal, expected changes related to age" (Mehta, 2018, para. 1)
- "...the interim state of cognition beyond that of the normal aging process, yet not sufficient to warrant a diagnosis of dementia" (Caliendo & Hilar, 2018, para. 1)
- "memory impaired, but otherwise functioning well" (Caliendo & Hilar, 2018, para. 1).

Four primary types of MCI have been proposed: amnesic MCI single domain, amnesic MCI multiple domain, non-amnesic MCI single domain, and non-amnesic MCI multiple domain (Peterson, 2009). The criteria for a diagnosis of MCI include subjective memory complaints, objective memory impairment, normal or preserved general cognition, intact activities of daily living, and no presence of dementia (Caliendo & Hilar, 2018). Additional diagnostic criteria include memory loss, language disturbance, attention deficit, and decreased visuospatial skills (Mehta, 2018).

A number of governmental agencies and national organizations have provided MCI resources and programs, including:

- AARP Brain Health and Wellness <https://www.aarp.org/health/brain-health/>
- CDC Healthy Brain Initiative <https://www.cdc.gov/aging/healthybrain/index.htm>
- NIH Cognitive and Emotional Health Project: The Healthy Brain <https://trans.nih.gov/CEHP/>
- AHRQ Practice Guidelines <https://effectivehealthcare.ahrq.gov/topics/cognitive-decline/research-protocol>
- National Academies of Science, Engineering and Medicine <http://nationalacademies.org/hmd/reports/2017/preventing-cognitive-decline-and-dementia-a-way-forward.aspx>
- Alzheimer's Association https://www.alz.org/alzheimers-dementia/what-is-dementia/related_conditions/mild-cognitive-impairment
- HABIT: Healthy Action to Benefit Independence & Thinking <https://www.cityofroseville.com/2727/Activities>
- What is Brain Health? <https://brainhealth.nia.nih.gov/>
- U of MN Nursing ACT Trial (exercise and cognitive training) <https://www.nursing.umn.edu/act-trial>

Appraisals of Best Evidence, Themes, and Recommendations

After searching and finding evidence available from library databases and alternative sources, students conducted an initial appraisal to evaluate the quality and relevance of the evidence and select the best research for further review. Then they conducted critical appraisals of the best formal reviews of primary research (e.g., systematic reviews, meta-analyses) and/or primary/original research studies using the AOTA CAP form (American Occupational Therapy Association, 2016). One of the steps in the CAP process is to evaluate the strength or level of the research design and the types of conclusions that are possible from each design.

Initial Appraisal

- Quality of the evidence
 - type of evidence
 - research design
 - investigator qualifications
 - journal/publication/website
- Relevance of the evidence
 - PICO

Critical Appraisal

- Reviews of primary research
 - systematic reviews, meta-analysis
 - review process and approach
 - consistent and inconsistent findings
- Primary research studies AOTA CAP
 - Level 1: randomized controlled trials
 - Level 2: two groups, nonrandomized/cohort and case control
 - Level 3: nonrandomized, pretest/posttest and cross-sectional
 - Level 4: single subject
 - Level 5: case report

After completing initial and critical appraisals, themes are summarized related to the EBP question and other findings that emerged from the evidence. Recommendations for practice and reflection on participating in an EBP project are identified in the conclusions.

References

- Agency for Health Care Research and Quality (2016). Interventions for preventing cognitive decline, mild cognitive impairment, and Alzheimer's disease. Retrieved from <https://effectivehealthcare.ahrq.gov/topics/cognitive-decline/research-protocol>
- American Occupational Therapy Association (2017). Podcast: Functional cognition can promote value of OT in post-acute care. Retrieved from <https://www.aota.org/Advocacy-Policy/Federal-Reg-Affairs/News/2017/podcast-functional-cognition-value-post-acute-care.aspx>
- American Occupational Therapy Association. (2015). AOTA requests that Medicare collect IMPACT Act data on functional cognition. Retrieved from <https://www.aota.org/advocacy-policy/federal-reg-affairs/news/2015/request-medicare-impact-data-functional-cognition.aspx>
- American Occupational Therapy Association. (2016). AOTA'S evidence exchange: Guidelines to critically appraised paper (CAP) worksheet. Retrieved from <https://www.aota.org/~//media/Corporate/Files/Practice/EvidenceExchange/CAP%20Guidelines%20for%20Evidence%20Exchange.pdf>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. American Psychiatric Pub.
- Belchior, P., Korner-Bitensky, N., Holmes, M., & Robert, A. (2015). Identification and assessment of functional performance in mild cognitive impairment: A survey of occupational therapy practices. *Australian Occupational Therapy Journal*, 62(3), 187-196.

Caliendo, T. & Hilas, O. (2018). Mild cognitive impairment overview and update. Retrieved from <https://journalce.powerpak.com/ce/mild-cognitive-impairment-overview-and>

Mehta, S. for Medscape (2018). Mild cognitive impairment. Retrieved from <https://emedicine.medscape.com/article/1136393-overview>

National Academies of Science, Engineering and Medicine. (2017). Preventing cognitive decline and dementia: A way forward. Retrieved from <http://nationalacademies.org/hmd/reports/2017/preventing-cognitive-decline-and-dementia-a-way-forward.aspx>

Petersen, R. C. (2004). Mild cognitive impairment as a diagnostic entity. *Journal of Internal Medicine*, 256(3), 183-194.

Petersen, R. C. (2009). Early diagnosis of Alzheimer's disease: is MCI too late?. *Current Alzheimer Research*, 6(4), 324-330.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3098139/>

Sachdev, P. S., Lipnicki, D. M., Kochan, N. A., Crawford, J. D., Thalamuthu, A., Andrews, G., Brayne, C., Matthews, F. E., Stephan, B. C., Lipton, R. B., Katz, M. J., Ritchie, K., Carrière, I., Ancelin, M. L., Lam, L. C., Wong, C. H., Fung, A. W., Guaita, A., Vaccaro, R., Davin, A., Ganguli, M., Dodge, H., Hughes, T., Anstey, K. J., Cherbuin, N., Butterworth, P., Ng, T. P., Gao, Q., Reppermund, S., Brodaty, H., Schupf, N., Manly, J., Stern, Y., Lobo, A., Lopez-Anton, R., Santabárbara, J., Cohort studies of memory in an international consortium (COSMIC) (2015). The prevalence of mild cognitive impairment in diverse geographical and ethnocultural regions: The COSMIC Collaboration. *PloS one*, 10(11), e0142388. doi:10.1371/journal.pone.0142388. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4634954/>

Straus, S. E., Richardson, W. S., Glasziou, P., & Haynes, R. B. (2005). How to practice and teach EBM. *Evidence-Based Medicine. Third edition. Elsevier*, 13-29.

Wesson, J., Clemson, L., Brodaty, H., & Reppermund, S. (2016). Estimating functional cognition in older adults using observational assessments of task performance in complex everyday activities: A systematic review and evaluation of measurement properties. *Neuroscience & Biobehavioral Reviews*, 68, 335-360. Retrieved from <https://www.sciencedirect.com/science/article/pii/S0149763415302608>

Winblad, B., Palmer, K., Kivipelto, M., Jelic, V., Fratiglioni, L., Wahlund, L. O., ... & Arai, H. (2004). Mild cognitive impairment—beyond controversies, towards a consensus: report of the International Working Group on Mild Cognitive Impairment. *Journal of Internal Medicine*, 256(3), 240-246. Retrieved from <https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1365-2796.2004.01380.x>

All EBP Projects are available at <http://sophia.stkate.edu/>.

EBP Question

What occupational therapy and interdisciplinary assessments are currently used and have the best psychometric characteristics and are most effective for screening or evaluating functional cognition of individuals with mild cognitive impairment and measuring the outcomes of intervention programs for mild cognitive impairment?

Executive Summary
Minnesota Occupational Therapy Association Continuing Education Presentation

Assessments for Mild Cognitive Impairment (MCI) and Functional Cognition

Maggie Hiniker, Hannah Kleschult, Erica Norton, Libby Reger, Natalie Ristau, Kate Skluzacek, Seng Vang, & Tiffany Vang

EBP Question

What occupational therapy and interdisciplinary assessments are currently used and have the best psychometric characteristics and are most effective for screening or evaluating functional cognition of individuals with mild cognitive impairment and measuring the outcomes of intervention programs for mild cognitive impairment?

Background Learning

- **Characteristics of mild cognitive impairment include:**
 - Difficulty with memory
 - Processing and spatial skills
 - Language
 - Judgment
 - Limited impact on ADLs (NIA, 2017; Medline Plus, 2019; Mayo Clinic, 2019).
- **Individuals with mild cognitive impairment are at higher risk for developing dementia.** (Bretner, 2014).

Background Learning continued...

- **Assessments of functional cognition include:**
 - ✗ The Montreal Cognitive Assessment (MoCA) (Krogman & Petersen, 2014)
 - ✗ Mini-Mental State Examination (MMSE) (Mayo Clinic, 2019)
 - ✗ Performance-based skills assessments (Gustberg et al., 2019)
 - ✗ Interviews (Coles & Wolf, 2017)
- **Methods used to assess functional cognition include:**
 - ✗ Ability to perform tasks
 - ✗ Demonstrate time management
 - ✗ Display awareness and attention to the environment (AOTA, 2019)

Examples of Evidence Resources

- ✗ **Governmental and Major Foundations:** National Institute of Aging (NIA), Medline Plus, Mayo Clinic, Alzheimer's Association, CDC
- ✗ **OT Specific Resources:** AOTA, AOTF
- ✗ **Interprofessional Journals, Databases, Professional Association:** New England Journal of Medicine, British Pharmacological Society, American Journal of Psychiatry

Examples of Search Process

- ✗ Medline/PubMed, ERIC, Health and Psychosocial Instruments (HaPI), OT Search, Google Scholar, CDC, Mayo Clinic, National Institutes of Health (NIH), AOTA
- ✗ Older adults, 2000, full-text, peer-reviewed
- ✗ Helpful keywords: mild cognitive impairment, functional cognition, assessment(s), psychometric, tools, screening, and validity

Initial Appraisal of Best Evidence

- ✎ Primary Research Studies
 - ✎ 30 articles
- ✎ Reviews of Primary Research
 - ✎ 7 articles
- ✎ Conceptual/Theoretical Articles
 - ✎ 3 articles

Overview of Critical Appraisals of Best Evidence

Critical Appraisal Papers (CAPs)

- ✎ Everyday cognition in older adults: Association with neuropsychological performance and structural brain imaging (Faris et al., 2013)
- ✎ Development and Implementation of Persian test of Elderly for Assessment of Cognition and Executive Function (PEACE) (Javadi et al., 2015)
- ✎ Informant-reported cognitive symptoms that predict amnesic mild cognitive impairment (Maki-Arnold et al., 2012)

Reviews of Primary Research

- ✎ Mini-mental state examination (MMSE) for the detection of Alzheimer's disease and other dementias in people with mild cognitive impairment (MCI) (Azevalo-Rodriguez et al., 2015)
- ✎ Can a Virtual Reality Cognitive Training Application Fulfill a Dual Role? Using the Virtual Supermarket Cognitive Training Application as a Screening Tool for Mild Cognitive Impairment (Zygouris et al., 2015)

Reviews of Assessments

- Performance Assessment of Self-care skills (PASS) (Rogers, Holm, & Chubolin, 2016)

Critical Appraisal 1 and 2:

Development and Implementation of Persian test of Elderly for Assessment of Cognition and Executive Function (PEACE)

- ✎ **Focused Question:** How do the three groups differ with their performance on the PEACE (control, MCI, and Alzheimer's, and illiterate, semi-illiterate, and literate)?
- ✎ **Clinical Bottom Line:** There was no difference between the illiterate and literate groups. Also, there was a significant difference between the control group and the Alzheimer's group. (Javadi et al., 2015)

Everyday cognition in older adults: Association with neuropsychological performance and structural brain imaging (ECog)

- ✎ **Focused Question:** Does the Everyday Cognition scales accurately measure multiple cognitively-relevant functional domains?
- ✎ **Clinical Bottom Line:** To educate therapists and other providers assessing cognition in adults, about the external validity of the Everyday Cognition scales in assessing normal cognition, mild cognitive impairment, and dementia. (Faris et al., 2013)

Critical Appraisal 3 and 4:

The Montreal Cognitive Assessment, MoCA-A Brief Screening Tool For Mild Cognitive Impairment

- **Focused Question:** Is the MoCA assessment a useful assessment for individuals with MCI? Do the three groups differ when taking the MoCA assessment (control, AD, MCI)?
- **Clinical Bottom Line:** The MoCA demonstrated high test-retest reliability, and good internal consistency. MCI, AD, Control (did not differ in these areas): digit span, sustained attention, and the serial 7 calculation task. AD and MCI: performed poorly in the sentence repetition task. MCI: delayed recall was most impaired item (Nasreddine et al., 2005)

Can a Virtual Reality Cognitive Training Application Fulfill a Dual Role? Using the Virtual Supermarket Cognitive Training Application as a Screening Tool for Mild Cognitive Impairment

- **Focused Question:** Is there a significant group difference in performance at the first administration of the VSM cognitive training exercises? Is there a correlation between the performance in the VSM and established neuropsychological tests used in MCI?
- **Clinical Bottom Line:** There was a significant difference found between the healthy and MCI groups. Those with an MCI performed at a much slower rate and had a high error percentage than the healthy participants. (Zygouris et al., 2015)

Critical Appraisal 5 and 6:

Performance Assessment of Self-care Skills (PASS)

- ✎ **Focused Question:** 4 domains with 26 different tasks (Functional mobility, ADLs, IADLs- physical based, IADLs- cognitive based)
- ✎ **Clinical Bottom Line:** Performance-based cognitive assessment (Rogers et al., 2016)

Mini-mental state examination (MMSE) for the detection of Alzheimer's disease and other dementias in people with mild cognitive impairment (MCI)

- **Focused Question:** What is the diagnostic accuracy of the MMSE for detecting individuals with baseline MCI who would clinically convert to dementia?
- **Clinical Bottom Line:** MMSE is inadequate in detecting subtle cognition changes; perform additional tests for a more comprehensive assessment. (Azevalo-Rodriguez et al., 2015)

Critical Appraisal 7 and 8:

Informant-reported cognitive symptoms that predict amnesic mild cognitive impairment

- ✎ **Focused question:** Does using an informant-based dementia assessment help identify cognitive symptoms that can predict amnesic MCI in individuals?
- ✎ **Clinical bottom line:** By using an informant-based dementia assessment, it can help predict individuals with amnesic MCI. (Maki-Arnold et al., 2012)

Assessment of cognition in mild cognitive impairment: A comparative study

- ✎ **Focused question:** Which measures of mild cognitive impairment provide the most comprehensive combination of reliable cognitive assessment brevity, demonstrated construct and predictive validity, and ease of use?
- ✎ **Clinical bottom line:** There is no single recommended "gold standard" battery but, rather, a subset of very good products to choose from, based on individual study needs. (Bryder et al., 2011)

Theme 1: Cognitive Domains

There are various cognitive domains measured in assessments that may be categorized into the domains below, with specific subdomains for each. Full table includes 13 assessments and the cognitive domains measured.

Assessment	Attention	Memory	Function	Executive Function	Discrete Abilities and Other Domains
MCI Screen	A1, B2				
MoCA	A2	B5		D1	E2, E7
PASS			C3, C4, C5		
NIH Toolbox	A3	B2, B6		D1, D9, D13	E6

Theme 2: The most common Measures of Cognition & Functional Cognition for Individuals with MCI

The main instruments for assessing MCI are the Mini-Mental State Examination (MMSE) which is the most commonly used and the Montreal Cognitive Assessment (MoCA).

- Similarities of MMSE and MoCA: test format, time of administration and purpose of instrument (Cameron, Wormal-Carter, Page, Steward, & Shi, 2013)
- Limitations of MoCA and MMSE (Miranda, Brucki, & Yasuda, 2018)
- Comparisons of MoCA and MMSE (Cameron et al., 2013; Nasreddine et al., 2005)
- Characteristics of Performance-Based Assessment: PASS (Rogers et al., 2016)

Theme 3: Importance of Using Multiple Tools

Cognition is comprised of multiple domains and requires comprehensive assessments to effectively measure cognitive functioning.

- The MMSE assessment is unable to distinguish subtle cognition changes in individuals with MCI (Arevalo-Rodriguez et al., 2015)
- Some patients with MCI do not experience declines in memory (Arevalo-Rodriguez et al., 2015)
- The use of multiple tests is important in assessing various aspects of MCI (Arevalo-Rodriguez et al., 2015)
- A single instrument is not adequate for revealing cognition problems (Arevalo-Rodriguez et al., 2015; Nasreddine et al., 2005)

MYRAINTEST.ORG
<https://www.myraintest.org/about-us/raiders-dementia-mild-cognitive-impairment/>

Theme 4: Possible Biases in Assessments

Potential biases in cognitive assessments may result in inaccurate measures of functional cognition and MCI.

- Educational bias may impact individual scores (Javadi et al., 2015; Miranda et al., 2018; Nasreddine et al., 2005)
- Measuring bias may result from self-report and informant-report (Snyder et al., 2012)
- Biases may put individuals at risk for improper diagnosis (Farias et al., 2013; Javadi et al., 2015; & Zhai et al., 2016)
- Biases may be addressed by new cognitive assessments (Javadi et al., 2015)

Recommendations for OT and Interprofessional Programs

- Consider appropriateness for population and/or setting
- Select appropriate cognitive domains
- Utilize more than one assessment.
- Include performance-based assessments.

Summary and Reflection

- Existing evidence comes from both interdisciplinary and occupational therapy studies
- Measuring for functional cognition and MCI involves a wide variety of assessments and cognitive domains
- Emerging assessments hold promise for the further development of clinical research and practice that is useful for all populations and settings

References

About Alzheimer's, Dementia, Mild Cognitive Impairment. (2018). Retrieved from <https://www.nysbnybest.org/about-alzheimers-dementia-mild-cognitive-impairment/>

American Occupational Therapy Association. (2019). Role of occupational therapy in assessing functional cognition. Retrieved from <https://www.aota.org/Advocacy-Policy/Federal-Policy-Affairs/Medicaid-Underpayments-OT-assessing-functional-cognition.aspx>

Azevedo-Rodrigues, I., Bonaldi, N., Ribeiro-Fogaça, M., Caporoni, A., Barichello-Pereira, E., Garassino, A., ... & Caltham, S. (2019). Mini-Mental State Examination (MMSE) for the detection of Alzheimer's disease and other dementias in people with mild cognitive impairment (MCI). *Cochrane Database of Systematic Reviews*, 5, 1-74. DOI: 10.1002/14651125.cd010783a2

Baizer, J. (2014). Mild cognitive impairment and progression to dementia. *Neurology*, 82(4), e34-e35. doi: 10.1212/WNL.0000000000000158

Carmona, J., Wondol-Gebrie, L., Paek, K., Bennett, S., & Shi, C. F. (2013). Screening for mild cognitive impairment in patients with heart failure. *Medical Cognitive Assessment versus Mini Mental State Exam*. *European Journal of Cardiovascular Nursing*, 7(2), 252-260. <https://doi.org/10.1177/1463151113506266>

Dilla, G. M., and Wolf, T. (2017). Occupational therapy: functional cognition advantage. *OT Practice*, 20(5), 12-15.

Goldberg, J. E., Rappaport, J., Kaufman, L., Chikara, E., Chasse-Werninger, L., Conroy-Goldberg, C., ... & Davies, P. (2016). Performance-based measures of everyday function in mild cognitive impairment. *The American Journal of Psychiatry*, 173(7), 845-53.

Faliss, S. T., Park, L., O'Hare, D. J., Simon, C., Beale, S. R., Carmichael, O., & Mangus, D. (2013). Everyday Cognition in older adults: Associations with neuropsychological performance and structural brain imaging. *Journal of the International Neuropsychological Society*, 19(4), 430-441. doi: 10.1017/S1551220912000669

Javed, P. D., Zandbergen, A., Daniels, F., Khosravi, S., & Novotnik, M. (2015). Development and implementation of Pension test of Elderly for Assessment of Cognition and Education (PEACE). *Electronic Physician*, 7(1), 1549-1556. doi:10.19623/seap

Kropman, S. S., & Polman, R. C. (2014). Mild Cognitive Impairment and Mild Dementia. *A Clinical Perspective*. *Mayo Clinic Proceedings*, 89(10), 1452-1458. <https://doi.org/10.1016/j.mayocp.2014.06.019>

Mahdavi-Nia, M., Dine, K., Sadeghi, M., Jafarizadeh, M., & Sadeghi, M. N. (2012). Informal caregiver self cognitive symptoms that predict amnesic mild cognitive impairment. *BMC Geriatrics*, 12(3), 1-8. <https://doi.org/10.1186/1471-2318-12-3>

Mayo Clinic. (2019). Mild cognitive impairment. Retrieved from <https://www.mayoclinic.org/diseases-conditions/mild-cognitive-impairment/symptoms-causes/voc-20354578>

Medline Plus. (2019). Mild cognitive impairment. Retrieved from <https://medlineplus.gov/mildcognitiveimpairment.html>

Miranda, D., Brock, S., & Yasuda, M. S. (2018). The Mini-Addenbrooke's Cognitive Examination (M-ACE) as a brief cognitive screening instrument in Mild Cognitive Impairment and mild Alzheimer's Disease. *Dementia & Neurocognition*, 12(4), 268-275. doi: 10.1080/1580-1764.2018.1480055

Narasimhan, Z. S., Phillips, N. A., Badrian, Y., Charbonneau, S., Whitehead, V., Coffa, L., ... & Chertkow, H. (2005). The Montreal Cognitive Assessment, MCA: A brief screening test for mild cognitive impairment. *Journal of the American Geriatrics Society*, 53(4), 695-699. <https://doi.org/10.1111/j.1532-5415.2005.35221.x>

References

National Institute on Aging. (2017). What is mild cognitive impairment? Retrieved from National Institute of Health <https://www.nia.nih.gov/health/what-is-mild-cognitive-impairment>

Rogers, J. C., Hays, M. B., Chikara, D. (2016). Performance assessment of self-care skills. Retrieved from <https://www.ahrq.gov/evidence/about-performance-assessment-self-care-skills-paas>

Snyder, P. J., Jackson, C. E., Peterson, H. C., Khachaturian, A. S., Kaye, J., Albert, M. S., & Wernema, S. (2011). Assessment of cognition in mild cognitive impairment: A comparative study. *Alzheimer's & Dementia*, 7(3), 338-350. doi:10.1016/j.jalz.2011.03.009

Total Assets. (2019). Image. Retrieved from <https://www.istockphoto.com/stock-photo-1234567890>

Zhai, Y., Chao, Q., Li, H., Wang, B., Xu, R., Wang, N., ... & Wang, X. (2016). Correction: Application and Revision of Montreal Cognitive Assessment in China's Minority Regions with Mild Cognitive Impairment. *PLoS One*, 11(2), 1-2. <https://doi.org/10.1371/journal.pone.0148825>

Zygoridis, S., Giakouris, D., Vella, K., Doumposiaki, S., Novak, K., Sigafoos, S., Tzani, M. (2015). Can a virtual reality cognitive training application fulfill a dual role? Using the virtual supermarket cognitive training application as a screening tool for mild cognitive impairment. *Journal of Alzheimer's Disease*, 46(4), 1333-1347. doi:10.3233/JAD-141260

Themes

Introduction

Synthesis of our group research findings resulted in the identification of four themes pertaining to assessments for mild cognitive impairment and functional cognition. The themes identified include cognitive domains measured, the common use of the Montreal Cognitive Assessment (MoCA) and the Mini-Mental State Exam (MMSE) in practice, the importance of using multiple assessments, and the appropriateness of assessments for various populations and settings.

Cognitive Domain

The theme of cognitive domains measured in assessments for mild cognitive impairment and functional cognition was identified from our research. There are various cognitive domains measured in assessments, some of which are measured across multiple assessments pertaining to attention, memory, function, and executive function. There are also discrete abilities and other domains that are specific to a relatively small number of assessments. Table 1 below provides detailed information about the cognitive domains measured in 13 different assessments for mild cognitive impairment and functional cognition. The 13 assessments included in Table 1 contain a variety of administration methods, including interview and observation. This may serve as a functional tool for identifying an appropriate assessment measure in addition to providing a broad overview of cognitive domains measured among various assessments.

Table 1.

Cognitive Domains Measured in Assessments for Mild Cognitive Impairment and Functional Cognition

Assessment	Attention	Memory	Function	Executive Function	Discrete Abilities and Other Domains
MCI Screen	A1, B2				
MoCA	A2	B5		D1	E2, E7
PASS			C3, C4, C5		
NIH Toolbox	A3	B2, B6		D1, D9, D13	E6
AQ	A2	B1	C2		E2, E7
ACT	A1, A3	B1		D1, D2, D3	E2
ANAM GNS	A1	B2, B3, B4		D1	E3, E4, E8, E9
RAVLT				D4, D12	
ROCF		B3, B7			
ECog	A1, A4	B1		D6, D8	E2, E7
PEACE	A1, A2	B1	D2, D5, D6, D7, D10, D11		E5, E7, E10
CPT		B2		D1	
MMSE	A1	B1, B8			

Note: MCI = Mild Cognitive Impairment; MoCA = Montreal Cognitive Assessment; PASS = Performance Assessment of Self-care Skills; NIH = National Institute of Health; AQ = Alzheimer's Questionnaire; ACT = Automatic Cognitive Test; ANAM GNS = Automated Neuropsychological Assessment Metrics General Neuropsychological Screening; RAVLT = Rey Auditory Verbal Learning Test; ROCF = Rey-Osterrieth Complex Figure Test; ECog = The Measurement of Everyday Cognition; PEACE = Persian Test of Elderly for Assessment of Cognition and Executive Function; CPT = Cognitive Performance Test; MMSE = Mini-Mental State Examination. See legend below for information on specific subdomains.

A1. Attention	B1. Memory	C1. Functional Cognition	D1. Executive Function	E1. Discrete Abilities and Other Domains
A2. Orientation	B2. Working memory	C2. Functional ability	D2. Calculation	E2. Visuospatial ability
A3. Visual attention	B3. Visuospatial memory	C3. Functional mobility	D3. Impulsivity	E3. Verbal reasoning
A4. Divided attention	B4. Delayed memory	C4. ADL	D4. Rate of learning	E4. Spatial processing
	B5. Short-term memory recall	C5. IADL	D5. Abstract thinking	E5. Gnosis
	B6. Episodic memory		D6. Planning / sequencing	E6. Auditory comprehension
	B7. Visual memory		D7. Problem-solving	E7. Language
	B8. Recall		D8. Organization	E8. Psychomotor speed
			D9. Executive inhibition	E9. Psychomotor efficiency
			D10. Judgment	E10. Praxis
			D11. Similarity	
			D12. Learning strategies	
			D13. Processing speed	

Common Use of MoCA and MMSE

The Montreal Cognitive Assessment (MoCA) and Mini-Mental State Examination (MMSE) are widely used instruments for assessing mild cognitive impairment (MCI). The MoCA provides a brief screening with high sensitivity and specificity for detecting MCI (Nasreddine et al., 2005). The MMSE is a screening test that follows disease progression over time and screening for cognitive decline in the general population (Hamrick, Hafiz, & Cummings, 2013). Both the instrument assessments are rated on a 30-point scale, take under 12 minutes to administer, are not very detailed oriented, and both are used as an initial screening tool (Cameron, Worrall-Carter, Page, Stewart, & Ski, 2013). The MoCA can be used in a variety of settings from primary care to acute care as well as with culturally diverse populations, a variety of ages, and differing education levels (Nasreddine et al., 2005).

Similar to the MoCA, the MMSE is used most commonly among individuals who have or are experiencing cognitive impairment such as frontotemporal dementia or Alzheimer disease (Freitas, Simões, Alves, Duro, & Santana, 2012). The MMSE is a widely used instrument, however, it encompasses limitations, such as inadequate assessment of executive function, which is an important cognitive domain to assess for MCI (Miranda, Brucki, & Yassuda, 2018). The

MMSE also has susceptibility of relatively easy verbal tasks that do not have the sensitivity to identify subtle language deficits and insufficient items to adequately measure visuospatial and constructional praxis (Cameron et al., 2013). A limitation of the MoCA is its inability to accurately assess performance at various education levels. Research has indicated that an individual with 12 years of education or less tended to have worse performance on the MoCA than those with more than 12 years of education (Nasreddine et. al., 2005).

In a comparison of the MoCA and MMSE, the MoCA was a better cognitive tool than the MMSE for screening and monitoring of MCI in clinical settings (Freitas et al., 2012). Results showed that the MoCA had consistently superior psychometric properties compared to the MMSE, higher diagnostic accuracy to discriminate between MCI, and revealed higher sensitivity to cognitive decline in longitudinal monitoring (Freitas et al., 2012). The MoCA also demonstrated higher test-retest reliability, inclusion of important cognitive domains, better internal consistency, and higher sensitivity in detecting MCI than the MMSE assessment (Cameron et al., 2013; Nasreddine et al., 2005). Although there are a number of possible assessments that can be used for cognitive screening, many researchers have found that the MMSE and MoCA were likely to be used for general cognitive evaluation, but prefer the MoCA over the MMSE based on current evidence (Trzepacz et al., 2015).

Importance of Using Multiple Tools

Cognition is comprised of multiple domains and requires comprehensive assessments to effectively measure cognitive functioning and more specifically, mild cognitive impairment (MCI). Currently, there are no assessments that are comprehensive in the diagnosis of MCI, therefore occupational therapists (OTs) should advocate for the use of multiple tools in assessing cognition. “In routine clinical practice, the clinicians’ goal should be to elicit a broad assessment

of cognitive function within the shortest possible time and to incorporate this information into the diagnostic process“ (Walterfang, Siu, & Velakoulis, 2006, p. 995). Thus, the use of multiple assessments provides primary care practitioners a more accurate diagnosis and basis for intervention planning. The Mini Mental State Examination (MMSE) assessment may not have the ability to distinguish between subtle cognition changes in individuals with MCI, and therefore should be used in conjunction with other assessments (Arevalo-Rodriguez et al., 2015).

Due to the extensive components of cognition, assessments may miss essential domains in diagnosing MCI. It is suggested to use additional tests that include domains such as language, praxis, and executive functioning (Arevalo-Rodriguez et al., 2015). Additionally, some patients with MCI do not experience declines in the memory domain, however they may experience declines in related cognitive domains (Arevalo-Rodriguez et al., 2015). Hence, cognition is a complex construct to encompass in a full measure and should be evaluated through multiple assessments to elicit a broad understanding of the individual’s cognition.

Perceptibly, a single instrument is not adequate for identifying cognition and occupational performance problems associated with MCI. Comparable to the systematic review findings about the unsuitability of the MMSE, supporting data implicated that neither the Short Test of Mental Status (STMS) nor the MMSE should be used as stand alone tests to diagnose MCI (Nasreddine et al., 2005). Considering the two assessments, the STMS was found to have greater sensitivity and provided a better indication of cognitive deficits in individuals who demonstrated normal cognition at baseline and eventually were diagnosed with MCI (Tang-Wai et al., 2003). Some other assessments used in practice, the Cognistat and Rivermead Behavioural Memory Test (RBMT), have moderate validity in the detection of MCI, however are additionally inapt as the tests are not sensitive enough to capture early cognitive impairment (Johansson &

Wressle, 2012). Consequently, even at the earliest stages, multiple screening tests that reveal cognitive impairment are vital in order to assist patients with the occupational performance issues of daily life.

Possible Biases in Assessments

Assessments developed to assess functional cognition and cognitive decline may have an educational bias that could impact how an individual scores. Individuals with a higher education and literacy skills may score higher on a cognitive assessment than those individuals with a lower education (Javadi et al., 2015; Miranda et al., 2018; & Nasreddine et al., 2005). Current cognitive assessments may not be correctly assessing cognitive functions in individuals with lower education and in non-western countries (Javadi et al., 2015; Miranda et al., 2018). According to Javadi et al. (2005), some cognitive assessments may be used inappropriately across multiple backgrounds and in countries with biases to individuals with higher education. Education and literacy level should be taken into consideration when administering a cognitive assessment because many individuals can be at risk of improper diagnosis (Farias et al., 2013; Javadi et al., 2015; & Zhai et al., 2016). Overall, when selecting and administering a cognitive assessment, appropriateness of the assessment to the population or setting in which it is being used is a crucial consideration.

Although some current cognitive assessments have an education bias and may not be tailored to different types of backgrounds and settings, new assessments are being developed to address this issue. The Persian test of Elderly for Assessment of Cognition and Executive function (PEACE) is a new assessment that is tailored to individuals with illiteracy (Javadi et al., 2015). The Cognitive Drug Research Computerized Assessment System and the CogState battery are available in multiple different languages, which can help meet non-English literate

individuals on their level (Snyder et al., 2012). By considering a client's age, education level, and socioeconomic status when assessing their cognitive status, individuals may be better diagnosed and treated (Farias et al., 2013). Therefore, newer cognitive assessments hold promises to address literacy and education level to meet the needs of all populations for proper diagnosis.

Summary and Implications for Practice

Cognition is a multiplex function that plays a key role in overall functioning. A large number of assessments measuring a variety of cognitive domains are available. The primary goal of occupational therapy is to enhance quality of life and enable occupational participation and performance. This highlights the responsibility of occupational therapy practitioners to use multiple appropriate assessments for MCI and functional cognition, as there is no established “gold standard.” This project showed that some patients with MCI do not demonstrate decline in the memory domain, suggesting the importance of testing additional cognitive domains such as attention, functional cognitive domains, executive function, and other domains (Arevalo-Rodriguez et al., 2015). Using multiple evidence-based assessments that measure a variety of cognitive domains and are appropriate for the client allows for a more comprehensive understanding of cognition.

The selection of appropriate assessments is a crucial component in the assessment process. It is important to consider client factors such as age, culture, language, and education and literacy levels when selecting an assessment to administer. It is also important to consider the specific cognitive domains to be measured in assessment. It is useful to measure a variety of cognitive domains that are relevant to the client’s condition and concerns.

Each assessment has strengths and limitations that are important to consider in addition to the appropriateness of the assessment. There are both strength and limitations of the current evidence on assessments for MCI and functional cognition. Functional cognition is a relatively new concept and thus, evidence on functional cognition is still emerging and somewhat limited. Additionally, information provided in systematic and literature reviews of assessments for MCI and functional cognition is time-limited, given that the measures and the literature accompanying

them will change in the coming years (Snyder et al., 2012). The current evidence does not adequately cover the newer cognitive assessments that hold promises to address literacy and education level to meet the needs of various populations.

However, such emerging cognitive assessments also provide a strength for the developing evidence on assessments for MCI and functional cognition. Current evidence also provides useful criteria and information that may be used as a basis for comparison of both existing and emerging cognitive assessments. This is important for future clinical research and practice.

Overall, there are a wide variety of measures available for the assessment of mild cognitive impairment and functional cognition. Emerging assessments hold promise for the further development of clinical research and practice that is useful for all populations and settings. With the wide variety of assessments available and cognitive domains measured, it is important to utilize multiple measures in the assessment process to gain a comprehensive understanding of clients' cognition. Synthesis of our group research findings provided helpful information on assessments for MCI and functional cognition including cognitive domains measured, the common use of the Montreal Cognitive Assessment (MoCA) and the Mini-Mental State Exam (MMSE) in practice, the importance of using multiple assessments, and the appropriateness of assessments for various populations and settings.

Table of EBP Resources

Table 1.

Government and Foundation Resources that Address Mild Cognitive Impairment and Functional Cognition

Title/Name	Brief Description	Source
National Institute of Aging (NIA)	NIA “leads the federal government in conducting and supporting research on aging and the health and well-being of older people” Includes symptoms and diagnosing information	National Institute of Health https://www.nia.nih.gov/health/what-mild-cognitive-impairment
Medline Plus	Mild cognitive impairment summary, diagnosis and tests, prevention and risk factors, statistics and research, journal articles, and patient handouts	https://medlineplus.gov/mildcognitiveimpairment.html
Mayo Clinic	An overview of the condition, symptoms are associated, causes, risk factors, complications, diagnosis, brain imaging, treatments and department and doctors that specialize in the condition	https://www.mayoclinic.org/diseases-conditions/mild-cognitive-impairment/symptoms-causes/syc-20354578
Alzheimer’s Association	Described as, “the leading voluntary health organization in Alzheimer's care, support and research.” Includes symptoms, diagnosis, causes and risks, and treatment of MCI	https://www.alz.org/alzheimers-dementia/what-is-dementia/related_conditions/mild-cognitive-impairment
Centers for Disease Control (CDC)	Includes data and statistics, resources and publications, and other health information related to aging and cognition	https://www.cdc.gov/aging/index.html

Table 2.

Occupational Therapy Resources that Address Mild Cognitive Impairment and Functional Cognition

Title/Name	Brief Description	Source
Occupational Therapy's Role in Adult Cognitive Disorders	Functional cognition is the interaction of cognitive skills and self-care, and community living skills needed for complex tasks. Impairments can result from multiple causes, such as, genetics, neurologic conditions, mental illness or stress. Occupational therapists use various approaches	www.aota.org/Advocacy-Policy/Federal-Reg-Affairs/Medicare/Guidance/role-OT-assessing-functional-cognition.aspx
Role of Occupational Therapy in Assessing Functional Cognition	It is important to assess one's functional cognition (FC) to determine an individual's safety during participation in ADLs. FC is assessed using performance based testing (PBT). FC assessments using PBT assists OTs in determining the proper assistive technology and/or adaptations needed to support a client's functionality in treatment, discharge, and personal environments.	www.aota.org/Advocacy-Policy/Federal-Reg-Affairs/Medicare/Guidance/role-OT-assessing-functional-cognition.aspx
Returning to Work with Cognitive Impairments	Individuals can make a full recovery, but can also be left with mild cognitive impairments that affect their work occupations such as processing information, organization and maintaining a reasonable attention span. Analyzing the role of occupational therapy can help individuals with mild cognitive impairment address the deficits that the individual may be experiencing.	https://www.aota.org/About-Occupational-Therapy/Professionals/MH/Cognitive-Impairments.aspx
Functional Cognition	"Cognition is a factor that supports or limits full participation in meaningful life activities, compromises health and well-being for individuals with diverse conditions. Functional cognition may influence safety, caregiver burden, and resource utilization as well as performance in everyday activities."	www.aotf.org/About-AOTF/Research-Priorities/functionalcognition
Occupational Therapists' Functional Cognition Advantage	Occupational therapy has a unique approach, using performance-based testing (PBT). OT's focus primarily on successes in performance, problem-solving, and reasoning skills in functional behavior. Functional cognition is reforming the health care system because it identifies the clients that need assistance in supporting themselves. OT's give clients sufficient strategies for self-care management.	https://www.aota.org/publications-news/otp/archive/2017/03-27-17-storytelling/functional-cognition-advantage.aspx

Table 3.

Interdisciplinary Journals, Databases, Professional Associations that Address Mild Cognitive Impairment and Functional Cognition

Title/Name	Brief Description	Source
Alzheimer's Association	Mild Cognitive Impairment Includes description such as about, symptoms, diagnosis, causes and risks, and treatment.	https://www.alz.org/alzheimers-dementia/what-is-dementia/related-conditions/mild-cognitive-impairment
The New England Journal of Medicine	Multiple peer-reviewed articles related to mild cognitive impairment.	https://www.nejm.org/search?q=mild+cognitive+impairment&asug=mild+cognitive+impairment
Mayo Clinic Proceedings	Mild Cognitive Impairment and Mild Dementia: A Clinical Perspective Includes multiple peer-reviewed journals related to mild cognitive impairment and different types of assessments that can be used to measure performance. An individual with MCI may be unaware that they have a cognitive impairment. Assessments can help diagnose the individual.	https://www.mayoclinicproceedings.org/article/S0025-6196(14)00622-3/fulltext
British Pharmacological Society	Multiple peer-reviewed articles relating functional cognition with pharmacology and neurological functions.	https://bpspubs.onlinelibrary.wiley.com/action/doSearch?AllField=functional+cognition
The American Journal of Psychiatry	Performance-Based Measures of Everyday Function in Mild Cognitive Impairment Includes peer-reviewed journals and articles relating to studies conducted on measuring performance of individuals with MCI. A study conducted on a group of individuals with MCI performing everyday functions. This study measured the individual's cognition and functional tasks.	https://doi.org/10.1176/appi.ajp.2010.09050692

References

- American Occupational Therapy Association. (2019). Role of occupational therapy in assessing functional cognition. Retrieved from <https://www.aota.org/Advocacy-Policy/Federal-Reg-Affairs/Medicare/Guidance/role-OT-assessing-functional-cognition.aspx>
- Arevalo-Rodriguez, I., Smailagic, N., Roque I Figuls, M., Ciapponi, A., Sanchez-Perez, E., Giannakou, A., . . . Cullum, S. (2015). Mini-Mental State Examination (MMSE) for the detection of Alzheimer's disease and other dementias in people with mild cognitive impairment (MCI). *Cochrane Database of Systematic Reviews*, 3, 1-74. DOI: 10.1002/14651858.CD010783.pub2.
- Asuman Kiyak, H., Teri, L., & Borson, S. (1994). Physical and functional health assessment in normal and aging in Alzheimer's disease: Self-report vs. family reports. *The Gerontologist*, 31(3), 324-331. Doi:10.1093/geront/34.3.324
- Breitner, J. (2014). Mild cognitive impairment and progression to dementia. *Neurology*, 82(4), e34-e35. doi: 10.1212/WNL.0000000000000158
- Belchior, P. , Korner-Bitensky, N. , Holmes, M. and Robert, A. (2015). Identification and assessment of functional performance in mild cognitive impairment: A survey of occupational therapy practices. *Australian Occupational Therapy Journal*, 62, 187-196. doi:10.1111/1440-1630.12201
- Burns, T., & Haertl, K. (2018). Cognitive Performance Test: Practical applications and evidence-based use. *SIS Quarterly Practice Connections*, 3(4), 17-19.
- Cameron, J., Worrall-Carter, L., Page, K., Stewart, S., & Ski, C. F. (2013). Screening for mild cognitive impairment in patients with heart failure: Montreal Cognitive Assessment versus Mini-Mental State Exam. *European Journal of Cardiovascular Nursing*, 12(3),

252-260. <https://doi.org/10.1177/1474515111435606>

Can, S. S., Genay-Can, A., & Gunendi, Z. (2011). Validity and reliability of the clock drawing test as a screening tool for cognitive impairment in patients with fibromyalgia.

Comprehensive Psychiatry, 53(1), 81-86. doi:10.1016/j.comppsy.2011.02.001

Chu, Y., Lai, M. H. C., Xu, Y., & Zhou, Y. (2012). Test review: Advanced clinical solutions for WAIS-IV and WMS-IV. *Journal of Psychoeducational Assessment*, 30(5), 520–524.

Ciro, C. A., Anderson, M. P., Hershey, L. A., Prodan, C. I., & Holm, M. B. (2015). Instrumental activities of daily living performance and role satisfaction in people with and without mild cognitive impairment: a pilot project. *The American Journal of Occupational Therapy*, 69(3), doi:6903270020p1-10.

Cornelis, E., Gorus, E., Beyer, I., Bautmans, I., & De Vriendt, P. (2017) Early diagnosis of mild cognitive impairment and mild dementia through basic and instrumental activities of daily living: Development of a new evaluation tool. *PLOS Medicine*, 14(3).

<https://doi.org/10.1371/journal.pmed.1002250>

Cullen, B., O'Neill, B., Evans, J. J., Coen, R. F., & Lawlor, B. A. (2006). A review of screening tests for cognitive impairment. *Journal of Neurology, Neurosurgery, and Psychiatry*, 78(8), 790-799. doi: 10.1136/jnnp.2006.095414

De Yébenes, M. J., Otero, A., Zunzunegui, M. V., Rodríguez-Laso, A., & Sánchez-Sánchez, F. (2003). Validation of a short cognitive tool for the screening of dementia in elderly people with low educational level. *International Journal of Geriatric Psychiatry*, 18(10), 925-936. doi:10.1002/gps.947

Giles, G. M. and Wolf, T. (2017). Occupational therapists' functional cognition advantage. *OT Practice*, 22(5), 12–15.

- Gold, D. (2012). An examination of instrumental activities of daily living assessment in older adults and mild cognitive impairment. *Journal of Clinical and Experimental Neuropsychology*, *34*(1), 11-34. doi:10.1080/13803395.2011.614598
- Goldberg, T. E., Koppel, J., Keehlisen, L., Christen, E., Dreses-Werringloer, U., Conejero-Goldberg, C., . . . Davies, P. (2010). Performance-based measures of everyday function in mild cognitive impairment. *The American Journal of Psychiatry*, *167*(7), 845-53. doi: 10.1176/appi.ajp.2010.09050692
- Griffith, H.R., Belue, K., Sicola, A., Kryzwanski, S., Zamrini, E., Harrell, L., & Marson, D.C. (2003). Impaired financial abilities in mild cognitive impairment: A direct assessment approach. *Neurology*, *60*(3), 449-457. doi: 10.1212/WNL.60.3.449
- Hudson, C. & Belleville, S., & Gauthier, S. (2009). The assessment of recognition memory using the remember/know procedure in amnesic mild cognitive impairment and probable Alzheimer's disease. *Brain and Cognition*, *70*(1), 171-179. doi:10.1016/j.bandc.2009/01.009
- Farias, S. T., Park, L. Q., Harvey, D. J., Simon, C., Reed, B. R., Carmichael, O., & Mungas, D. (2013). Everyday cognition in older adults: Associations with neuropsychological performance and structural brain imaging. *Journal of the International Neuropsychological Society*, *19*(4), 430-441. doi: 10.1017/S1355617712001609
- Freitas, S., R., M., Alves, L., Duro, D., & Santana, I. (2012). Montreal Cognitive Assessment (MoCA): Validation study for mild cognitive impairment and Alzheimer disease. *Journal of Alzheimer Disease & Associated Disorders*, *25*(3), 146-154. <https://doi.org/10.1177/0891988712455235>

- Fleming, V. B. (2014). Early detection of cognitive-linguistic change associated with mild cognitive impairment. *Communication Disorders Quarterly*, 35, 146–157.
- Fuh, J.L., Teng, E.L., Lin, K.N., Larson, E.B., Wang, S.J., Liu, C.Y., Chou, P., Kuo, B.I., Liu, H.C. (1995). Informant questionnaire on cognitive decline in the elderly (IQCODE) for assessing the severity of dementia in patients with Alzheimer's disease. *Neurology*, 45(1). 92-96. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/7824143/>
- Hamrick, I., Hafiz, R., & Cummings, D. M. (2013). Use of days of the week in a modified Mini-Mental State Exam (M-MMSE) for detecting geriatric cognitive impairment. *Journal of the American Board of Family Medicine*, 26(4), 429-435.
doi:10.3122/jabfm.2013.04.120300
- Javadi, P. S., Zendehbad, A., Darabi, F., Khosravifar, S., & Noroozian, M. (2015). Development and implementation of Persian test of Elderly for Assessment of Cognition and Executive function (PEACE). *Electronic Physician*, 7(7), 1549-1556. doi:10.19082/1549
- Johansson, M. & Wressle, E. (2012). Validation of the neurobehavioral cognitive status examination and the Rivermead Behavioural Memory Test in investigations of dementia. *Scandinavian Journal of Occupational Therapy*, 19(3), 282-287. doi: 10.3109/11038128.2010.528789
- Karmali, S., Hagstrom, L., Mah, K., Mishima, G., & Seminary, J. (2018). Functional cognitive assessment and intervention in acute care. *SIS Quarterly Practice Connections*, 3(4), 21–23.
- Kirova A., Bays R. B., & Lagalwar S.. (2015). Working memory and executive function decline across normal aging, mild cognitive impairment, and Alzheimer's disease. *BioMed Research International*, 2015, 1-9. doi:10.1155/2015/748212

- Kizony, R., Demayo-Dayan, T., Sinoff, G., & Josman, N. (2011). Validation of the Executive Function Route-Finding Task (EFRT) in people with mild cognitive impairment. *Occupation, Participation, and Health, 3*(1), S47-S52. <https://doi.org/10.3928/15394492-20101108-08>
- Knopman, D. S. & Petersen, R. C. (2014). Mild cognitive impairment and mild dementia: A clinical perspective. *Mayo Clinic Proceedings, 89*(10), 1452-1459. <https://doi.org/10.1016/j.mayocp.2014.06.019>
- Lee, J., Lee, D. W., Cho, S., Na, D. L., Jeon, H. J., Kim, S., . . . Cho, M. J. (2008). Brief screening for mild cognitive impairment in elderly outpatient clinic: Validation of the Korean version of the Montreal Cognitive Assessment. *Journal of Geriatric Psychiatry and Neurology, 21*(2), 104-110. doi:10.1177/0891988708316855
- Malek-Ahmadi, M., Davis, K., Belden, C. M., Jacobson, S., & Sabbagh, M. N. (2012). Informant-reported cognitive symptoms that predict amnesic mild cognitive impairment. *BMC Geriatrics, 12*(3), 1-6. <https://doi.org/10.1186/1471-2318-12-3>
- Mayo Clinic. (2019). *Mild cognitive impairment*. Retrieved from <https://www.mayoclinic.org/diseases-conditions/mild-cognitive-impairment/symptoms-causes/syc-20354578>
- Medline Plus. (2019). *Mild cognitive impairment*. Retrieved from <https://medlineplus.gov/mildcognitiveimpairment.html>
- Miranda, D., Brucki, S., & Yassuda, M. S. (2018). The Mini-Addenbrooke's Cognitive Examination (M-ACE) as a brief cognitive screening instrument in mild cognitive impairment and mild Alzheimer's disease. *Dementia & Neuropsychologia, 12*(4), 368-373. doi: 10.1590/1980-57642018dn12-040005

My Brain Test. (2018). About Alzheimer's, dementia, mild cognitive impairment. Retrieved from <https://www.mybraintest.org/about-alzheimers-dementia-mild-cognitive-impairment/>

Nasreddine, Z. S., Phillips, N. A., Bédirian, V., Charbonneau, S., Whitehead, V., Collin, I., . . . Chertkow, H. (2005). The Montreal Cognitive Assessment, MoCA: A brief screening tool for mild cognitive impairment. *Journal of the American Geriatrics Society*, 53(4), 695-699. <https://doi.org/10.1111/j.1532-5415.2005.53221.x>

National Institute on Aging. (2017). What is mild cognitive impairment? Retrieved from <https://www.nia.nih.gov/health/topics/mild-cognitive-impairment>

Petersen, R. C. (2004). Mild cognitive impairment as a diagnostic entity. *Journal of Internal Medicine*, 256, 183-194. doi:10.1111/j.1365-2796.2004.01388.x

Petersen, R. C., Stevens, J.C., Ganguli, M., Tangalos, E. G., Cummings, J.L., DeKosky, S. T. (2001). Practice parameter: Early detection of dementia: mild cognitive impairment (an evidence-based review). *Neurology*, 56 (9) 1133-1142; doi: 10.1212/WNL.56.9.1133

Plancher, G., Tirard, A., Gyselinck, V. (2012). Using virtual reality to characterize episodic memory profiles in amnesic mild cognitive impairment and Alzheimer's disease: Influence of active and passive encoding. *Neuropsychologia*, 50(5), 592-602. doi:10.1016/j.neuropsychologia.2011.12.013

Robert, P.H., Clairet, S., Benoit, M., Koutaich, J., Bertogliati, C., Tible, O., Caci, H., Borg, M., Brocker, P., & Bedoucha, P. (2002). The Apathy Inventory: Assessment of apathy and awareness in Alzheimer's disease, Parkinson's disease, and mild cognitive impairment. *International Journal of Geriatric Psychiatry*, 17(12). doi:10.1002/gps.755

Rogers, J. C., Holm, M. B., Chisholm, D. (2016). Performance assessment of self-care skills.

Retrieved from <https://www.shrs.pitt.edu/ot/about/performance-assessment-self-care-skills-pass>

Scharre, D. W., Chang, S. I., Nagaraja, H. N., Vrettos, N. E., & Bornstein, R. A. (2017).

Digitally translated Self-Administered Gerocognitive Examination (eSAGE): Relationship with its validated paper version, neuropsychological evaluations, and clinical assessments. *Alzheimer's Research & Therapy*, 9(1), 44. doi:10.1186/s13195-017-0269-3

Siedlecki, K. L., Honig, L. S., & Stern, Y. (2008). Exploring the structure of a

neuropsychological battery across healthy elders and those with questionable dementia and Alzheimer's disease. *Neuropsychology*, 22(3), 400-411.

Smith, T., Gildeh, N., & Holmes, C. (2007). The Montreal Cognitive Assessment: Validity and utility in a memory clinic setting. *The Canadian Journal of Psychiatry*, 52(5), 329-332.

<https://doi.org/10.1177/070674370705200508>

Snyder, P. J., Jackson, C. E., Petersen, R. C., Khachaturian, A. S., Kaye, J., Albert, M. S., &

Weintraub, S. (2011). Assessment of cognition in mild cognitive impairment: A comparative study. *Alzheimer's & Dementia*, 7(3), 338-355.

doi:10.1016/j.jalz.2011.03.009

Tang-Wai, D.F., Knopman, D.S., Geda, Y.E., Edland, S.D., Smith, G., Ivnik, R.J.,...Petersen,

R.C. (2003). Comparison of the Short Test of Mental Status and the Mini-Mental State Examination in mild cognitive impairment. *Archives of Neurology*, 60(12), 1777-1781.

doi:10.1001/archneur.60.12.1777

Tombaugh, T.N. & McIntyre, N.J. (1992). The Mini-Mental State Examination: A

comprehensive review. *Journal of the American Geriatrics Society*, 40(9), 922-935.

<https://doi.org/10.1111/j.1532-5415.1992.tb01992.x>

- Trzepacz, P. T., Hochstetler, H., Wang, S., Walker, B., Saykin, A. J., Alzheimer's Disease Neuroimaging Initiative (2015). Relationship between the Montreal Cognitive Assessment and Mini-mental State Examination for assessment of mild cognitive impairment in older adults. *BMC Geriatrics*, *15*, 107. doi:10.1186/s12877-015-0103-3
- Walterfang, M., Siu, R., & Velakoulis, D. (2006). The NUCOG: Validity and reliability of a brief cognitive screening tool in neuropsychiatric patients. *Australian and New Zealand Journal of Psychiatry*, *40*(11-12), 995-1002. doi:10.1080/j.1440-1614.2006.01923.x
- Zhai, Y., Chao, Q., Li, H., Wang, B., Xu, R., Wang, N., . . . Wang, X., (2016). Correction: application and revision of Montreal Cognitive Assessment in China's military retirees with mild cognitive impairment. *Plos One*, *11*(2), 1-2.
<https://doi.org/10.1371/journal.pone.0149825>
- Zygouris, S., Giakoumis, D., Votis, K., Doumpoulakis, S., Ntovas, K., Segkouli, S., Tsolaki, M. (2015). Can a virtual reality cognitive training application fulfill a dual role? Using the virtual supermarket cognitive training application as a screening tool for mild cognitive impairment. *Journal of Alzheimer's Disease*, *44*(4), 1333-1347. doi:10.3233/JAD-141260

Appendix A. Initial Appraisals

Type of article	Overall Type: Primary research study Specific Type: Descriptive prevalence
APA Reference	Zhai, Y., Chao, Q., Li, H., Wang, B., Xu, R., Wang, N., . . . Wang, X., (2016). Correction: Application and revision of Montreal Cognitive Assessment in China's military retirees with Mild Cognitive Impairment. <i>Plos One</i> , 11(2), 1-2.
Abstract	<p>Objective: In an effort to accommodate MOCA to better fit for the Chinese context, this study was designed to employ the MOCA criteria to screen mild cognitive impairment (MCI) and analyze associated risk factors in military retirees.</p> <p>Methods: Three hundred and four retired military cadres were recruited using a random cluster sampling technique with information collected including personal, prevalence, MOCA scale, and related neuropsychiatry scale. Thirty retirees were randomly chosen to be further analyzed one month later using the revised MOCA scale.</p> <p>Results: Our data indicated an incidence rate of 64.8% for mild cognitive impairment in retired military cadres. The incidence rate for MCI was significantly higher in those aged 80 or above compared with those 80 years of age or younger ($P<0.05$). The incidence rate of MCI was significantly higher in those with fewer than 6 years of education compared with those with over 7 years of education ($P<0.05$). The MCI incidence was higher for those with little exercise than those taking regular exercise ($P<0.01$). Moreover, the MCI incidence was higher in stroke patients than those who never had a stroke episode ($P<0.05$). ② There was a significant correlation between MOCA and MMSE scale scores ($r = 0.81$). MOCA scale scores were negatively correlated with ADL and CES-D scores (although not PSQI scores). ③ MOCA recension Cronbach's alpha value was 0.862. The related coefficient of MOCA and MOCA recension was 0.878($P<0.01$). When the Score of cut-off -point of the MOCA recension was 28, the area in ROC curve analyses was 0.859, as well as the largest area.</p> <p>Conclusion: Retired cadres exhibited a greater incidence of MCI (than general population), which was closely associated with age, level of education and physical exercise and cerebral apoplexy. Revised MOCA scale displays a better validity and reaction degree of reliability and is more suitable for screening and diagnosis of MCI in the elderly in China." (p. 1-2)</p>
Author	<p>Credentials: not reported</p> <p>Position and Institution: Department of Geriatrics, Xijing Hospital, Fourth Military Medical University. Xi'an, Shaanxi, China.</p> <p>Publication History in Peer-Reviewed Journals: <i>extensive</i></p>
Publication	<p>Type of publication: Scholarly peer-reviewed journal</p> <p>Publisher: PLOS one</p> <p>Other: Supported by the National Natural Science Foundation of China and National Department Public Benefit Research Foundation by Ministry of Health P. R. China</p>
Date and Citation History	<p>2016</p> <p>Google Scholar cited by: 2</p>
Research Question	"This study was designed to employ MOCA to examine mild cognitive impairment and to analyze related epidemiological risk factors in Xi'an retired military cadres." (p. 3).
Author's Conclusion	"...this study uncovers the MCI prevalence of retired military cadres in Chinese, indicates a great reliability and validity with the revised MOCA which can be used as an initial screening tool for MCI as well as popularized in different areas and larger population in China further." (p. 10)
Overall Relevance EBP Research Question	<p>Overall Relevance to Research Question: moderate</p> <p>Research question: Distributed MOCA to retired military cadres and directly examined the different epidemiological risk factors associated with that specific population.</p>
Overall Quality of Article	<p>Overall Quality of Article: Good</p> <p>Established author, reputable publisher, and published within the last 5 years. The article has not been cited very many times, however it is a new article.</p>

Type of article	Overall Type: Primary research study Specific Type: Psychometric research study
APA Reference	Can, S. S., Genay-Can, A., & Gunendi, Z. (2011). Validity and reliability of the clock drawing test as a screening tool for cognitive impairment in patients with fibromyalgia. <i>Comprehensive Psychiatry</i> , 53(1), 81-86. doi:10.1016/j.comppsy.2011.02.001
Abstract	<p>Objective: The objective of the study was to assess the validity and reliability of the clock drawing test (CDT) in comparison with the Mini- Mental State Examination (MMSE) as a screening tool for cognitive impairment in patients with fibromyalgia (FM).</p> <p>Methods: Fifty female patients with FM and 51 healthy female controls were enrolled in the study. Cognitive functioning of the subjects was evaluated by the CDT and the MMSE. Each CDT was scored according to 3 different clock scoring methods (Shulman, Sunderland, and Watson). Two experienced clinicians scored the CDTs to evaluate the interrater reliability. Validity, sensitivity, specificity, and predictive accuracy of each clock scoring method were analyzed.</p> <p>Results: The Shulman score had the highest correlation with the MMSE score ($r = 0.65$, $P = .01$). The Shulman and Sunderland methods had significantly the largest areas under the receiver operating characteristic curve (0.82 and 0.81, respectively; $P = .000$). They also had the highest sensitivity (68.8% and 65.5%, respectively) and specificity (84.2%, and 84.1%, respectively). The interrater correlation coefficients were high for all 3 clock scoring methods.</p> <p>Conclusion: The CDT has been proven to be a valid and reliable tool for screening cognitive impairment in FM patients. The Shulman or Sunderland scoring methods are more appropriate than the Watson scoring method. Further studies are needed for using the CDT to detect cognitive impairment in patients with FM. (p. 81)</p>
Author	Department of Psychiatry, Kahramanmaraş State Hospital, Turkey. Can, S.S. – 15 published articles Genay-Can, A. – 6 published articles Gunendi, Z. – 27 published articles
Publication	Type of publication: Validation Study Publisher: Comprehensive Psychiatry Other: open access; peer-reviewed journal
Date and Citation History	2011 Google Scholar Cited By: 26
Stated Purpose or Research Question	“The aim of the study was to assess the validity and reliability of the CDT in comparison with the MMSE as a screening tool for cognitive impairment in patients with FM.” (p.82)
Author’s Conclusion	“In the present study, the CDT has been proven to be valid and reliable to detect the presence of cognitive decline in FM patients. The Shulman or Sunderland clock scoring methods were found to be more appropriate than the Watson scoring method.” (p. 85)
Overall Relevance to PICO	Overall Relevance to PICO: Moderate Relevance PICO: Directly related to the outcome of executive function measures, but targeted to a specific population, fibromyalgia than in relation to the general population.
Overall Quality	Overall Quality of Article: Fair Quality More recently published authors. Reputable journal and publisher. Publication within last 10 years. Compared to a reputable cognitive assessment.

Type of article	Overall Type: Primary research study Specific Type: Psychometric research study
APA Reference	Walterfang, M., Siu, R., & Velakoulis, D. (2006). The NUCOG: Validity and reliability of a brief cognitive screening tool in neuropsychiatric patients. <i>Australian and New Zealand Journal of Psychiatry</i> , 40(11-12), 995-1002. doi:10.1080/j.1440-1614.2006.01923.x
Abstract	<p>Objectives: To examine the validity and reliability of a brief cognitive screen instrument, the Neuropsychiatry Unit Cognitive Assessment Tool (NUCOG), in patients with dementia, major psychiatric disorders and neurological disorders, and to compare its performance with the Mini-Mental State Examination (MMSE).</p> <p>Method: The NUCOG was undertaken with the MMSE on a total of 347 individuals, with 82 subjects in the control group and 265 in the patient group. The patient group consisted of patients with dementia (n = 65), non-dementing neurological disorders (n = 44) and psychiatric illness (n = 156). The patient group was further broken into subgroups of dementing and psychiatric disorders for further analysis. A subgroup of patients (n = 22) underwent detailed neuropsychological testing.</p> <p>Results: The NUCOG and MMSE scores, which correlated strongly, were highest in the control group, and lowest in the dementia group, with psychiatric and neurological patients scoring similarly. Internal consistency and reliability were high. Scores were significantly affected by age and years of education. The NUCOG differentiated the four broad groups and the dementia subgroups more strongly than the MMSE. The NUCOG subscale scores correlated strongly with most neuropsychological subtests undertaken. At a cut-off score of 80/100, sensitivity of the NUCOG for detection of dementia was 0.84 and specificity 0.86.</p> <p>Conclusions: The NUCOG is a valid and reliable cognitive tool that is sensitive and specific for the detection of dementia. The NUCOG was able to differentiate dementia and psychiatric subgroups which were not able to be discriminated on MMSE scores. The NUCOG appears to be a well-tolerated, reliable and highly useful clinical tool that offers benefits over and above the MMSE.” (p. 995)</p>
Author	Neuropsychiatry Unit, Royal Melbourne Hospital, Parkville, Victoria, Australia. Walterfang, M. – 142 published articles Siu, R. – 51 published articles Velakoulis, D. – 276 published articles
Publication	Type of publication: Research Study Publisher: Australian and New Zealand Journal of Psychiatry Other: Sage Journals recognized, member of the Committee on Publication Ethics (COPE)
Date and Citation History	2006 Google Scholar Cited By: 58
Stated Purpose or Research Question	“When initially piloted the NUCOG was shown to have high face validity, to correlate with MMSE scores and to provide significant scoring differences between patients with dementia and those without dementia [5]. The current study reports our further experience with the NUCOG and its psychometric properties in a larger group of patients, together with data regarding the performance of control subjects on the tool.” (p. 996)
Author’s Conclusion	“The NUCOG has been conceptualized and developed as a tool which slots into the routine clinical assessment of patients and which contributes to the diagnostic process, rather than a diagnostic tool in itself (Box). Despite a wealth of attempts to develop a quick diagnostic cognitive tool, the reality remains that clinical diagnosis must be based on a multiple sources of evidence from the history, the mental state examination, the physical examination and the results of investigations.” (p. 1001)
Overall Relevance to PICO	Overall Relevance to PICO: Moderate Relevance PICO: Directly related to the outcome of executive function measures, but targeted to a specific populations, such as patients with dementia, major psychiatric disorders and neurological disorders, as compared to the general population referenced in our EBP question.
Overall Quality	Overall Quality of Article: Fair Quality More recently published authors. Reputable journal and publisher. Publication within last 13 years, compared to a reputable cognitive assessment.

Type of article	Overall Type: Primary research study Specific Type: Psychometric research study
APA Reference	De Yébenes, M. J., Otero, A., Zunzunegui, M. V., Rodríguez-Laso, A., & Sánchez-Sánchez, F. (2003). Validation of a short cognitive tool for the screening of dementia in elderly people with low educational level. <i>International Journal of Geriatric Psychiatry</i> , 18(10), 925-936. doi:10.1002/gps.947
Abstract	<p>“AIM: To validate the 'Prueba Cognitiva de Leganés' (PCL) as a screening tool for cognitive impairment in elderly people with little formal education.</p> <p>METHODS: The PCL is a simple cognitive test with 32 items that includes two scores of orientation and memory and a global score of 0-32 points. It was applied to a population sample of 527 elderly people over 70 with low educational level, who were independently diagnosed by consensus between two neurologists as having normal cognitive function, age associated cognitive decline (AACD, IPA-OMS criteria) or dementia (DSM-IV criteria). Individuals with severe visual or hearing defects and those who rejected the exam were excluded from the study. The PCL was validated in a sample of 375 individuals: 300 normal, 42 with AACD and 33 with dementia. The sensitivity, specificity, accuracy and likelihood ratios, as well as the ROC curves for dementia and for AACD-dementia, were calculated. The confounding effect of sociodemographic variables was assessed by logistic regression analysis and convergent validity by partial correlations of the PCL with other cognitive tests. Inter-rater reliability was evaluated with the intraclass correlation coefficient.</p> <p>RESULTS: The PCL identified dementia (cut-off < or =22) and AACD-dementia (cut-off < or =26), with the following diagnostic parameters, respectively: sensitivity 93.9%-80%, specificity 94.7%-84.3%, positive likelihood ratio 17.8-5.1, negative likelihood ratio 0.06-0.24, and accuracy 94.6%-83.4%. The areas under the ROC curve were 0.985 (95% Confidence Intervals (CI) 0.967-0.995) and 0.904 (95% CI: 0.870-0.932) respectively. The intraclass correlation coefficient was 0.79 (0.74-0.83).</p> <p>CONCLUSION: The PCL is a simple instrument, which is both valid and reliable, for the screening of dementia in population samples of individuals with low educational level. This instrument could be useful in primary health care.” (p. 925)</p>
Author	De Yébenes, M.J. – 5 published articles Otero, A. – 6 published articles Zunzunegui, M. V. – 340 published articles Rodríguez-Laso, A. – 28 published articles Sanchez-Sanchez, F. – 62 published articles Del Ser, T. – 96 published articles
Publication	Type of publication: Validation Study Publisher: International Journal of Geriatric Psychology Other: Peer-reviewed medical journal
Date and Citation History	2003 Google Scholar Cited By: 133
Stated Purpose or Research Question	“To validate the 'Prueba Cognitiva de Leganés' (PCL) as a screening tool for cognitive impairment in elderly people with little formal education.” (Abstract, no PDF available)
Author’s Conclusion	“The PCL is a simple instrument, which is both valid and reliable, for the screening of dementia in population samples of individuals with low educational level. This instrument could be useful in primary health care.” (Abstract, no PDF available)
Overall Relevance to PICO	Overall Relevance to PICO: Moderate Relevance PICO: Study relates to mild cognitive impairment, focused on specific population, Spanish assessment.
Overall Quality	Overall Quality of Article: Fair Quality One author had over 300 publications, however other authors had significantly less. Peer-reviewed journal. Publication within last 16 years.

Type of article	Overall Type: Primary research study Specific Type: Psychometric research study
APA Reference	Fuh, J.L., Teng, E.L., Lin, K.N., Larson, E.B., Wang, S.J., Liu, C.Y., Chou, P., Kuo, B.I., Liu, H.C. (1995). Informant questionnaire on cognitive decline in the elderly (IQCODE) for assessing the severity of dementia in patients with Alzheimer's disease. <i>Neurology</i> , 45(1). 92-96.
Abstract	“The Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE) provides ratings of an individual's changes in everyday cognitive functions during the previous 10 years. Original studies conducted in Australia showed that its score was not influenced by the subjects' educational backgrounds and that it performed at least as well as the Mini-Mental State Examination (MMSE) as a screening instrument for dementia. The subjects of the present study were Chinese and included 399 community residents and 61 dementia patients. Their ages ranged from 50 to 92 years; their education levels ranged from 0 to 19 years, and 63% of them had never attended school. We administered the IQCODE to informants and the Cognitive Abilities Screening Instrument (CASI), from which a CASI-estimated score of the MMSE (MMSE-CE) can be obtained, to the subjects. The diagnosis of dementia was made independently by physicians according to the DSM-III-R criteria based on semi-structured interview and testing, neurologic examination, and standardized assessments of cerebral vascular disease, Parkinson's disease, and depression. The Chinese IQCODE showed no association with the subjects' education level or gender, low association with their age, and moderately high association with their MMSE-CE score. The area under the receiver operating characteristic curve of the IQCODE was significantly larger than that of the MMSE-CE for the whole group and for the subgroup with 1 to 19 years of education but not for the subgroup with 0 years of education. Nine of the 26 items of the IQCODE could be deleted without appreciable reduction in sensitivity and specificity. The IQCODE (1) can be shortened to 17 items, (2) had good cross-cultural applicability, and (3) was better than the MMSE-CE as a screening tool for dementia in a population with large variation in educational backgrounds.” (p. 92)
Author	Neurological Institute, Veterans General Hospital, Taipei, Taiwan, Republic of China. Not able to find published articles by researchers.
Publication	Type of publication: clinical trial, comparative study Publisher: Neurology Other: Official journal of the American Academy of Neurology. <i>Neurology</i> is indexed in MEDLINE/Pubmed, Embase, Scopus, Biological Abstracts®, PsycINFO®, Current Contents®, Web of Science®, CrossRef, and Google Scholar. Funded articles are indexed in PMC. Peer reviewed.
Date and Citation History	1995 Google Scholar Cited By: 152
Stated Purpose or Research Question	“The Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE) provides ratings of an individual's changes in everyday cognitive functions during the previous 10 years. Original studies conducted in Australia showed that its score was not influenced by the subjects' educational backgrounds and that it performed at least as well as the Mini-Mental State Examination (MMSE) as a screening instrument for dementia.” (Abstract, no PDF available)
Author's Conclusion	“The IQCODE (1) can be shortened to 17 items, (2) had good cross-cultural applicability, and (3) was better than the MMSE-CE as a screening tool for dementia in a population with large variation in educational backgrounds.” (Abstract, no PDF available)
Overall Relevance to PICO	Overall Relevance to PICO: Moderate Relevance PICO: Study relates to mild cognitive impairment, focused on specific population in Australian
Overall Quality	Overall Quality of Article: Good Quality Unable to find authors previous publications, journal was reputable, use of valid measurement tool for comparison, focuses on condition related to EBP question.

Type of article	Overall Type: Primary research study Specific Type: Psychometric research study
APA Reference	Hamrick, I., Hafiz, R., & Cummings, D. M. (2013). Use of days of the week in a Modified Mini-Mental State Exam (M-MMSE) for detecting geriatric cognitive impairment. <i>Journal of the American Board of Family Medicine</i> , 26(4), 429-435. doi:10.3122/jabfm.2013.04.120300
Abstract	<p>“Purpose: The purpose of this study was to compare a modified version of the Mini-Mental State Examination (MMSE) with the standard MMSE and the Mini-Cog in patients >65 years old, stratified by education and literacy level. Method: This cross-sectional exploratory study enrolled a convenience sample of 219 patients with a complaint of memory loss or a diagnosis of dementia from a geriatric outpatient clinic, nursing home, senior center, and university hospital. The MMSE was administered, and in addition to spelling and serial 7s backward, patients were asked to recite the days of the week backward with the intent to reduce educational bias. Scores on the modified MMSE were compared with scores of the MMSE and the MiniCog.</p> <p>Results: Of the 219 patients, 157 were identified with cognitive impairment by the Mini-Cog. Using a cutoff of ≤ 23, the MMSE identified 118 patients and the modified MMSE identified 91 patients with cognitive impairment, and with a cutoff of ≤ 27 the MMSE identified 168 and the modified MMSE 149 patients. All cognitively intact subjects correctly recited the days of the week backward. Specificity of the modified MMSE was higher than the MMSE for most groups. The highest sensitivity and specificity (94% and 88%, respectively) as well as positive and negative predictive values (96% and 81%, respectively) were in patients with low levels of education for the modified MMSE using a cut off of ≤ 27.</p> <p>Conclusion: Using the days of the week in the MMSE among illiterate and semiliterate participants and with education less than high school, and using a cutoff of 27 of 30, correlates better with Mini-Cog for dementia screening, with fewer false positives.” (p. 429)</p>
Author	Hamrick, I., MD, CMD, FAAFP – 16 publications Hafiz, R., MD – 2 publications Cummings, D. M., PharmD, FCP, FCCP – 110 publications
Publication	Type of publication: Research Article Publisher: Journal of the American Board of Family Medicine Other: Official peer-reviewed journal of the American Board of Family Medicine (ABFM), Free-access journal
Date and Citation History	2013 Google Scholar Cited By: 11
Stated Purpose or Research Question	“The purpose of this study was to compare a modified version of the Mini-Mental State Examination (MMSE) with the standard MMSE and the Mini-Cog in patients >65 years old, stratified by education and literacy level.” (p. 429)
Author’s Conclusion	“Our study shows that this modified screening instrument may lead to fewer participants being incorrectly categorized as cognitively impaired solely due to low literacy level. Taking the educational part (spelling and counting) out of the MMSE, using days of the week recited backward as the Modified-MMSE, and using a cut off 27 of 30 for low literacy, the M-MMSE detects cognitive impairment with fewer false positives.” (p. 434)
Overall Relevance to PICO	Overall Relevance to PICO: Moderate Relevance PICO: Directly related to the outcome of executive function measures, but targeted to a specific populations, such as patients with dementia, as compared to the general population referenced in our EBP question.
Overall Quality	Overall Quality of Article: Good Quality One author had over 100 publications, however other authors had few. Peer-reviewed journal. Publication within last 6 years, use of a reputable cognitive assessment.

Type of article	Overall Type: Primary research study Specific Type: Psychometric study
APA Reference	Scharre, D. W., Chang, S. I., Nagaraja, H. N., Vrettos, N. E., & Bornstein, R. A. (2017). Digitally translated Self-Administered Gerocognitive Examination (eSAGE): relationship with its validated paper version, neuropsychological evaluations, and clinical assessments. <i>Alzheimer's research & therapy</i> , 9(1), 44. doi:10.1186/s13195-017-0269-3
Abstract	<p>Background: The original paper Self-Administered Gerocognitive Examination (SAGE) is a valid and reliable cognitive assessment tool used to identify individuals with mild cognitive impairment (MCI) or early dementia. We evaluated identical test questions in a digital format (eSAGE) made for tablet use with the goals of calibrating it against SAGE and establishing its association with other neuropsychological tests and clinical assessments of cognitive impairment.</p> <p>Methods: subjects aged 50 and over who had taken SAGE were recruited from community and clinic settings. Subjects were randomly selected to participate in a clinical evaluation including neuropsychological evaluations. SAGE and eSAGE were administered using a crossover design. Subjects were identified as dementia, MCI, or normal based on standard clinical criteria. Associations were investigated using Spearman correlations, linear regression, and sensitivity and specificity measures.</p> <p>Results: Of the 426 subjects screened, 66 completed the evaluation. eSAGE score correlation to a battery of neuropsychological tests was 0.73 ($p < 0.0001$) with no significant difference between the paper and digital format. Spearman correlation of SAGE versus eSAGE was 0.88 ($p < 0.0001$), and they are related by the formula: eSAGE score = $-1.05 + 0.99 \times$ SAGE score. Since the slope is very close to 1 ($p = 0.86$) there is strong evidence that the scaling is identical between eSAGE and SAGE, with no scale bias. Overall, eSAGE scores are lower by an average of 1.21 and the decrease is statistically significant ($p < 0.0001$). For those subjects familiar with smartphones or tablets (one measure of digital proficiency), eSAGE scores are lower by an average of 0.83 points ($p = 0.029$). With a score 16 and higher being classified as normal, eSAGE had 90% specificity and 71% sensitivity in detecting those with cognitive impairment from normal subjects.</p> <p>Conclusions: Tablet-based eSAGE shows a strong association with the validated paper SAGE and a neuropsychological battery. It shows no scale bias compared to SAGE. Both have the advantage of self-administration, brevity, four interchangeable forms, and high sensitivity and specificity in detecting cognitive impairment from normal subjects. Their potential widespread availability will be a major factor in overcoming the many obstacles in identifying early cognitive changes." (p. 44)</p>
Author	Credentials: MS: Physiology and Biophysics, MD: Medicine Position and Institution: Division of Cognitive Neurology, Department of Neurology, Ohio State University Wexner Medical Center Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: Scholarly research Publisher: Alzheimer's Research and Therapy
Date and Citation History	Date of publication: 2017 Google Scholar Cited By: 1
Research Question	"The aim of the study was to compare and correlate the digital, tablet-based eSAGE with its validated paper SAGE and with the MMSE, MoCA, and a battery of neuropsychological tests." (p. 3)
Author's Conclusion	"Tablet-based eSAGE correlates well with the 7-item total of a battery of neuropsychological tests and performs similarly to the validated SAGE. As would be expected, SAGE and eSAGE scores are highly correlated with each other. SAGE and eSAGE have similar correlation values with MMSE and MoCA." (p. 8)
Overall Relevance EBP Research Question	Overall Relevance to Research Question: Strong Rationale: The study examined the correlation between the eSAGE with the MMSE, MoCA and other neuropsychological tests. The researchers found that the eSAGE was comparable to the other testing agents and it drew accurate scores determining that it could be used in a primary care setting.
Overall Quality of Article	Overall Quality of Article: Good Rationale: The research question was properly addressed and carried throughout the research article, the author is reputable and the research was completed within the last 3 years.

Type of article	Overall Type: Primary research study Specific Type: descriptive
APA Reference	Griffith, H.R., Belue, K., Sicola, A., Kryzwanski, S., Zamrini, E., Harrell, L., & Marson, D.C. (2003). Impaired financial abilities in mild cognitive impairment: A direct assessment approach. <i>Neurology</i> , 60(3), 449-457. doi: 10.1212/WNL.60.3.449
Abstract	<p>Objectives: To assess financial capacity in patients with mild cognitive impairment (MCI) using a standardized psychometric capacity measure.</p> <p>Methods: Participants were 21 cognitively normal older controls, 21 patients with amnesic MCI, and 22 patients with mild AD. The Financial Capacity Instrument (FCI), a psychometric capacity measure consisting of 18 financial ability tests (tasks), 9 domains (activities), and 2 total scores, was administered to participants along with a battery of neuropsychological tests sensitive to dementia. Group differences were examined on the neuropsychological and financial capacity variables.</p> <p>Results: Relative to controls, the MCI group demonstrated impairments in episodic memory, and also semantic knowledge, executive function, written arithmetic, and spatial attention. MCI participants demonstrated impairments in FCI domains of conceptual knowledge, cash transactions, bank statement management, and bill payment, and in overall financial capacity. The control and MCI groups performed significantly better than patients with AD on most financial capacity and cognitive measures.</p> <p>Conclusions: On direct assessment, patients with amnesic MCI as a group demonstrate impairments across a range of financial abilities. These impairments are mild and may only apply to a subset of patients with MCI. However, existing diagnostic criteria for MCI should be applied flexibly to include mild impairments in higher order activities of daily life such as financial capacity." (p. 449)</p>
Author	Credentials: PhD Position and Institution: Department of Neurology and Alzheimer's Disease Research Center Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: Scholarly Publisher: Wolters Kluwer Health, Inc.
Date and Citation History	Date of publication: February 11, 2003 Cited By: 8
Stated Purpose or Research Question	"To assess financial capacity in patients with mild cognitive impairment (MCI) using a standardized psychometric capacity measure." (found in abstract, full text not available)
Author's Conclusion	"On direct assessment, patients with amnesic MCI as a group demonstrate impairments across a range of financial abilities. These impairments are mild and may only apply to a subset of patients with MCI. However, diagnostic criteria for MCI should be applied flexibly to include mild impairments in higher order activities of daily life such as financial capacity." (found in abstract, full text not available)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to EBP question: Limited Rationale: While the topic of this article is relevant, there is no full text available that I can access so it is of limited use for this project.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: Author has extensive publications. Only cited 8 times. Published in 2003, not very recent.

Type of article	Overall Type: Primary research study Specific Type: Descriptive Study
APA Reference	Hudson, C. & Belleville, S., & Gauthier, S. (2009). The assessment of recognition memory using the remember/know procedure in amnesic mild cognitive impairment and probable Alzheimer's disease. <i>Brain and Cognition</i> , 70(1), 171-179. doi:10.1016/j.bandc.2009/01.009
Abstract	“This study used the Remember/Know (R/K) procedure combined with signal detection analyses to assess recognition memory in 20 elders with amnesic mild cognitive impairment (aMCI), 10 patients with probable Alzheimer's disease (AD) as well as matched healthy older adults. Signal detection analyses first indicated that aMCI and control participants were comparable on general recognition performance. As regards AD patients, they were impaired relative to both aMCI and healthy elders. When assessing Remember and Know responses the aMCI group showed diminished sensitivity for Remember responses but intact Know responses compared to healthy elders. In contrast, AD patients showed decreased sensitivity for both Remember and Know responses compared to control and aMCI participants. The response bias index revealed that AD patients were more liberal than aMCI and control participants when providing Know responses. On the other measures, response bias was comparable between the groups. Overall, this study indicates that the R/K procedure can characterize different aspects of recognition memory performance in persons with aMCI or AD. (Contains 4 tables.)” (p. 171)
Author	Credentials: none available Position and Institution: School of Psychology at Universite Laval and Center of Research at Universite Laval Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: Scholarly Publisher: Elsevier
Date and Citation History	Date of publication: June 2009 Cited By: 83
Stated Purpose or Research Question	“The principal objective of this study was to better understand and characterize the recognition memory deficit of older persons with aMCI or AD.” (p. 176)
Author's Conclusion	“The present study indicated a decline of Remember responses but intact Know responses in aMCI compared to healthy older adults.” (p. 178)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to EBP question: Moderate Rationale: While this article provides good information on recognition memory of adults with MCI, its main topic does not focus entirely on assessment.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Author has extensive publications. Article cited many times. Published within last 10 years.

Type of article	Overall Type: Primary research study Specific Type: Descriptive
APA Reference	Plancher, G., Tirard, A., & Gyselinck, V. (2012). Using virtual reality to characterize episodic memory profiles in amnesic mild cognitive impairment and Alzheimer's disease: Influence of active and passive encoding. <i>Neuropsychologia</i> , 50(5), 592-602. doi:10.1016/j.neuropsychologia.2011.12.013
Abstract	<p>"Most neuropsychological assessments of episodic memory bear little similarity to the events that patients actually experience as memories in daily life. The first aim of this study was to use a virtual environment to characterize episodic memory profiles in an ecological fashion, which includes memory for central and perceptual details, spatiotemporal contextual elements, and binding. This study included subjects from three different populations: healthy older adults, patients with amnesic mild cognitive impairment (aMCI) and patients with early to moderate Alzheimer's disease (AD). Second, we sought to determine whether environmental factors that can affect encoding (active vs. passive exploration) influence memory performance in pathological aging. Third, we benchmarked the results of our virtual reality episodic memory test against a classical memory test and a subjective daily memory complaint scale. Here, the participants were successively immersed in two virtual environments; the first, as the driver of a virtual car (active exploration) and the second, as the passenger of that car (passive exploration). Subjects were instructed to encode all elements of the environment as well as the associated spatio-temporal contexts. Following each immersion, we assessed the patient's recall and recognition of central information (i.e., the elements of the environment), contextual information (i.e., temporal, egocentric and allocentric spatial information) and lastly, the quality of binding. We found that the AD patients' performances were inferior to that of the aMCI and even more to that of the healthy aged groups, in line with the progression of hippocampal atrophy reported in the literature. Spatial allocentric memory assessments were found to be particularly useful for distinguishing aMCI patients from healthy older adults. Active exploration yielded enhanced recall of central and allocentric spatial information, as well as binding in all groups. This led aMCI patients to achieve better performance scores on immediate temporal memory tasks. Finally, the patients' daily memory complaints were more highly correlated with the performances on the virtual test than with their performances on the classical memory test. Taken together, these results highlight specific cognitive differences found between these three populations that may provide additional insight into the early diagnosis and rehabilitation of pathological aging. In particular, neuropsychological studies would benefit to use virtual tests and a multi-component approach to assess episodic memory, and encourage active encoding of information in patients suffering from mild or severe age-related memory impairment. The beneficial effect of active encoding on episodic memory in aMCI and early to moderate AD is discussed in the context of relatively preserved frontal and motor brain functions implicated in self-referential effects and procedural abilities. (Contains 5 figures and 3 tables.)" (p. 592)</p>
Author	Credentials: none listed Position and Institution: Memory and Cognition Lab, Paris Descartes University, Paris, France Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: Scholarly Publisher: Elsevier
Date and Citation History	Date of publication: April 2012 Cited By: 132
Stated Purpose or Research Question	"In this study, our first objective was to differentiate between the episodic memory profiles of aMCI and mild AD patients compared to normal again, using a virtual reality environment to assess central and contextual episodic memory as well as binding function with tasks that involve immediate and delayed recalls and immediate recognition." (p. 594)
Author's Conclusion	"Overall, our study clearly demonstrates the feasibility of using VR technology to study the episodic memory deficits of patients with aMCI and AD." (p. 600)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to EBP question: Strong Rationale: This article provides a primary research study on assessment of MCI that found virtual reality may be used as an accurate assessment.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Author has extensive publications. Cited many times. Published relatively recently in 2012.

Type of article	Overall Type: Primary research study Specific Type: Psychometric study
APA Reference	Robert, P.H., Clairet, S., Benoit, M., Koutaich, J., Bertogliati, C., Tible, O., Caci, H., Borg, M., Brocker, P., & Bedoucha, P. (2002). The Apathy Inventory: Assessment of apathy and awareness in Alzheimer's disease, Parkinson's disease, and mild cognitive impairment. <i>International Journal of Geriatric Psychiatry, 17</i> (12), 1099-1105. doi:10.1002/gps.755
Abstract	<p>Objective: This study was designed to establish the validity and reliability of the apathy inventory (IA), a rating scale for global assessment of apathy and separate assessment of emotional blunting, lack of initiative, and lack of interest.</p> <p>Method: Information for the IA can be obtained from the patient or from a caregiver. We evaluated 115 subjects using the IA, consisting of 19 healthy elderly subjects, 24 patients with Mild Cognitive Impairment (MCI), 12 subjects with Parkinson's disease (PD) and 60 subjects with Alzheimer's disease (AD).</p> <p>Results: Internal consistency, item reliability, and between-rater reliability were high. A test-retest reliability study demonstrated that caregiver responses to IA questions were stable over short intervals. A concurrent validity study showed that the IA assesses apathy as effectively as the Neuro Psychiatric Inventory apathy domain. In the caregiver-based evaluation, AD subjects had significantly higher scores than controls, both for global apathy score and for the lack of interest dimension. When the AD patients were subdivided according to diagnostic criteria for apathy, apathetic patients had significantly higher scores than non apathetic patients. With the patient-based evaluations, no differences were found among the AD, MCI and control groups. The scores in the patient-based evaluations were only higher for the PD group versus the control subjects. The results also indicated that AD patients had poor awareness of their emotional blunting and lack of initiative.</p> <p>Conclusions: The IA is a reliable method for assessing in demented and non-demented elderly subjects several dimensions of the apathetic syndrome, and also the subject's awareness of these symptoms." (p. 1099)</p>
Author	Credentials: none listed Position and Institution: Centre Memoire, Unite d'Evaluation des Cognitions, Centre Hospitalier Universitaire de Nice, France Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: Scholarly Publisher: John Wiley & Sons, Ltd.
Date and Citation History	Date of publication: October 23, 2002 Cited By: 174
Stated Purpose or Research Question	"This study was designed to establish the validity and reliability of the apathy inventory (IA)." (p. 1099)
Author's Conclusion	"This study established the reliability and validity of the IA, a new instrument for the assessment of apathy in elderly subjects with and without dementia." (p. 1103)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to EBP question: Moderate Rationale: This article provides information on a form of assessment that can be used with individuals with MCI to assess dimensions of apathy, but it does not test for MCI. It is a rather specific article, which reduces its relevance.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: Author has extensive publications. Article cited many times. Published in 2002, not very recent.

Type of article	Overall Type: Primary research study & Review of research studies Specific Type: Comparative study (survey) & literature review
APA Reference	Snyder, P.J., Jackson, C.E., Petersen, R.C., Khachaturian, A.S., Kaye, J., Albert, M.S., Weintraub, S. (2011). Assessment of cognition in mild cognitive impairment: A comparative study. <i>Alzheimer's & Dementia</i> , 7(3), 338-355. doi:10.1016/j.jalz.2011.03.009
Abstract	“The demand for rapidly administered, sensitive, and reliable cognitive assessments that are specifically designed for identifying individuals in the earliest stages of cognitive decline (and to measure subtle change over time) has escalated as the emphasis in Alzheimer’s disease clinical research has shifted from clinical diagnosis and treatment toward the goal of developing presymptomatic neuroprotective therapies. To meet these changing clinical requirements, cognitive measures or tailored batteries of tests must be validated and determined to be fit-for-use for the discrimination between cognitively healthy individuals and persons who are experiencing very subtle cognitive changes that likely signal the emergence of early mild cognitive impairment. We sought to collect and review data systematically from a wide variety of (mostly computer-administered) cognitive measures, all of which are currently marketed or distributed with the claims that these instruments are sensitive and reliable for the early identification of disease or, if untested for this purpose, are promising tools based on other variables. The survey responses for 16 measures/batteries are presented in brief in this review; full survey responses and summary tables are archived and publicly available on the Campaign to Prevent Alzheimer’s Disease by 2020 Website (http://pad2020.org). A decision tree diagram highlighting critical decision points for selecting measures to meet varying clinical trials requirements has also been provided. Ultimately, the survey questionnaire, framework, and decision guidelines provided in this review should remain as useful aids for the evaluation of any new or updated sets of instruments in the years to come.” (p. 338)
Author	Credentials: PhD Position and Institution: Vice President for Research, Lifespan Hospital System Professor of Neurology & Surgery in Department of Neurology, Alpert Medical School of Brown University Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: Scholarly Publisher: Alzheimer’s & Dementia
Date and Citation History	Date of publication: May 2011 Cited By: 72
Stated Purpose or Research Question	“We sought to collect and review data systematically from a wide variety (mostly computer-administered) of cognitive measures, all of which are currently marketed or distributed with the claims that these instruments are sensitive and reliable for the early identification of disease, or, if untested for this purpose, are promising tools based on other variables.” (p. 338)
Author’s Conclusion	“Hence, there is no single recommended ‘gold standard’ battery but, rather, a subset of very good products to choose from, based on individual study needs.” (p. 352)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to EBP question: Strong Rationale: Provides reliability and validity information on 16 specific cognitive assessments.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Author has extensive publications. Cited many times. Published relatively recently in 2011.

Type of article	Overall type: Conceptual Specific type: Test review
APA Reference	Chu, Y., Lai, M. H. C., Xu, Y., & Zhou, Y. (2012). Test review: Advanced clinical solutions for WAIS-IV and WMS-IV. <i>Journal of Psychoeducational Assessment</i> , 30(5), 520–524. Retrieved from
Abstract	“The authors review the "Advanced Clinical Solutions for WAIS-IV and WMS-IV". The "Advanced Clinical Solutions (ACS) for the Wechsler Adult Intelligence Scale-Fourth Edition" (WAIS-IV; Wechsler, 2008) and the "Wechsler Memory Scale-Fourth Edition" (WMS-IV; Wechsler, 2009) was published by Pearson in 2009. It is a clinical tool for extending the assessment of individuals' cognitive functioning. Generally, the ACS provides supplemental information for the results of the WAIS-IV and WMS-IV; it includes six components that are relatively independent, namely, additional scores, effort measures, demographically adjusted norms, reliable change scores, test of premorbid functioning, and social cognition subtests. These new elements were specially designed for forensic evaluations, re-administrations, and neuropsychological evaluations. The age range for the ACS varies for different elements, but for most tests it is 16 to 90, as consistent with the WAIS-IV and WMS-IV. A technician or graduate assistant with appropriate graduate-level training can administer and score the tests under supervision, but as stressed in the Administration and Scoring Manual results should only be interpreted by professionals with extensive training in assessment. In addition, to use the ACS for assessing neuropsychological functioning, examiners must have adequate background in neuropsychological assessment. The components of the ACS for WAIS-IV and WMS-IV are described.” (p. 520)
Author	Credentials: not listed Position and Institution: Professor at University of Louisiana at Monroe Publication History in Peer-reviewed Journals: moderate
Publication	Type: Scholarly Publisher: SAGE publication
Date and Citation History	Date: September 6, 2012 Cited by: 8
Stated Purpose or Research Question	“Generally, the ACS provides supplemental information for the results of the WAIS-IV and WMS-IV; it includes six components that are relatively independent, namely, additional scores, effort measures, demographically adjusted norms, reliable change scores, test of premorbid functioning, and social cognition subtests.” (Found in abstract, not clear in full text)
Author’s Conclusion	“All in all, the ACS exposes the WAIS-IV and the WMS-IV to more options for interpretations in an efficient way.” (Found in abstract, not clear in full text)
Overall Relevance to PICO or EBP Research Question	Overall relevance to EBP question: Moderate Rationale: It gives a good overview of the tests and their reliability, validity and the other mechanics of the assessments. It does not apply it to our target population.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: The author has a moderate amount of publications. Only cited by 8. Relatively recent article published in 2012.

Type of article	Overall Type: Primary research article Specific Type: Replication study
APA Reference	Fleming, V. B. (2014). Early detection of cognitive-linguistic change associated with mild cognitive impairment. <i>Communication Disorders Quarterly</i> , 35, 146–157.
Abstract	“Individuals with mild cognitive impairment (MCI) may present with subtle declines in linguistic ability that go undetected by tasks not challenging enough to tax a relatively intact cognitive-linguistic system. This study was designed to replicate and extend a previous study of cognitive-linguistic ability in MCI using a complex discourse production task. Two hypotheses were tested: (a) complex discourse production differentiates individuals with MCI from individuals who are cognitively normal and (b) decreases in complex discourse production ability in MCI are related to declines in the planning and cognitive flexibility components of executive function (EF). Nine adults with MCI and nine age- and gender-matched controls participated in this study. Participants were assessed in terms of general cognition, naming ability, components of EF, and spoken discourse production. Performance on the experimental spoken discourse production task distinguished the groups on a measure of quality but not on length or complexity. The EF component of cognitive flexibility appeared important to discourse production ability. Results of this study provide further support for the use of a complex discourse production task as a tool for early detection of MCI.” (p. 146)
Author	Credentials: PhD, CCC-SLP Position and Institution: Texas State University Publication History in Peer-Reviewed Journals: 15
Publication	Type of publication: Scholarly Publisher: SAGE Publications and Hammill Institute on Disabilities.
Date and Citation History	Date of publication: 2014 Cited By: 17
Stated Purpose or Research Question	“This study was designed to replicate and extend a previous study of cognitive-linguistic ability in MCI using a complex discourse production task. “
Author’s Conclusion	“Results of this study provide further support for the use of a complex discourse production task as a tool for early detection of MCI.”
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: This is a qualitative study done to test MCI on declines in cognitive linguistics. This is a well done and established source and it can further our research on assessments for MCI.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: The author has a moderate amount of publications. Only cited by 17. Relatively recent article published in 2014.

Type of article	Overall Type: Primary research Specific Type: Psychometric study
APA Reference	Lee, J., Lee, D. W., Cho, S., Na, D. L., Jeon, H. J., Kim, S., . . . Cho, M. J. (2008). Brief screening for mild cognitive impairment in elderly outpatient clinic: Validation of the Korean version of the Montreal cognitive assessment. <i>Journal of Geriatric Psychiatry and Neurology</i> , 21(2), 104-110. doi:10.1177/0891988708316855
Abstract	“The Montreal Cognitive Assessment (MoCA) is a brief cognitive screening tool with high sensitivity for screening patients with mild cognitive impairment (MCI). The authors examined the validity and reliability of the Korean version of the MoCA (MoCA-K) in elderly outpatients. The MoCA-K, a Korean version of the Mini-Mental State Examination (MMSE), Clinical Dementia Rating (CDR) scale, and neuropsychological batteries were administered to 196 elderly persons (mild Alzheimer’s disease [AD] = 44, MCI = 37, normal controls [NC] = 115). MoCA-K scores were highly correlated with those of MMSE and CDR. Using a cutoff score of 22/23, the MoCA-K had an excellent sensitivity of 89% and a good specificity of 84% for screening MCI. Internal consistency and test–retest reliability were good. The results obtained show that the MoCA-K is brief, reliable, and suitable for use as a screening tool to screen MCI patients in elderly outpatient clinic settings.” (p. 104)
Author	Credentials: not listed Position and Institution: Department of Psychiatry and Behavioral Science, Seoul National University College of Medicine, Boramae Hospital, Publication History in Peer-Reviewed Journals: 7
Publication	Type of publication: Scholarly Publisher: Sage Publication
Date and Citation History	Date of publication: 2008 Cited By: 372
Stated Purpose or Research Question	“The aims of this study were as follows: to evaluate the reliability and validity of the Korean version of the MoCA (MoCA-K), and to determine the optimal cutoff MoCA-K score that best corresponds to a clinical diagnosis of MCI or AD.” (p. 105)
Author’s Conclusion	“In conclusion, our results showed that the MoCA could be reliably used in primary care and geriatric outpatient clinics to detect cognitive impairment corresponding to MCI and AD in just 10 minutes.” (p. 109)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: This is a good source because it describes the Montreal assessment which can further our education of this particular assessment. There is a lot of research on this assessment and this source gives good background to understand the other studies.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: The author has a moderate amount of publications. Cited by 372. Relatively recent article published in 2008.

Type of article	Overall Type: Conceptual Specific Type: Diagnostic criteria
APA Reference	Petersen, R. C. (2004), Mild cognitive impairment as a diagnostic entity. <i>Journal of Internal Medicine</i> , 256, 183-194. doi:10.1111/j.1365-2796.2004.01388.x
Abstract	“The concept of cognitive impairment intervening between normal ageing and very early dementia has been in the literature for many years. Recently, the construct of mild cognitive impairment (MCI) has been proposed to designate an early, but abnormal, state of cognitive impairment. MCI has generated a great deal of research from both clinical and research perspectives. Numerous epidemiological studies have documented the accelerated rate of progression to dementia and Alzheimer's disease (AD) in MCI subjects and certain predictor variables appear valid. However, there has been controversy regarding the precise definition of the concept and its implementation in various clinical settings. Clinical subtypes of MCI have been proposed to broaden the concept and include prodromal forms of a variety of dementias. It is suggested that the diagnosis of MCI can be made in a fashion similar to the clinical diagnoses of dementia and AD. An algorithm is presented to assist the clinician in identifying subjects and sub-classifying them into the various types of MCI. By refining the criteria for MCI, clinical trials can be designed with appropriate inclusion and exclusion restrictions to allow for the investigation of therapeutics tailored for specific targets and populations.” (p. 183)
Author	Credentials: MD, PhD Position and Institution: From the Department of Neurology, Alzheimer's Disease Research Center, Mayo Clinic College of Medicine, Rochester, MN Publication History in Peer-Reviewed Journals:12
Publication	Type of publication: Scholarly Publisher: Wiley Online Library
Date and Citation History	Date of publication: 2004 Cited By: 2,679
Stated Purpose or Research Question	“The concept of cognitive impairment intervening between normal ageing and very early dementia has been in the literature for many years.” (From abstract)
Author's Conclusion	“As the field matures, we will learn more about the various subtypes of MCI and their ability to predict various forms of cognitive impairment.” (p. 193)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to EBP question: Moderate Rationale: This was a good study that conceptualizes what MCI is and how it is related to Alzheimer's Disease. The source is good for establishing the definitions and the background to support other studies.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: The author has a moderate amount of publications. Cited many times. Not relatively recent article, published in 2004.

Type of article	Overall Type: Review of Research Study Specific Type: Evidence-based review
APA Reference	Petersen, R. C., Stevens, J.C., Ganguli, M., Tangalos, E. G., Cummings, J.L., DeKosky, S. T. (2001). Practice parameter: Early detection of dementia: Mild cognitive impairment (an evidence-based review) <i>Neurology</i> , 56 (9) 1133-1142; doi: 10.1212/WNL.56.9.1133
Abstract	<p>Objective: The goal of this project was to determine whether screening different groups of elderly individuals in a general or specialty practice would be beneficial in detecting dementia.</p> <p>Background: Epidemiologic studies of aging and dementia have demonstrated that the use of research criteria for the classification of dementia has yielded three groups of subjects: those who are demented, those who are not demented, and a third group of individuals who cannot be classified as normal or demented but who are cognitively (usually memory) impaired.</p> <p>Methods: The authors conducted computerized literature searches and generated a set of abstracts based on text and index words selected to reflect the key issues to be addressed. Articles were abstracted to determine whether there were sufficient data to recommend the screening of asymptomatic individuals. Other research studies were evaluated to determine whether there was value in identifying individuals who were memory-impaired beyond what one would expect for age but who were not demented. Finally, screening instruments and evaluation techniques for the identification of cognitive impairment were reviewed.</p> <p>Results: There were insufficient data to make any recommendations regarding cognitive screening of asymptomatic individuals. Persons with memory impairment who were not demented were characterized in the literature as having mild cognitive impairment. These subjects were at increased risk for developing dementia or AD when compared with similarly aged individuals in the general population.</p> <p>Recommendations: There were sufficient data to recommend the evaluation and clinical monitoring of persons with mild cognitive impairment due to their increased risk for developing dementia (Guideline). Screening instruments, e.g., Mini-Mental State Examination, were found to be useful to the clinician for assessing the degree of cognitive impairment (Guideline), as were neuropsychologic batteries (Guideline), brief focused cognitive instruments (Option), and certain structured informant interviews (Option). Increasing attention is being paid to persons with mild cognitive impairment for whom treatment options are being evaluated that may alter the rate of progression to dementia.” (p. 1133)</p>
Author	Credentials: MD, PhD Position and Institution: From the Department of Neurology, Alzheimer's Disease Research Center, Mayo Clinic College of Medicine, Rochester, MN Publication History in Peer-Reviewed Journals: 12
Publication	Type of publication: Scholarly Publisher: AAN Publications
Date and Citation History	Date of publication: 2001 Cited By: 2,588
Stated Purpose or Research Question	“Mission statement. The Quality Standards Subcommittee (QSS) seeks to develop scientifically sound, clinically relevant practice parameters for the practice of neurology. When the previous practice parameter, Diagnosis and Evaluation of Dementia, was published in 1994 the issue of early detection was not addressed.1 Since then, considerable progress has been made ” (p. 1)
Author’s Conclusion	“The ultimate economic impact of this work is also significant. Because the segment of the population that is achieving the seventh and eighth decades of life is increasing at a rapid pace, the societal impact of dementing illnesses, which are strongly age-related, is large. There are additional considerations concerning quality of life, caregiver burden, health service utilization, institutionalization, and mortality that must be addressed. ” (p. 9)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to EBP question: Moderate Rationale: This article took different studies and analyzed and compared them. This is useful to take multiple studies and analyze and to make the confidence in their finding stronger for other researchers.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: The author has a moderate amount of publications. Cited by 2,588. Not relatively recent article published in 2001.

Type of article	Overall Type: Primary research study Specific Type: Quasi-experimental research study
APA Reference	Zygoris, S., Giakoumis, D., Votis, K., Doumpoulakis, S., Ntovas, K., Segkouli, S., . . . Tsolaki, M. (2015). Can a virtual reality cognitive training application fulfill a dual role? using the virtual supermarket cognitive training application as a screening tool for mild cognitive impairment. <i>Journal of Alzheimer's Disease: JAD</i> , 44(4), 1333-1347. doi:10.3233/JAD-141260
Abstract	<p>Background: Recent research advocates the potential of virtual reality (VR) applications in assessing cognitive functions highlighting the possibility of using a VR application for mild cognitive impairment (MCI) screening.</p> <p>Objective: The aim of this study is to investigate whether a VR cognitive training application, the virtual supermarket (VSM), can be used as a screening tool for MCI.</p> <p>Methods: Two groups, one of healthy older adults ($n = 21$) and one of MCI patients ($n = 34$), were recruited from day centers for cognitive disorders and administered the VSM and a neuropsychological test battery. The performance of the two groups in the VSM was compared and correlated with performance in established neuropsychological tests. At the same time, the effectiveness of a combination of traditional neuropsychological tests and the VSM was examined.</p> <p>Results: VSM displayed a correct classification rate (CCR) of 87.30% when differentiating between MCI patients and healthy older adults, while it was unable to differentiate between MCI subtypes. At the same time, the VSM correlates with various established neuropsychological tests. A limited number of tests were able to improve the CCR of the VSM when combined with the VSM for screening purposes.</p> <p>Discussion: VSM appears to be a valid method of screening for MCI in an older adult population though it cannot be used for MCI subtype assessment. VSM's concurrent validity is supported by the large number of correlations between the VSM and established tests. It is considered a robust test on its own as the inclusion of other tests failed to improve its CCR significantly." (p. 1333)</p>
Author	<p>Credentials: a PhD candidate in a joint program at the Aristotle University of Thessaloniki and the Network Aging Research at the University of Heidelberg, with a scholarship from the Robert Bosch Foundation Stuttgart. His PhD project focuses on the use of longitudinal performance data on a self-administered serious game to detect mild cognitive impairment.</p> <p>Position and Institution: 3rd Department of Neurology, Aristotle University of Thessaloniki, Thessaloniki, Greece</p> <p>Publication History in Peer-Reviewed Journals: 12</p>
Publication	<p>Type of publication: Scholarly peer-reviewed journal</p> <p>Publisher: Journal of Alzheimer's Disease</p> <p>Other: The journal is dedicated to providing an open forum for original research that will expedite our fundamental understanding of Alzheimer's disease</p>
Date and Citation History	<p>Date of publication: 2015</p> <p>Google Scholar Cited By: 48</p>
Research Question	<p>"...assess the differences in performance between healthy older adults and MCI patients and detect whether there are significant group differences in performance at the first administration of the VSM cognitive training exercise. A secondary aim is to explore to what extent the performance in the VSM correlates with established neuropsychological tests used in MCI and how it compares to them in terms of diagnostic value." (p. 1334)</p>
Author's Conclusion	<p>"The VSM proved to be a capable instrument for differentiating between MCI patients and healthy older adults, while it lacked the ability to differentiate between various MCI subtypes." (p. 1346)</p>
Overall Relevance EBP Research Question	<p>Overall Relevance to Research Question: Moderate</p> <p>Rationale: The research directly focused on discovering the difference in performance between different individuals. Compared to other testing methods, using the VSM as a screening tool could make the assessment experience less threatening and more appealing to older adults.</p>
Overall Quality of Article	<p>Overall Quality of Article: Good</p> <p>The research used a diverse testing population, implemented a full neurological, neuropsychological and lab assessment in order to receive a diagnosis, all of which were confirmed by retest using the VSM.</p>

Type of article	Overall Type: Primary research study Specific Type: Psychometric study
APA Reference	Cornelis E, Gorus E, Beyer I, Bautmans I, De Vriendt P (2017) Early diagnosis of mild cognitive impairment and mild dementia through basic and instrumental activities of daily living: Development of a new evaluation tool. <i>PLOS Medicine</i> 14(3), e1002250. https://doi.org/10.1371/journal.pmed.1002250
Abstract	<p>“Background: Assessment of activities of daily living (ADL) is paramount to determine impairment in everyday functioning and to ensure accurate early diagnosis of neurocognitive disorders. Unfortunately, most common ADL tools are limited in their use in a diagnostic process. This study developed a new evaluation by adopting the items of the Katz Index (basic [b-] ADL) and Lawton Scale (instrumental [i-] ADL), defining them with the terminology of the International Classification of Human Functioning, Disability and Health (ICF), adding the scoring system of the ICF, and adding the possibility to identify underlying causes of limitations in ADL.</p> <p>Methods and findings: The construct validity, interrater reliability, and discriminative validity of this new evaluation were determined. From 2015 until 2016, older persons (65–93 y) with normal cognitive ageing (healthy comparison [HC]) ($n = 79$), mild cognitive impairment (MCI) ($n = 73$), and Alzheimer disease (AD) ($n = 71$) underwent a diagnostic procedure for neurocognitive disorders at the geriatric day hospital of the Universitair Ziekenhuis Brussel (Brussels, Belgium). Additionally, the ICF-based evaluation for b- and i-ADL was carried out. A global disability index (DI), a cognitive DI (CDI), and a physical DI (PDI) were calculated. The i-ADL-CDI showed high accuracy and higher discriminative power than the Lawton Scale in differentiating HC and MCI (area under the curve [AUC] = 0.895, 95% CI .840–.950, $p = .002$), MCI and AD (AUC = 0.805, 95% CI .805–.734, $p = .010$), and HC and AD (AUC = 0.990, 95% CI .978–1.000, $p < .001$). The b-ADL-DI showed significantly better discriminative accuracy than the Katz Index in differentiating HC and AD (AUC = 0.828, 95% CI .759–.897, $p = .039$). This study was conducted in a clinically relevant sample. However, heterogeneity between HC, MCI, and AD and the use of different methods of reporting ADL might limit this study.</p> <p>Conclusion: This evaluation of b- and i-ADL can contribute to the diagnostic differentiation between cognitively healthy ageing and neurocognitive disorders in older age. This evaluation provides more clarity and nuance in assessing everyday functioning by using an ICF-based terminology and scoring system. Also, the possibility to take underlying causes of limitations into account seems to be valuable since it is crucial to determine the extent to which cognitive decline is responsible for functional impairment in diagnosing neurocognitive disorders. Though further prospective validation is still required, the i-ADL-CDI might be useful in clinical practice since it identifies impairment in i-ADL exclusively because of cognitive limitations.” (p. 1)</p>
Author	<p>Credentials: MS: Gerontologist, BSc: Occupational Therapist Position and Institution: Department of Geriatrics, Universitair Ziekenhuis Brussel, Brussels, Belgium, Frailty in Ageing Research Group (FRIA), Vrije Universiteit Brussel, Brussels, Belgium, Department of Occupational Therapy, Artevelde University College Ghent, Ghent, Belgium Publication History in Peer-Reviewed Journals: 23</p>
Publication	Type of publication: Scholarly peer-reviewed <i>journal</i> Publisher: PLOS Medicine
Date and Citation History	Date of publication: 2017 Cited By: 15
Research Question	“...this study set out to develop a new tool to evaluate b- and i-ADL for diagnostic purposes in a geriatric population with NCD. This evaluation is based on the International Classification of Functioning, Disability and Health (ICF) developed by the World Health Organization (WHO).” (Found in background paragraph)
Author’s Conclusion	“In conclusion, this new ICF-based evaluation for b- and i-ADL addresses important issues in assessing everyday functioning by (1) providing an operationalization of the evaluated activities by ICF codes and definitions, (2) providing a detailed scoring system that is based on the ICF qualifiers, and (3) by making a differentiation in causes of limitations.” (Found in conclusion paragraph)
Overall Relevance EBP Research Question	Overall Relevance to Research Question: Moderate Rationale: Directly assessed the new ICF-based evaluation for b- and IADL as a diagnostic tool for assessing functionality based on the ICF qualifiers.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: Reputable author, publisher, and published within the last 3 years.

Type of article	Overall Type: Conceptual Specific Type: Theoretical review article
APA Reference	Kirova A., Bays R. B., & Lagalwar S.. (2015). Working memory and executive function decline across normal aging, mild cognitive impairment, and Alzheimer's disease. <i>BioMed Research International</i> , 2015, 1-9. doi:10.1155/2015/748212
Abstract	“Alzheimer’s disease (AD) is a progressive neurodegenerative disease marked by deficits in episodic memory, working memory (WM), and executive function. Examples of executive dysfunction in AD include poor selective and divided attention, failed inhibition of interfering stimuli, and poor manipulation skills. Although episodic deficits during disease progression have been widely studied and are the benchmark of a probable AD diagnosis, more recent research has investigated WM and executive function decline during mild cognitive impairment (MCI), also referred to as the preclinical stage of AD. MCI is a critical period during which cognitive restructuring and neuroplasticity such as compensation still occur; therefore, cognitive therapies could have a beneficial effect on decreasing the likelihood of AD progression during MCI. Monitoring performance on working memory and executive function tasks to track cognitive function may signal progression from normal cognition to MCI to AD. The present review tracks WM decline through normal aging, MCI, and AD to highlight the behavioral and neurological differences that distinguish these three stages in an effort to guide future research on MCI diagnosis, cognitive therapy, and AD prevention.” (p. 1)
Author	Credentials: not reported Position and Institution: Department of Psychology, Neuroscience Program, Skidmore College Publication History in Peer-Reviewed Journals: Several
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: BioMed Research International, Hindawi Publishing Corporation Other: <i>Publishes peer-reviewed, original research articles</i>
Date and Citation History	Date of publication: 2015 Cited By: 100
Stated Purpose or Research Question	“The following review examines the detection of working memory (WM) deficits through behavioral, functional, and structural changes amongst non-impaired, MCI, and AD adults.” (p. 1)
Author’s Conclusion	“Executive dysfunction becomes more pronounced during MCI...Brain imaging data also demonstrate that MCI individuals display under activation compared to non-impaired adults on WM tasks of increasing load. This evidence promotes the use of WM and executive function assessments to track behavioral and functional changes to distinguish between normal aging, MCI, and AD.” (p. 7)
Overall Relevance to EBP Research Question	Overall Relevance to Research Question: Moderate Rationale: The review examined working memory deficits in different dimensions amongst healthy individuals, those with a MCI, and Alzheimer’s disease.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: The author is not established however the review the publisher is credible and publication is within the last 3 years. It is likely that this article will not be used in the next steps of our project.

Type of article	Overall Type: Primary research study Specific Type: Retrospective psychometric research study
APA Reference	Johansson, M. & Wressle, E. (2012). Validation of the neurobehavioral cognitive status examination and the Rivermead Behavioural Memory Test in investigations of dementia. <i>Scandinavian Journal of Occupational Therapy</i> , 19(3), 282-287. doi: 10.3109/11038128.2010.528789
Abstract	“The aim of this retrospective study was to validate two commonly used instruments, Cognistat and the Rivermead Behavioural Memory Test, RBMT, for detection of MCI and mild dementia. Two different diagnosis groups, mild cognitive impairment (MCI) and Alzheimer's disease combined with mixed dementia representing mild dementia (MD), were compared with a group of patients who did not receive a diagnosis of dementia. All patients were assessed at a specialized outpatient memory clinic in a university hospital in Sweden using the Mini Mental State Examination (MMSE), Cognistat, and RBMT. Sensitivity, specificity, predictive value, and likelihood ratio were calculated for the tests. The Cognistat and RBMT have moderate validity in the detection of MCI and mild dementia. On their own, none of the tests used is sufficient for diagnosing MCI or mild dementia. A combination of the Cognistat and RBMT provides additional information in early stage dementia; in this regard the RBMT is better than the Cognistat, which also has other limitations. The RBMT can be helpful for distinguishing between MCI and mild dementia. There is a need for a more sensitive screening test to capture early cognitive impairment related to patients' occupational performance and problems in daily life.” (p. 282)
Author	Credentials: PhD, OTR Position and Institution: Faculty of Health Sciences, Geriatrics; Linköping University, Sweden Publication History in Peer-Reviewed Journals: Johansson: Moderate; Wressle: Extensive
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: Scandinavian Journal of Occupational Therapy Other: Informa Healthcare
Date and Citation History	Date of publication: 2012 <i>Scandinavian Journal of Occupational Therapy</i> Cited By: 15
Stated Purpose or Research Question	“The aim of this retrospective study was to validate two commonly used instruments, Cognistat and the Rivermead Behavioural Memory Test, RBMT, for detection of MCI and mild dementia.” (p. 282)
Author's Conclusion	“The Cognistat and RBMT have moderate validity in the detection of MCI and mild dementia. There is a need for a more sensitive screening test to capture early cognitive impairment (language, memory, visuospatial functions, psychomotor skills, and executive functions) related to patients' occupational performance and problems in daily life.” (p. 286)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong relevance Rationale: Directly included the targeted population (individuals with <i>mild cognitive impairment</i> , Alzheimer's disease, and mild dementia) which was compared to group without dementia diagnosis. The assessments conducted (intervention) were used for detection purposes of MCI and mild dementia, however the outcome of specific interventions for MCI is not included.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Well-cited authors and faculty at university. Reputable journal and publisher. Publication within last 10 years

Type of article	Overall Type: Primary research study Specific Type: Psychometric research study
APA Reference	Kizony, R., Demayo-Dayam, T., Sinoff, G., & Josman, N. (2011). Validation of the executive function route-finding task (EFRT) in people with mild cognitive impairment. <i>Occupation, Participation, and Health</i> , 3(1), S47-S52. https://doi.org/10.3928/15394492-20101108-08
Abstract	“Reliability and validity of the Executive Function Route-finding Task (EFRT) with people diagnosed as having mild cognitive impairment was examined. Twenty-three people with mild cognitive impairment with a mean age of 77.4 (\pm 7.5) years and 23 healthy controls with a mean age of 74.3 (\pm 4.9) years participated. The EFRT was administered along with other tests for executive functions: Executive Interview and two subtests from the Executive Functions Performance Test (EFPT). Findings showed high inter-rater reliability for the EFRT. In addition, the control group performed significantly better on all tests, thus confirming the construct validity of the EFRT. However, further examination into the clinical significance of these findings is needed. Concurrent validity was partially demonstrated by low to moderate significant correlation between the EFRT and one subtest from the EFPT. The results of this study support the reliability and validity of the EFRT among people with mild cognitive impairment.” (p. S47)
Author	Credentials: PhD, OTR Position and Institution: Lecturer in Department of Occupational Therapy, Faculty of Social Welfare & Sciences; University of Haifa, and Department of Occupational Therapy, Ono Academic College, Haifa, Israel Publication History in Peer-Reviewed Journals: Extensive
Publication	Type of publication: Scholarly peer-reviewed journal (quantitative study) Publisher: OTJR: Occupation, Participation and Health Other: The Occupational Therapy Journal of Research is published by the American Occupational Therapy Foundation, Inc.
Date and Citation History	Date of publication: 2011 Google Scholar Cited By: 74
Stated Purpose or Research Question	“Reliability and validity of the Executive Function Route-finding Task (EFRT) with people diagnosed as having mild cognitive impairment was examined.” (p. S47)
Author’s Conclusion	“The results of this study support the reliability and validity of the EFRT among people with mild cognitive impairment.” (p. S51)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong relevance Rationale: Directly related to the targeted population and addressed the effectiveness (reliability and validity) of a particular screening tool (EFRT), however this article did not evaluate the outcome of specific interventions for MCI.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Established author and faculty at two universities. Reputable journal and publisher. Publication within last 10 years

Type of article	Overall Type: Primary research study Specific Type: Psychometric
APA Reference	Tang-Wai, D.F., Knopman, D.S., Geda, Y.E., Edland, S.D., Smith, G., Ivnik, R.J.,...Petersen, R.C. (2003). Comparison of the Short Test of Mental Status and the Mini-Mental State Examination in Mild Cognitive Impairment. <i>Arch Neurol.</i> , 60(12),1777-1781. doi:10.1001/archneur.60.12.1777
Abstract	<p>Background: The Mini-Mental State Examination (MMSE) is the most widely used brief screening measure of cognition, but it is not sensitive in detecting mild memory or other cognitive impairments. The Short Test of Mental Status (STMS) was specifically developed for use in dementia assessment and was intended to be more sensitive to problems of learning and mental agility that may be seen in mild cognitive impairment (MCI).</p> <p>Objective: To compare the STMS and MMSE for detecting or predicting MCI.</p> <p>Design: Comparison of STMS and MMSE scores at baseline among 4 groups of patients: 788 patients with stable normal cognition, 75 patients with normal cognition at baseline but who developed incident MCI or Alzheimer disease during follow-up, 129 patients with prevalent MCI at baseline, and 235 patients with prevalent mild Alzheimer disease. All patients and control subjects for this study were evaluated through the Mayo Alzheimer's Disease Patient Registry or the Mayo Clinic Alzheimer's Disease Research Center, Rochester, Minn, using a standardized diagnostic approach.</p> <p>Results: The STMS was slightly more sensitive than the MMSE in discriminating between patients with stable normal cognition and patients with prevalent MCI. The STMS was superior to the MMSE in detecting deficits in cognition in individuals who had normal cognition at baseline but later developed incident MCI or Alzheimer disease. Conclusions: Compared with the MMSE, the STMS was better able to document MCI and was more sensitive in detecting deficits in cognition in individuals who had normal cognition at baseline but later developed incident MCI or Alzheimer disease." (p. 1777)</p>
Author	Credentials: MD, FRCPC (Fellow of the Royal College of Physicians of Canada) Position and Institution: MD; Department of Neurology, Mayo Alzheimer's Disease Research Center, and Mayo Clinic. Publication History in Peer-Reviewed Journals: Extensive
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: Archives of Neurology Journal Other: American Medical Association
Date and Citation History	Date of publication: 2003 Google Scholar Cited By: 139
Stated Purpose	"To compare the STMS and MMSE for detecting or predicting MCI." (p. 1777)
Author's Conclusion	"Compared with the MMSE, the STMS was better able to document MCI and was more sensitive in detecting deficits in cognition in individuals who had normal cognition at baseline but later developed incident MCI or Alzheimer disease." (p. 1777)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong relevance Rationale: Comparison study directly addressed EBP question about the most effective evaluation tool for functional cognition in individuals with MCI. The article did not include any interventions.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Established medical author. Reputable journal and publisher.

Type of article	Overall Type: Review of Research Study Specific Type: Systematic review
APA Reference	Arevalo-Rodriguez, I., Smailagic, N., Roque i Figuls, M., Ciapponi, A., Sanchez-Perez, E., Giannakou...Cullum, S. (2015). Mini-mental state examination (MMSE) for the detection of Alzheimer's disease and other dementias in people with mild cognitive impairment (MCI). <i>Cochrane Database of Systematic Reviews</i> , 3, CD010783. DOI: 10.1002/14651858.CD010783.pub2
Abstract	"Patients with MCI should be evaluated and monitored due to their increased risk of progression to dementia. At present there are no agreements about what the best approach is to register the progression to dementia. Several cognitive function tests have been proposed for this task because most of them are easy to administer, take no longer than 10 minutes to complete, involve major executive functions, and yield an objective score. Our review assessed the current evidence related to one of those brief tests, the Mini-Mental State Examination (MMSE), in the prediction of decline to dementia in people with cognitive impairments. After an extensive search and analysis of available information, we did not find evidence supporting a substantial role of MMSE as a stand-alone single-administration test in the identification of patients who will convert to dementia in the future." (p. 1)
Author	Credentials: PhD student Position and Institution: PhD student; Department of Pediatrics, Obstetrics and Gynecology and Preventative Medicine of the Universitat Autònoma de Barcelona. Publication History in Peer-Reviewed Journals: Moderate
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: Cochrane Database of Systematic Reviews, John Wiley & Sons, Ltd. Other: Cochrane Library
Date and Citation History	Date of publication: 2015 Google Scholar Cited By: 648
Stated Purpose or Research Question	"To determine the diagnostic accuracy of the MMSE at various thresholds for detecting individuals with baseline MCI who would clinically convert to dementia in general, Alzheimer's disease dementia or other forms of dementia at follow-up." (p. 1)
Author's Conclusion	"Our review did not find evidence supporting a substantial role of MMSE as a stand-alone single-administration test in the identification of MCI patients who could develop dementia." (p. 2)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate relevance Rationale: Related to evaluation of functional cognition for people within the targeted population. However, the fact that no evidence was found to support the role of the MMSE for screening purposes does not provide valuable information to answer our question about the most effective screening/evaluating measures for individuals with MCI.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Extensively well-cited author. Reputable journal and publisher. Publication within last 5 years

Type of article	Overall Type: Review of Research Study Specific Type: Systematic review
APA Reference	Cullen, B., O'Neill, B., Evans, J. J., Coen, R. F., & Lawlor, B. A. (2006). A review of screening tests for cognitive impairment. <i>Journal of Neurology, Neurosurgery, and Psychiatry</i> , 78(8), 790-9. doi: 10.1136/jnnp.2006.095414
Abstract	“The merit of screening for dementia and cognitive impairment has been the subject of recent debate. One of the main limitations in this regard is the lack of robust evidence to support the many screening tests available. Although plentiful in number, few such instruments have been well validated in the populations for which they are intended to be used. In addition, it is likely that “one size does not fit all” in cognitive screening, leading to the development of many specialised tests for particular types of impairment. In this review, we sought to ascertain the number of screening tools currently available, and to examine the evidence for their validity in detecting different diagnoses in a variety of populations. A further consideration was whether each screen elicited indices of a range of cognitive, affective and functional domains or abilities, as such information is a valuable adjunct to simple cut-off scores. Thirty-nine screens were identified and discussed with reference to three purposes: brief assessment in the doctor's office; large scale community screening programmes; and identifying profiles of impairment across different cognitive, psychiatric and functional domains/abilities, to guide differential diagnosis and further assessment. A small number of screens rated highly for both validity and content. This review is intended to serve as an evaluative resource, to guide clinicians and researchers in choosing among the wide range of screens which are currently available.” (p. 790)
Author	Credentials: PhD Position and Institution: Lecturer in Mental Health; Department of Neuropsychology, University of Glasgow, UK Publication History in Peer-Reviewed Journals: Extensive
Publication	Type of publication: scholarly peer-reviewed journal Publisher: Journal of Neurology, Neurosurgery, and Psychiatry, PubMed Other: Archive of biomedical topics
Date and Citation History	2007 Google Scholar Cited By: 1628
Stated Purpose or Research Question	“The aims of this paper were to identify and evaluate available screening instruments for cognitive impairment.” (p. 795)
Author's Conclusion	“Out of 39 screens identified, we have emphasized a small subset that, in our opinion, have particular strengths, but ultimately there is no such thing as the perfect screen for all purposes. Clinicians should move away from the tendency to become over reliant on one screen (usually the MMSE) and take advantage of the continually evolving (and dauntingly extensive) range of more specialized tools for different situations.” (p. 797)
Overall Relevance to PICO or EBP Question	Overall Relevance to PICO: Strong Relevance Rationale: Included population of interest and provided large scope of available screens, focusing particularly on profiles of impairment across different cognitive, psychiatric and functional domains. This is especially relevant to our question on evaluating functional cognition, but this article focused on evaluation of assessments and not intervention outcomes.
Overall Quality	Overall Quality of Article: Good Quality Prolific author. Reputable journal and publisher.

Type of article	Overall Type: Conceptual Specific Type: Literature review
APA Reference	Burns, T., & Haertl, K. (2018). Cognitive Performance Test: Practical applications and evidence-based use. <i>SIS Quarterly Practice Connections</i> , 3(4), 17–19.
Abstract	“The Cognitive Performance Test (CPT) is a widely used standardized assessment in occupational therapy (Burns et al., 2018). Reliability and validity were established as part of a longitudinal study of Alzheimer’s disease conducted by the National Institute on Aging (Burns et al., 1994). The test, originally based on Allen’s cognitive disability theory, has evolved to identify cognitive performance distinct from the original Allen Cognitive Levels (Allen et al., 1992). Through administration of the CPT’s IADL performance-based test, inferences are drawn on cognitive integration and processes that mediate goal-directed activity. Despite its global use, too often scholars and clinicians misuse the CPT by using old versions, administering too few subtests, making adaptations, or using the CPT as an ADL assessment versus CPT’s intended analysis of cognitive function with predictive application for IADLs. The CPT practice model incorporates using an occupational profile, evaluation, family observation, and direct intervention services. This article summarizes latest research on the CPT, provides a case example, and concludes with practical guidelines for use.” (p. 17)
Author	Credentials: BS, OTR Position and Institution: Clinical Occupational Therapist Specialist for the Geriatric Research, Education, and Clinical Center at the Minneapolis VA Medical Center in Minnesota. Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: scholarly peer-reviewed journal Publisher: American Occupational Therapy Association (AOTA) Other: <i>SIS Quarterly Practice Connections</i>
Date and Citation History	2018 Google Scholar Cited By: 27,900
Stated Purpose or Research Question	“This article summarizes latest research on the CPT, provides a case example, and concludes with practical guidelines for use.”
Author’s Conclusion	“The advantage of standardized evaluation is that the results can be empirically documented, meaning the scores have relative reliability and validity and can be generalized for real-world functioning.”
Overall Relevance to PICO	Overall Relevance to PICO: Limited PICO: Article was about proper use of the Cognitive Performance Test.
Overall Quality	Overall Quality of Article: Moderate Rationale: Established author and publisher. Publication within last year but is not a scholarly journal. The article talks about CPT, which can be used for our EBP question.

Type of article	Overall Type: Conceptual article Specific Type: Literature review
APA Reference	Karmali, S., Hagstrom, L., Mah, K., Mishima, G., & Seminary, J. (2018). Functional cognitive assessment and intervention in acute care. <i>SIS Quarterly Practice Connections</i> , 3(4), 21–23.
Abstract	“Functional cognition is the interrelationship of cognition and functional performance (Giles et al., 2017). Occupational therapy practitioners in the acute care setting play an integral role by addressing functional cognition, which can impair IADLs and BADLs (Leland et al., 2012). Cognitive impairment in older adults is one of the most debilitating and common outcomes after critical illness of traumatic brain injury, stroke, and neurodegenerative diseases (Brummel et al., 2012). Older adults in acute care may present with additional challenges, such as comorbidities and medical instability (Shotwell et al., 2017). Providing a functional cognitive assessment is imperative if a cognitive deficit is suspected through chart review or clinical observations. This article will discuss examples of cognitive assessment tools that could be used in the acute care setting, intervention strategies, and application of tools and strategies.” (p. 21)
Author	Credentials: OTR/L Position and Institution: Occupational Therapist at Overlake Hospital Medical Center in Bellevue, Washington. Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: American Journal of Occupational Therapy (AJOT) Other: SIS Quarterly Practice Connections
Date and Citation History	Date of publication: 2018 Cited By: 850
Stated Purpose or Research Question	This article will discuss examples of cognitive assessment tools that could be used in the acute care setting, intervention strategies, and application of tools and strategies.
Author’s Conclusion	Occupational therapy practitioners have functional cognitive assessment tools for older adults that incorporate the real-world environment to determine a treatment plan and recommendations for discharge. Identifying functional cognitive deficits early can enhance performance and facilitate carryover through the care continuum.
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Limited Rationale: Article discusses cognitive assessment tools neutrally.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Reputable Journal and publisher. Publication within last year. It lists a few cognitive assessments, which could be used for our question.

Type of article	Overall Type: Primary Research Study Specific Type: Psychometric
APA Reference	Javadi, P. S., Zendehbad, A., Darabi, F., Khosravifar, S., & Noroozian, M. (2015). Development and implementation of Persian test of Elderly for Assessment of Cognition and Executive function (PEACE). <i>Electronic Physician, 7</i> (7), 1549-56. doi:10.19082/1549
Abstract	<p>Introduction: A considerable segment of the elderly population in Iran is illiterate, and it seems the existing neuropsychological screening tests are not very useful for detecting dementia in illiterate participants. The purpose of this study was to develop and validate a tool called Persian test of Elderly for Assessment of Cognition and Executive function (PEACE) for detecting dementia in both illiterate and literate participants.</p> <p>Methods: First, in order to design some of the cognitive aspects of the PEACE assay, we considered other prevalent neuropsychological instruments, such as the General Practitioner assessment of Cognition (GPCOG), Functional Assessment Staging (FAST), Mini Mental State Examination (MMSE), and Wechsler Memory scale. The other domains of PEACE were designed according to our clinical proficiencies and the culture of the society. In the next step, the participants were classified into three distinct groups, i.e., the control group (n=33), the Mild Cognitive Impairment (MCI) group (n=30), and the Alzheimer's group (n=38). All of the participants in each group were divided according to their educational level, i.e., illiterate, semi-literate, and literate.</p> <p>Results: We developed PEACE consisting of 14 items, each of which represents a specific cognitive function, with a maximum score of 91. The 14 items are Orientation, Praxis, Attention and Concentration, Attention and Calculation, Memory, Similarity, Abstract Thinking, General Information, Language, Judgment, Gnosis, Planning (Sequencing), Problem Solving, and Animal Naming. PEACE scores are highly correlated with those of the MMSE ($r=0.78$). The optimal cut-off point of PEACE chosen for diagnosis of Alzheimer's disease was 67.5 (sensitivity: 75.8%, specificity: 97.4%). The PEACE scores showed a significant difference between Participants with Alzheimer's disease and the control group ($p=0.0000$) and the MCI group ($p=0.003$). In addition, there was no significant difference between illiterate and literate participants in the Alzheimer's group. However, the PEACE scores differed significantly ($p=0.0000$) between illiterate and literate participants in the control group.</p> <p>Conclusion: The PEACE addresses the limitations of existing tests and is appropriate for use in countries that have high rates of illiteracy. It is a valid screening mechanism for the detection of dementia in both illiterate and literate participants." (p. 1549)</p>
Author	Credentials: M.D. Position and Institution: Resident of Psychiatry, Department of Psychiatry, Tehran University of Medical Sciences, Tehran, Iran Publication History in Peer-Reviewed Journals: minimal
Publication	Type of publication: Scholarly peer-reviewed Publisher: Electronic Physician Journal
Date and Citation History	Date of publication: 2015 Cited By: 27
Stated Purpose or Research Question	"The purpose of this study was to develop and validate a tool called Persian test of Elderly for Assessment of Cognition and Executive function (PEACE) for detecting dementia in both illiterate and literate participants." (p. 1549)
Author's Conclusion	"The PEACE test addresses the limitations of existing tests and is appropriate for use in countries with a high illiteracy rate. It is a valid screening battery for detection of dementia in both illiterate and literate participants." (p. 1556)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong Rationale: The population is illiterate and literate participants; intervention is the PEACE test for detecting dementia, comparison is if the PEACE test is valid, and the outcome is if the test is a valid screening tool.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: Publication within 3 years. Author has a small reputation. Assessment talked about in article is new, but is compared with and designed by influence of similar type assessments.

Type of article	Overall Type: Primary Research Study Specific Type: Cross-sectional
APA Reference	Trzepacz, P. T., Hochstetler, H., Wang, S., Walker, B., Saykin, A. J., Alzheimer's Disease Neuroimaging Initiative (2015). Relationship between the Montreal Cognitive Assessment and Mini-mental State Examination for assessment of mild cognitive impairment in older adults. <i>BMC geriatrics</i> , 15, 107. doi:10.1186/s12877-015-0103-3
Abstract	<p>Background: The Montreal Cognitive Assessment (MoCA) was developed to enable earlier detection of mild cognitive impairment (MCI) relative to familiar multi-domain tests like the Mini-Mental State Exam (MMSE). Clinicians need to better understand the relationship between MoCA and MMSE scores.</p> <p>Methods: For this cross-sectional study, we analyzed 219 healthy control (HC), 299 MCI, and 100 Alzheimer's disease (AD) dementia cases from the Alzheimer's Disease Neuroimaging Initiative (ADNI)-GO/2 database to evaluate MMSE and MoCA score distributions and select MoCA values to capture early and late MCI cases. Stepwise variable selection in logistic regression evaluated relative value of four test domains for separating MCI from HC. Functional Activities Questionnaire (FAQ) was evaluated as a strategy to separate dementia from MCI. Equi-percentile equating produced a translation grid for MoCA against MMSE scores. Receiver Operating Characteristic (ROC) analyses evaluated lower cutoff scores for capturing the most MCI cases.</p> <p>Results: Most dementia cases scored abnormally, while MCI and HC score distributions overlapped on each test. Most MCI cases scored ≥ 17 on MoCA (96.3%) and ≥ 24 on MMSE (98.3%). The ceiling effect (28-30 points) for MCI and HC was less using MoCA (18.1%) versus MMSE (71.4%). MoCA and MMSE scores correlated most for dementia ($r = 0.86$; versus MCI $r = 0.60$; HC $r = 0.43$). Equi-percentile equating showed a MoCA score of 18 was equivalent to MMSE of 24. ROC analysis found MoCA ≥ 17 as the cutoff between MCI and dementia that emphasized high sensitivity (92.3%) to capture MCI cases. The core and orientation domains in both tests best distinguished HC from MCI groups, whereas comprehension/executive function and attention/calculation were not helpful. Mean FAQ scores were significantly higher and a greater proportion had abnormal FAQ scores in dementia than MCI and HC.</p> <p>Conclusions: MoCA and MMSE were more similar for dementia cases, but MoCA distributes MCI cases across a broader score range with less ceiling effect. A cutoff of ≥ 17 on the MoCA may help capture early and late MCI cases; depending on the level of sensitivity desired, ≥ 18 or 19 could be used. Functional assessment can help exclude dementia cases. MoCA scores are translatable to the MMSE to facilitate comparison." (p. 107)</p>
Author	Credentials: Unknown Position and Institution: Indiana University School of Medicine, Indianapolis, IN, USA Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: Scholarly peer-reviewed Publisher: BMC Geriatrics
Date and Citation History	Date of publication: 2015 Cited By: 513
Stated Purpose or Research Question	"We analyzed the relationship between MoCA and MMSE scores with their distributions, equivalent scores, cutoff values for MCI versus AD dementia, and contribution of domain subscores in differentiating MCI from HC groups using ADNI data" (p. 1)
Author's Conclusion	"We recommend that the MoCA be used in conjunction with a functional scale such as the FAQ to distinguish dementia cases whose scores overlap in the MCI range and a more sophisticated executive function or episodic memory test to distinguish milder MCI as it transitions from normal." (p. 9)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Good Rationale: The study compared cognitive tests to see which one(s) work best in functional cognition.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Published within 4 years. Author has a good reputation. The tests studied are the typical assessments used for functional cognition, which is part of our question.

Type of article	Overall Type: Conceptual Specific Type: Practice article
APA Reference	Karmali, S., Hagstrom, L., Mah, K., Mishima, G., & Seminary, J. (2018). Functional cognitive assessment and intervention in acute care. <i>SIS Quarterly Practice Connections</i> , 3(4), 21–23.
Abstract	“Functional cognition is the interrelationship of cognition and functional performance (Giles et al., 2017). Occupational therapy practitioners in the acute care setting play an integral role by addressing functional cognition, which can impair IADLs and BADLs (Leland et al., 2012). Cognitive impairment in older adults is one of the most debilitating and common outcomes after critical illness of traumatic brain injury, stroke, and neurodegenerative diseases (Brummel et al., 2012). Older adults in acute care may present with additional challenges, such as comorbidities and medical instability (Shotwell et al., 2017). Providing a functional cognitive assessment is imperative if a cognitive deficit is suspected through chart review or clinical observations. This article will discuss examples of cognitive assessment tools that could be used in the acute care setting, intervention strategies, and application of tools and strategies.” (p. 23)
Author	Credentials: OTR/L Position and Institution: Occupational Therapist at Overlake Hospital Medical Center in Bellevue, Washington. Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: American Journal of Occupational Therapy (AJOT) Other: SIS Quarterly Practice Connections
Date and Citation History	Date of publication: 2018 Cited By: 850
Stated Purpose or Research Question	“This article will discuss examples of cognitive assessment tools that could be used in the acute care setting, intervention strategies, and application of tools and strategies.” (p. 21)
Author’s Conclusion	“Occupational therapy practitioners have functional cognitive assessment tools for older adults that incorporate the real-world environment to determine a treatment plan and recommendations for discharge. Identifying functional cognitive deficits early can enhance performance and facilitate carryover through the care continuum.” (p. 23)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Limited Rationale: Article discusses cognitive assessment tools on a neutrally.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Reputable Journal and publisher. Publication within last year. It lists a few cognitive assessments, which could be used for our question.

Type of article	Overall Type: Primary research study Specific Type: Psychometric research study
APA Reference	Nasreddine, Z. S., Phillips, N. A., Bédirian, V. , Charbonneau, S. , Whitehead, V. , Collin, I. , Cummings, J. L. and Chertkow, H. (2005), The Montreal Cognitive Assessment, MoCA: A brief screening tool for Mild Cognitive Impairment. <i>Journal of the American Geriatrics Society</i> , 53, 695-699. doi:10.1111/j.1532-5415.2005.53221.x
Abstract	<p>Objectives: To develop a 10-minute cognitive screening tool (Montreal Cognitive Assessment, MoCA) to assist first-line physicians in detection of mild cognitive impairment (MCI), a clinical state that often progresses to dementia.</p> <p>Design: Validation study.</p> <p>Setting: A community clinic and an academic center.</p> <p>Participants: Ninety-four patients meeting MCI clinical criteria supported by psychometric measures, 93 patients with mild Alzheimer's disease (AD) (Mini-Mental State Examination (MMSE) score\geq17), and 90 healthy elderly controls (NC).</p> <p>Measurements: The MoCA and MMSE were administered to all participants, and sensitivity and specificity of both measures were assessed for detection of MCI and mild AD.</p> <p>Results: Using a cutoff score 26, the MMSE had a sensitivity of 18% to detect MCI, whereas the MoCA detected 90% of MCI subjects. In the mild AD group, the MMSE had a sensitivity of 78%, whereas the MoCA detected 100%. Specificity was excellent for both MMSE and MoCA (100% and 87%, respectively).</p> <p>Conclusion: MCI as an entity is evolving and somewhat controversial. The MoCA is a brief cognitive screening tool with high sensitivity and specificity for detecting MCI as currently conceptualized in patients performing in the normal range on the MMSE." (p. 695)</p>
Author	Credentials: MD and Neurologist Position and Institution: Assistant Professor at McGill University Publication History in Peer-Reviewed Journals: 419
Publication	Type of publication: scholarly peer-reviewed journal Publisher: Journal of the American Geriatrics Society
Date and Citation History	2005 Google Scholar Cited By: 8312
Stated Purpose or Research Question	"To develop a 10-minute cognitive screening tool (Montreal Cognitive Assessment, MoCA) to assist first line physicians in detection of mild cognitive impairment (MCI), a clinical state that often progresses to dementia." (p.1)
Author's Conclusion	"In summary, the current concepts of normal cognitive aging, MCI, and dementia diagnosis are evolving, and new assessment tools for executive function and attention might alter assessment of these categories. ²¹ Nevertheless, MCI is now recognized as an important and diagnosable entity, a high-risk state for progression to AD, and drug studies of MCI subjects are currently underway. ²² Rapid, accurate diagnosis of MCI will become increasingly important to clinicians. The MoCA is a simple, stand-alone cognitive screening tool with superior sensitivity. It covers important cognitive domains, can be administered in 10 minutes, and fits on one page. Moreover, the data indicate that it has excellent test-retest reliability and positive and negative predictive values for MCI and AD. It is sensitive to the presence of MCI and is feasible to use in a clinical setting, where assessment time is often limited. The MoCA promises to fill an urgent unmet need for a brief screening tool capable of detecting patients with MCI and distinguishing them from cognitively intact older people. (p.6)
Overall Relevance to PICO	Overall Relevance: Strong PICO: I believe this article is strong as it discusses the Montreal Cognitive Assessment for MCI which is the main point of our question.
Overall Quality	Overall Quality of Article: Good Quality Established author. Reputable journal and publisher. Publication within last 10 years. Fits well with our case question.

Type of article	Overall Type: Primary research study Specific Type: Psychometric
APA Reference	Freitas, S., R., M., Alves, L., Duro, D., & Santana, I. (2012). Montreal Cognitive Assessment (MoCA): Validation study for Mild Cognitive Impairment and Alzheimer Disease. <i>Journal of Alzheimer Disease & Associated Disorders</i> , 25(3), 146-154. https://doi.org/10.1177/0891988712455235
Abstract	“The Montreal Cognitive Assessment (MoCA) was recently proposed as a cognitive screening test for milder forms of cognitive impairment, having surpassed the well-known limitations of the Mini-Mental State Examination (MMSE). This study aims to validate the MoCA for screening Mild Cognitive Impairment (MCI) and Alzheimer disease (AD) through an analysis of diagnostic accuracy and the proposal of cut-offs. Patients were classified into 2 clinical groups according to standard criteria: MCI (n=90) and AD (n=90). The 2 control groups (C-MCI: n=90; C-AD: n=90) consisted of cognitively healthy community dwellers selected to match patients in sex, age, and education. The MoCA showed consistently superior psychometric properties compared with the MMSE, and higher diagnostic accuracy to discriminate between MCI (area under the curve=0.856; 95% confidence interval, 0.796-0.904) and AD patients (area under the curve=0.980; 95% confidence interval, 0.947-0.995). At an optimal cut-off of below 22 for MCI and below 17 for AD, the MoCA achieved significantly superior values in comparison with MMSE for sensitivity, specificity, positive predictive value, negative predictive value, and classification accuracy. Furthermore, the MoCA revealed higher sensitivity to cognitive decline in longitudinal monitoring. This study provides robust evidence that the MoCA is a better cognitive tool than the widely used MMSE for the screening and monitoring of MCI and AD in clinical settings.” (p. 146)
Author	Credentials: PhD Position and Institution: Faculty of Psychology and Educational Sciences Publication History in Peer-Reviewed Journals: 52,000
Publication	Type of publication: scholarly peer-reviewed journal Publisher: Alzheimer Disease & Associated Disorders
Date and Citation History	2012 Google Scholar Cited By: 232
Stated Purpose or Research Question	“The aim of the present study is to validate the MoCA10,22 for cognitive screening of MCI and AD patients. This was carried out through the analysis of its diagnostic accuracy as well as the establishment of the optimal cut-off points to detect MCI and AD patients. The data of a longitudinal study with MCI and AD patients has also been analyzed in order to establish the MoCA’s sensitivity for cognitive decline in a short period of time.” (p. 146)
Author’s Conclusion	“In conclusion, this study produced several evidences of the overall superiority of the MoCA in comparison with the MMSE as a global cognitive assessment instrument, regarding the discriminant validity and the diagnostic accuracy.” (p. 154)
Overall Relevance to PICO	Overall Relevance: Strong PICO: I believe this article is strong as it discusses the Montreal Cognitive Assessment for MCI in relations to our research question.
Overall Quality	Overall Quality of Article: Good Quality Established author. Reputable journal and publisher. Publication within last 10 years. Establishes a specific assessment for MCI.

Type of article	Overall Type: Primary research study Specific Type: Survey
APA Reference	Belchior, P., Korner-Bitensky, N., Holmes, M., & Robert, A. (2015). Identification and assessment of functional performance in mild cognitive impairment: A survey of occupational therapy practices. <i>Australian Occupational Therapy Journal</i> , 62, 187-196. doi:10.1111/1440-1630.12201
Abstract	“Despite the amount of research evidence pointing to functional changes experienced by individuals with mild cognitive impairment (MCI), we still do not understand how occupational therapists are currently addressing these concerns. Thus, we designed a national study to investigate Canadian occupational therapist’s practices with this clientele. We conducted a Canada-wide online survey to investigate occupational therapists’ practices with clients with potential MCI. Clinicians were prompted by a case vignette that described two clients: one vignette included cues associated with amnesic MCI (aMCI), the other non-amnesic MCI (naMCI). Specifically, clinicians were asked to identify potential concerns and to indicate the screening and assessment tools they would use in clinical practice. Two hundred and eighty-five participants met the inclusion criteria and were included in the final analysis. The average clinician age was 38.6 (SD = 10.3), 92% were female and 71.2% worked full-time. Almost all clinicians identified a concern in both vignettes, with cognitive concerns being identified more frequently than functional concerns [i.e. Instrumental Activities of Daily Living (IADL) concerns]. In terms of assessment practices, 18 standardized IADL assessments and 10 standardized cognitive assessments have been reported. Encouragingly, almost all clinicians identified a concern. However, some are still missing the IADL cues. Moreover, the lack of consensus in terms of which assessment practices to employ indicates that clinicians might benefit from guidelines in this area of practice.” (p. 187)
Author	Credentials: Post-doctoral Associate (Rehabilitation Sciences), BSc. (OT); B.A. (Law) Position and Institution: University of Florida, 2010, University of Florida, 2007; Dom Bosco Catholic University, Brazil, 1999; Bosco Catholic University, Brazil, 1998 Publication History in Peer-Reviewed Journals: 3,990 results
Publication	Type of publication: Scholarly peer reviewed journal Publisher: Australian Occupational Therapy Journal
Date and Citation History	Date of publication: 2015 Google Scholar Cited By: 10
Stated Purpose or Research Question	“Background/Aim: Despite the amount of research evidence pointing to functional changes experienced by individuals with mild cognitive impairment (MCI), we still do not understand how occupational therapists are currently addressing these concerns. Thus, we designed a national study to investigate Canadian occupational therapist’s practices with this clientele.” (p.2)
Author’s Conclusion	“The idea that individuals with MCI already face decline in performance of everyday tasks is not new. Although, this study shows that there is room for improvement in problem identification, screening and assessment practices in this area. For instance, considering that IADL assessment is the domain of concern and expertise of occupational therapists, they should be more aware of the possible functional problems experienced by this population. In fact, occupational therapists should take a lead role in this area of practice.” (p. 9)
Overall Relevance to PICO or EBP Research Question	Overall Relevance: Strong I believe that this fits perfectly with the EBP research question as it identifies assessments that can be useful for mild cognitive impairment. It gives great insight to individuals who have had functional changes within their life and how an occupational therapist can help address those issues through the use of assessments.
Overall Quality of Article	Overall Quality of Article: Good Gives great insight to assessments used for mild cognitive impairment. Established author. Reputable journal and publisher. Publication within last 10 years

Type of article	Overall Type: Review of research study Specific Type: Literature review
APA Reference	Gold, D. (2012). An examination of instrumental activities of daily living assessment in older adults and mild cognitive impairment. <i>Journal of Clinical and Experimental Neuropsychology</i> , 34(1), 11-34.
Abstract	“Basic activities of daily living (ADL) are self-maintenance abilities such as dressing or bathing. Instrumental ADL (IADL) are more complex everyday tasks, such as preparing a meal or managing finances (Lawton & Brody, 1969) Lawton, M. P. and Brody, E. M. 1969. Assessment of older people: Self-maintaining and instrumental activities of daily living. <i>Gerontologist</i> , 9: 179–186.[Crossref], [PubMed], [Web of Science®], [Google Scholar]. IADL questionnaires play an important role in assessing the functional abilities of older adults and evaluating the impact of cognitive impairment on routine activities. This paper examined the cognitive processes that underlie IADL performance and concluded that the accurate and reliable execution of IADL likely draws upon the integrity of a wide range of cognitive processes. This review examined IADL in mild cognitive impairment (MCI) because of the controversial nature of distinguishing a significant decline in functional abilities in those with MCI versus dementia or MCI versus cognitively normal aging. The challenges of investigating IADL empirically were explored, as well as some of the reasons for the inconsistent findings in the literature. A review of questionnaire-based assessments of IADL indicated that: MCI can be distinguished statistically from healthy older adults and dementia, individuals with multiple domain MCI are more impaired on IADL than those with single domain MCI, mild IADL changes can be predictive of future cognitive decline, and the ability to manage finances may be among the earliest IADL changes in MCI and a strong predictor of conversion to dementia. This paper concluded with recommendations for more sensitive and reliable IADL questionnaires.” (p. 11)
Author	Credentials: PhD Position and Institution: Faculty of Psychology and Educational Sciences Publication History in Peer-Reviewed Journals: 52,000
Publication	Type of publication: scholarly peer-reviewed journal Publisher: Journal of Clinical and Experimental Neuropsychology
Date and Citation History	2012 Google Scholar Cited By: 214
Stated Purpose or Research Question	“This goal of this article is to examine the cognitive processes that underlie IADL in community dwelling older adults, including those with MCI (many of the investigations collapse across groups of older adults and MCI to maximize power).” (p.2)
Author’s Conclusion	“This paper reviewed a number of investigations whose cumulative weight demonstrates that MCI individuals perform significantly worse on IADL measures. The difference in IADL performance between healthy older adults, MCI, and dementia is statistically significant, with moderate to large effect sizes.” (p. 14)
Overall Relevance	Overall Relevance: Strong PICO: Study relates to mild cognitive impairment and examines IADL assessments.
Overall Quality	Overall Quality of Article: Good Quality Established author. Reputable journal and publisher. Publication within last 10 years. Discusses basic IADL assessments for those with MCI.

Type of article	Overall Type: Primary research study Specific Type: Psychometric research study
APA Reference	Ciro, C. A., Anderson, M. P., Hershey, L. A., Prodan, C. I., & Holm, M. B. (2015). Instrumental activities of daily living performance and role satisfaction in people with and without mild cognitive impairment: a pilot project. <i>The American Journal of Occupational Therapy</i> , 69(3), 6903270020p1-10.
Abstract	<p>Objective: We investigated differences in observed performance of instrumental activities of daily living (IADLs) and self-reported satisfaction with social role performance between people with amnesic mild cognitive impairment (a-MCI) and age- and gender-matched control participants.</p> <p>Method: We measured observed performance of 14 IADLs using the Independence, Safety, and Adequacy domains of the Performance Assessment of Self-Care Skills (PASS) and the Patient-Reported Outcomes Measurement Information Systems (PROMIS) to examine satisfaction with social role performance.</p> <p>Results: Total PASS scores were significantly lower in participants with a-MCI (median = 40.6) than in control participants (median = 44.2; $p = .006$). Adequacy scores were also significantly lower. No significant differences were found between groups on the PROMIS measures.</p> <p>Conclusion: IADL differences between groups were related more to errors in adequacy than to safety and independence. Occupational therapy practitioners can play a key role in the diagnosis and treatment of subtle IADL deficits in people with MCI.” (p. 1)</p>
Author	Credentials: PhD, OTR/L, FAOTA Position and Institution: Professor and chair of the Department of Occupational Therapy Education. Publication History in Peer-Reviewed Journals: 824
Publication	Type of publication: scholarly peer-reviewed journal Publisher: American Journal of Occupational Therapy
Date and Citation History	2015 Google Scholar Cited By: 10
Stated Purpose or Research Question	“We investigated differences in observed performance of instrumental activities of daily living (IADLs) and self-reported satisfaction with social role performance between people with amnesic mild cognitive impairment (a-MCI) and age- and gender-matched control participants.” (p. 3)
Author’s Conclusion	“This pilot study found significant differences in IADL function between people with MCI and healthy control participants as measured by the PASS. Errors made by people with MCI involved the quality and process of performance to a greater extent than safety and independence in completing the task. These findings, along with other research, support occupational therapy practitioners’ use of sensitive IADL performance-based tools to inform collaboration with professionals who diagnose people with MCI and dementia and thus improve the preciseness of the diagnosis. Further, by specifically identifying errors in IADLs, practitioners can develop patient-centered and targeted treatment plans to address occupational performance dysfunction in older adults with cognitive disabilities.” (p. 6)
Overall Relevance to PICO	Overall Relevance: Moderate PICO: I believe this article is moderate on the relevance scale. It differentiates observed performance of IADLs between people with and without MCI giving us a good understanding how much MCI can affect daily occupations.
Overall Quality	Overall Quality of Article: Good Quality Established author. Reputable journal and publisher. Publication within last 10 years

Type of article	Overall Type: Primary research study Specific Type: Psychometric study
APA Reference	Smith, T., Gildeh, N., & Holmes, C. (2007). The Montreal Cognitive Assessment: Validity and Utility in a Memory Clinic Setting. <i>The Canadian Journal of Psychiatry</i> , 52(5), 329-332. https://doi.org/10.1177/070674370705200508
Abstract	<p>Objective: To prospectively validate the Montreal Cognitive Assessment (MoCA) in a UK memory clinic.</p> <p>Method: We administered the MoCA and Mini-Mental State Examination (MMSE) to 32 subjects fulfilling diagnostic criteria for dementia, to 23 subjects fulfilling diagnostic criteria for mild cognitive impairment (MCI), and to 12 memory clinic comparison subjects, at baseline and then at 6-month follow-up. Clinical diagnoses for dementia and MCI were made according to ICD-10 and Petersen criteria. The sensitivity and specificity of both measures were assessed for detection of MCI and dementia.</p> <p>Results: With a cut-off score of 26, the MMSE had a sensitivity of 17% to detect subjects with MCI, whereas the MoCA detected 83%. The MMSE had a sensitivity of 25% to detect subjects with dementia, whereas the MoCA detected 94%. Specificity for the MMSE was 100%, and specificity for the MoCA was 50%. Of subjects with MCI, 35% developed dementia within 6 months, and all scored less than 26 points on the MoCA at baseline.</p> <p>Conclusions: The MoCA is a useful brief screening tool for the detection of mild dementia or MCI in subjects scoring over 25 points on the MMSE. In patients already diagnosed with MCI, the MoCA helps identify those at risk of developing dementia at 6-month follow-up. “ (p. 329)</p>
Author	Credentials: Research Student Position and Institution: University of Southampton, Southampton, England Publication History in Peer-Reviewed Journals: low
Publication	Type of publication: Peer Reviewed Journal Publisher: The Canadian Journal of Psychiatry
Date and Citation History	2007 Google Scholar Cited By: 580
Stated Purpose or Research Question	“We sought to validate the MoCA in a UK memory clinic setting where subjects with a wide variety of illnesses may present with memory impairment.” (pp.330)
Author’s Conclusion	“We found the MoCA to have comparable sensitivity in detecting mild dementia (94%, compared with 100%).” (pp.331)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong Rationale: Used two different test to validate MoCA on three different population.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Although the author hasn’t published many journals, this journal was cited over 500 time and is only 10 years old.

Type of article	Overall Type: Primary research study Specific Type: Case-control study
APA Reference	Malek-Ahmadi, M., Davis, K., Belden, C.M., Jacobson, S., & Sabbagh, M.N. (2012). Informant-reported cognitive symptoms that predict amnesic mild cognitive impairment. <i>BMC Geriatrics</i> , 12(3), 1-6. https://doi.org/10.1186/1471-2318-12-3
Abstract	*Background: Differentiating amnesic mild cognitive impairment (aMCI) from normal cognition is difficult in clinical settings. Self-reported and informant-reported memory complaints occur often in both clinical groups, which then necessitates the use of a comprehensive neuropsychological examination to make a differential diagnosis. However, the ability to identify cognitive symptoms that are predictive of aMCI through informant-based information may provide some clinical utility in accurately identifying individuals who are at risk for developing Alzheimer's disease (AD). Methods: The current study utilized a case-control design using data from an ongoing validation study of the Alzheimer's Questionnaire (AQ), an informant-based dementia assessment. Data from 51 cognitively normal (CN) individuals participating in a brain donation program and 47 aMCI individuals seen in a neurology practice at the same institute were analyzed to determine which AQ items differentiated aMCI from CN individuals. Results: Forward stepwise multiple logistic regression analysis which controlled for age and education showed that 4 AQ items were strong indicators of aMCI which included: repetition of statements and/or questions [OR 13.20 (3.02, 57.66)]; trouble knowing the day, date, month, year, and time [OR 17.97 (2.63, 122.77)]; difficulty managing finances [OR 11.60 (2.10, 63.99)]; and decreased sense of direction [OR 5.84 (1.09, 31.30)]. (p. 1)
Author	Credentials: PhD Position and Institution: Bioinformatics Scientist at Banner Alzheimer's Institute Publication History in Peer-Reviewed Journals: moderate
Publication	Type of publication: Peer Reviewed Journal Publisher: BMC Geriatrics
Date and Citation History	2012 Google Scholar Cited By: 16
Stated Purpose or Research Question	"The ability to identify cognitive symptoms that are predictive of aMCI through informant-based information may provide some clinical utility in accurately identifying individuals who are at risk for developing Alzheimer's disease (AD)." (p. 1)
Author's Conclusion	"The use of informant-supplied information is a widely-used and highly valid method of assessing an individual's cognitive and functional abilities." (p. 4)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong Rationale: Compared two population to test aMCI and used Alzheimer's Questionnaire to test the population. A case-control design was used for this study.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: The author has done multiple work on Alzheimer's research and the article has been cited a few times since 2012.

Type of article	Overall Type: Primary research study Specific Type: Non-experimental longitudinal study
APA Reference	Asuman Kiyak, H., Teri, L., & Borson, S. (1994). Physical and functional health assessment in normal and aging in Alzheimer's disease: Self-Report vs family Reports. <i>The Gerontologist</i> , 31(3), 324-331.
Abstract	"This longitudinal 2-year study compared self and family members' reports of physical and functional health among 40 patients with Alzheimer's disease and 53 age-matched nondemented healthy older persons. Functional health was consistently rated as more impaired by family caregivers of demented patients than by the patients themselves, a discrepancy not observed in the cognitively intact comparison group. Caregiver reports correlated significantly with declines in patients' cognitive abilities as measured by formal testing, but self-reports did not. Patients did recognize deterioration in ADLs over time, despite progressively worsening cognitive ability. These data indicate that the capacity for self-observation is partially preserved in Alzheimer's patients in mild to moderate stages. Patient self-reports can provide valuable data for clinicians but should be supplemented by detailed information from caregivers." (p. 324)
Author	Credentials: Psychologist with specialty in gerontology. PhD Position and Institution: Professor at University of Washington Seattle Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: Peer reviewed journal Publisher: The Gerontologist
Date and Citation History	1994 Google Scholar Cited By: 184
Stated Purpose or Research Question	"The objectives of this study were to: (1) examine the assessments by older persons and their significant others in order to determine concordance between self and family reports; (2) assess the impact of cognitive impairment on degree of concordance; and (3) determine the impact of cognitive decline on self and family-reported functional and physical health in older adults with Alzheimer's disease." (pp. 325)
Author's Conclusion	"Despite these limitations, the findings of this study offer empirical support for the following conclusions: (1) healthy older adults remain consistent in their reports of physical and functional health over time; and (2) their families' reports closely resemble their own." (pp. 329)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: Compared and measured family and self-report of physical and functional health of Alzheimer's individual over a 2-year study.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: The article was cited over a hundred times; however, it is over 30 years old. The author is also credible due to her other work in gerontology.

Type of article	Overall Type: Primary research study Specific Type: Exploratory factor analysis
APA Reference	Siedlecki, K. L., Honig, L. S., & Stern, Y. (2008). Exploring the structure of a neuropsychological battery across healthy elders and those with questionable dementia and Alzheimer's disease. <i>Neuropsychology</i> , 22(3), 400-411. doi:http://dx.doi.org.pearl.stkate.edu/10.1037/0894-4105.22.3.400
Abstract	"An exploratory factor analysis (EFA) and a series of confirmatory factor analyses were conducted on 17 variables designed to assess different cognitive abilities in a sample of healthy older adults. In the EFA, 4 factors emerged corresponding to language, memory, processing speed, and fluid ability constructs. The results of the confirmatory factor analyses suggested that a 5-factor model with an additional Attention factor improved the fit. The invariance of the 5-factor model was examined across 3 groups: a group of cognitively healthy older adults, a group of patients diagnosed with questionable dementia (QD), and a group of patients diagnosed with probable Alzheimer's disease (AD). Results of the invariance analysis suggest that the model may have configural invariance across the 3 groups but not metric invariance. Specifically, preliminary analyses suggest that the memory construct may represent something different in the QD and AD groups as compared to the healthy older adult group, consistent with the underlying pathology in early AD." (p. 400)
Author	Credentials: PhD Psychologist Position and Institution: Professor at Fordham University Publication History in Peer-Reviewed Journals: low
Publication	Type of publication: Peer Reviewed Journal Publisher: Neuropsychology
Date and Citation History	2008 Google Scholar Cited By: 51
Stated Purpose or Research Question	"An exploratory factor analysis (EFA) and a series of confirmatory factor analyses were conducted on 17 variables designed to assess different cognitive abilities in a sample of healthy older adults."
Author's Conclusion	"There are clear differences in performance across diagnostic groups, with cognitively-healthy older adults performing better on all the tasks than the QD and probable AD groups."
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: Compared and measured healthy adults with Alzheimer's disease and questionable dementia. Used two test scores to compare the results of how each adults performed.
Overall Quality of Article	Overall Quality of Article: Poor Rationale: The article was cited about 51 times and even though it is over ten years old. The author doesn't have extensive work in testing adults with Alzheimer's.

Type of article	Overall Type: Review of research studies Specific Type: Review of psychometric studies
APA Reference	Tombaugh, T.N. & McIntyre, N.J. (1992). The Mini-Mental State Examination: A comprehensive review. <i>Journal of the American Geriatrics Society</i> , 40(9), 922-935. https://doi.org/10.1111/j.1532-5415.1992.tb01992.x
Abstract	<p>“Objective: The purpose of this paper is to provide a comprehensive review of information accumulated over the past 26 years regarding the psychometric properties and utility of the Mini-Mental State Examination (MMSE).</p> <p>Participants: The reviewed studies assessed a wide variety of subjects, ranging from cognitively intact community residents to those with severe cognitive impairment associated with various types of dementing illnesses.</p> <p>Main Outcome Measures: The validity of the MMSE was compared against a variety of gold standards, including DSM-III-R and NINCDS-ADRDA criteria, clinical diagnoses, Activities of Daily Living measures, and other tests that putatively identify and measure cognitive impairment.</p> <p>Results: Reliability and construct validity were judged to be satisfactory. Measures of criterion validity showed high levels of sensitivity for moderate-to-severe cognitive impairment and lower levels for mild degrees of impairment. Content analyses revealed the MMSE was highly verbal, and not all items were equally sensitive to cognitive impairment. Items measuring language were judged to be relatively easy and lacked utility for identifying mild language deficits. Overall, MMSE scores were affected by age, education, and cultural background, but not gender.</p> <p>Conclusions: In general, the MMSE fulfilled its original goal of providing a brief screening test that quantitatively assesses the severity of cognitive impairment and documents cognitive changes occurring over time. The MMSE should not, by itself, be used as a diagnostic tool to identify dementia. Suggestions for the clinical use of the MMSE are made.” (p. 922)</p>
Author	Credentials: PhD Psychologist Position and Institution: Professor at Carleton University Canada Publication History in Peer-Reviewed Journals: High
Publication	Type of publication: Peer Reviewed Journal Publisher: Journal of American Geriatrics Society
Date and Citation History	1992 Google Scholar Cited By: 3989
Stated Purpose or Research Question	“The purpose of this paper is to provide a comprehensive review of information accumulated over the past 26 years regarding the psychometric properties and utility of the Mini-Mental State Examination (MMSE).” (p. 922)
Author’s Conclusion	“In general, the MMSE fulfilled its original goal of providing a brief screening test that quantitatively assesses the severity of cognitive impairment and documents cognitive changes occurring over time.” (p. 935)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong Rationale: Measured how well the Mini-Mental State Examination assess cognitive abilities by using in on a wide range of population with mild to severe cognitive impairment.
Overall Quality of Article	Overall Quality of Article: Good Rationale: Although the article is over 20 years old, it is still cited by other relevant sources. The author has also conducted multiple studies and research on Alzheimer’s and cognitive function.