

Young Onset Dementia Special Interest Day

15 July 2019
The Royal College of Psychiatrists
21 Prescot Street, London, E1 8BB
#MSNAP19

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YOD & DIAGNOSTIC NEUROPSYCHOLOGY

Reinhard Guss, FPOP/BPS Dementia Workstream Lead,
Consultant Clinical Psychologist, Clinical Neuropsychologist

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Overview

- Principles of Neuropsychology
- Use in Memory Services
- What's different for younger people
- Screening tools
- Levels of assessment
- Types of assessments
- Referral decisions
- Sub-types and sub-groups
- BPS resource



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Neuropsychology in Memory Services

- Who has employed
 - Clinical Neuropsychologist?
 - Clinical Psychologist?
 - Counselling Psychologist?
 - Assistant Psychologist?
- Who has "access to"
 - The above
 - Neuropsychology Service
 - other



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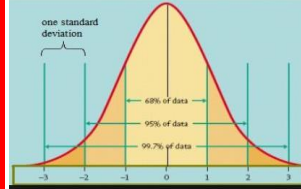
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Basic principles of Neuropsychology assessment

Statistics and the Normal Distribution



- Every characteristic we measure follows a type of normal distribution
- ND can be standardised using the standard deviation from the mean
- Error is normally distributed

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Basic principles of Neuropsychology assessment

- Normative comparison data
 - Large numbers of healthy people tested
- Age scaled norms
 - Stratified comparison data by age group
- Samples of data from condition specific groups
- How representative are the samples used for test construction?



Basic principles of Neuropsychology assessment

- Objectivity
 - correlation between administrators
 - Do you give hints?
 - Are you strict or lenient in scoring
 - Do you behave differently with a patient in their 50s or 90 – perhaps you should?



Basic principles of Neuropsychology assessment

- Reliability
 - Re-test reliability: test repetition
 - Are the conditions really the same
 - Inter-rater reliability (objectivity): different people scoring
 - Interpretations of scoring guidance
 - Using tests outside laboratory conditions
 - Testing in inpatient units



Basic principles of Neuropsychology assessment

- Validity
 - How well does it measure what it sets out to assess
 - Are tests more valid for younger or older people?
- Coefficients of Objectivity/Reliability/Validity
 - Correlations and percentages
 - What is good enough?

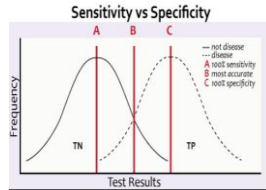


Basic principles of Neuropsychology assessment

Sensitivity & Specificity

Formula	Definition
Sensitivity $Sen = TP / (TP + FN)$ = TP / Diseased	Percentage of patients with the disease that receive a positive result Percentage chance that the test will correctly identify a person who actually has the disease
Specificity $Spec = TN / (TN + FP)$ = TN / Not Diseased	Percentage of patients without the disease that receive a negative result Percentage chance that the test will correctly identify a person who is disease free

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Basic principles of Neuropsychology assessment

Sensitivity & Specificity

TABLE 1
Sensitivity and specificity of commonly used dementia screening tests

Test	Cutoff score	Sensitivity (%)	Specificity (%)
Mini-Mental State Exam ²³	<24	66	99
Word Fluency - Animal Naming ⁴	<15	88	96
Mini Cognitive Assessment ⁴	<2	76	89
Sweet 16 ⁴	<14	80	70
Trail Making B ²³	117.5sec	75	76
MoCA (for MCI) ²³	<26	90	87
mini-KSCA ²⁴	<36	92	95

KSCA, Kingston Standardized Cognitive Assessment-Revised; MCI, mild cognitive impairment; MoCA, Montreal Cognitive Assessment.



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Premorbid level of functioning



- Based on preserved reading ability as a proxy for level of functioning
- Educational and occupational history
- Checking for validity – exceptions in PCA, FTD, dyslexia, education of women



SCOWELL READING TEST									
Age	100	105	110	115	120	125	130	135	140
10	100	100	100	100	100	100	100	100	100
11	100	100	100	100	100	100	100	100	100
12	100	100	100	100	100	100	100	100	100
13	100	100	100	100	100	100	100	100	100
14	100	100	100	100	100	100	100	100	100
15	100	100	100	100	100	100	100	100	100
16	100	100	100	100	100	100	100	100	100
17	100	100	100	100	100	100	100	100	100
18	100	100	100	100	100	100	100	100	100
19	100	100	100	100	100	100	100	100	100
20	100	100	100	100	100	100	100	100	100
21	100	100	100	100	100	100	100	100	100
22	100	100	100	100	100	100	100	100	100
23	100	100	100	100	100	100	100	100	100
24	100	100	100	100	100	100	100	100	100
25	100	100	100	100	100	100	100	100	100
26	100	100	100	100	100	100	100	100	100
27	100	100	100	100	100	100	100	100	100
28	100	100	100	100	100	100	100	100	100
29	100	100	100	100	100	100	100	100	100
30	100	100	100	100	100	100	100	100	100
31	100	100	100	100	100	100	100	100	100
32	100	100	100	100	100	100	100	100	100
33	100	100	100	100	100	100	100	100	100
34	100	100	100	100	100	100	100	100	100
35	100	100	100	100	100	100	100	100	100
36	100	100	100	100	100	100	100	100	100
37	100	100	100	100	100	100	100	100	100
38	100	100	100	100	100	100	100	100	100
39	100	100	100	100	100	100	100	100	100
40	100	100	100	100	100	100	100	100	100
41	100	100	100	100	100	100	100	100	100
42	100	100	100	100	100	100	100	100	100
43	100	100	100	100	100	100	100	100	100
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45	100	100	100	100	100	100	100	100	100
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86	100	100	100	100	100	100	100	100	100
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88	100	100	100	100	100	100	100	100	100
89	100	100	100	100	100	100	100	100	100
90	100	100	100	100	100	100	100	100	100
91	100	100	100	100	100	100	100	100	100
92	100	100	100	100	100	100	100	100	100
93	100	100	100	100	100	100	100	100	100
94	100	100	100	100	100	100	100	100	100
95	100	100	100	100	100	100	100	100	100
96	100	100	100	100	100	100	100	100	100
97	100	100	100	100	100	100	100	100	100
98	100	100	100	100	100	100	100	100	100
99	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100

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Screening Measures in Primary Care

Screening for dementia in primary care: A review of the use, efficacy and quality of measures

Article | Literature Review (PDF Available) in International Psychogeriatrics 2015;011-26 July 2008 with 248 Reads
[View full-text](#) [Download citation](#) [Share this publication](#)

Alison Milne
 2025-07 University of Kent

Alison Margaret Cullverwell
 2015-02 Saint and Shreeley Health and Social Care Partners

Reinhard Guze
 2016 Saint and Shreeley Health and Social Care Partners

J Tuppen

Despite evidence that early identification of dementia is of growing policy and practice significance in the U.K., limited work has been done on evaluating screening measures for use in primary care. The aim of this paper is to offer a critically appraised synthesis of research and practice-based evidence on the utility, efficacy and quality of dementia screening measures. The study has three elements: a review of research literature, a small scale survey of measures employed in three primary care trusts, and a systematic clinical evaluation of the most commonly used screening instruments. The study integrates data from research and clinical sources. The General Practitioner Assessment of Cognition (GPCOG), the Memory Impairment Screen (MIS), and the Mini-Cognitive Assessment Instrument (Mini-Cog) were found to be best, easy to administer, clinically acceptable, effective, and minimally affected by education, gender, and ethnicity. All three have psychometric properties similar to the Mini-Mental State Examination (MMSE). Although the MMSE is widely used in the U.K., this project identifies the GPCOG, MIS and Mini-Cog as clinically and psychometrically robust and more appropriate for routine use in primary care. A coherent review of evidence coupled with an in-depth evaluation of screening instruments has the potential to enhance ability and commitment to early intervention in primary care and, as part of a wider educational strategy, improve the quality and consistency of dementia screening.

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Screening Measures in Primary Care

The Mini-Cog scoring algorithm. The Mini-Cog uses a three-item recall test for memory and the intuitive clock-drawing test. The latter serves as an "informative distractor," helping to clarify scores when the memory recall score is intermediate.

```

    graph TD
      MiniCog[MINI-COG] --> Recall0[Recall = 0]
      MiniCog --> Recall12[Recall = 1-2]
      MiniCog --> Recall3[Recall = 3]
      Recall0 --> Demented0[DEMENTED]
      Recall12 --> ClockAbn[Clock Abnormal]
      Recall12 --> ClockNor[Clock Normal]
      ClockAbn --> Demented12[DEMENTED]
      ClockNor --> NonDemented12[NONDEMENTED]
      Recall3 --> NonDemented3[NONDEMENTED]
    
```

- The better ones:
 - GP Cog
 - MIS
 - Mini-Cog
- Major difficulties with younger and higher functioning people!

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Screening Measures in Primary Care

```

    graph TD
      Start[Conduct brief structured assessment  
Patient Assessment: GPCOG or Mini-Cog or MIS  
Informant assessment of patient: AD8 or GPCOG or Short IQCODE] --> Trigger{Brief assessment(s) triggers concerns:  
Patient: GPCOG <5 (5-8 score is indeterminate without informant) or Mini-Cog <3 or MIS <4  
Informant: AD8 >2 or GPCOG informant score <3 with patient score <8 or Short IQCODE >3.38}
      Trigger -- No --> FollowUp[Follow-up subsequent]
      Trigger -- Yes --> End[ ]
    
```

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Screening tools in Memory Services

- Who is using screening tools in their Service?
- What are you using?
- MMSE/SMMSE
- MOCA
- ACE III
- Other?

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Cut-off points for referral to Neuropsychology

- Who is using screening cut off points?
- What are the cut off points?
 - MMSE/sMMSE: 23+
 - MoCA: 25/26
 - ACE III: 80+
- Beware of context, high functioning, early stages
- What's the point of referral cut-off?

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A hierarchy of Neuropsychology testing

- Basic neuropsychological assessment in M/C
 - Premorbid functioning
 - RBANS
 - Executive functioning




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Executive functioning

- Attention/Distractibility
- Planning/Organisation
- Problem Solving
- Learning from Feedback
- Fluency/Generation
- Response Inhibition
- Shifting cognitive set
- Judgement
- Processing capacity
- Psychomotor speed



- Executive function problems can have many origins
- It's not just FTD!

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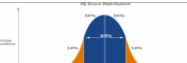
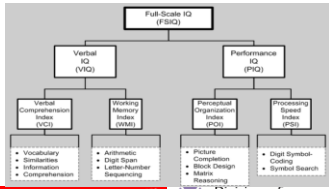
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A hierarchy of Neuropsychology testing

- "Full" neuropsychological assessment
 - Premorbid functioning
 - WAIS
 - WMS
 - DKEFS/BADS
 - Plus additions

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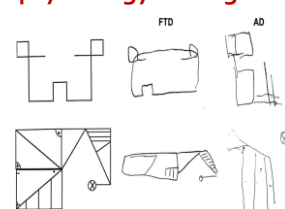
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A hierarchy of Neuropsychology testing

- Practice issues:
 - What is testing for?
 - Weighing up diagnostic versus rehabilitative uses
 - Producing scores to tick boxes
 - Personcentred Neuropsychology



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Effort testing?

- Do people fake dementia?
- Failing on purpose for personal gain?
- What do "tests of effort" measure?
- Effort tests can be failed due to dementia!

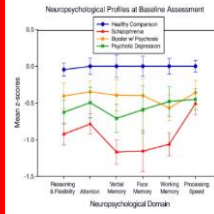
Malingering Checklist

- Presence of a substantial external incentive
- Evidence from neuropsychological testing
 - Definite negative response bias (below chance on a forced-choice measure of cognitive function)
 - Possible response bias on a validity test
 - Discrepancies between test data and known patterns of brain functioning
 - Discrepancies between test data and observed behavior
 - Discrepancy between test data and reliable collateral reports
 - Discrepancy between test data and documented background history
- Evidence from self-report
 - Self-reported history discrepancy with documented history
 - Self-reported symptom discrepancy with known patterns of brain functioning
 - Self-reported symptom discrepancy with behavioral observations
 - Self-reported symptom discrepancy with reports from close informants
 - Evidence of exaggerated or fabricated psychological dysfunction
- Behavior meeting criteria from groups B and C not fully accounted for by psychiatric, neurologic, or developmental factors

Nick et al., 1999; Lezak et al., 2004

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Major mental health history and YOD



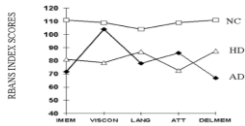
- Schizophrenia and bipolar disorders cause/correlate with cognitive difficulties
- typically executive function difficulties, attention, fluency, processing...
- History of treatments, ECT, antipsychotics have cognitive effects of their own
- Without excellent informant reports testing can only establish a baseline
- Baselines are not valid if mental state varies

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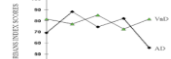
Differential diagnosis

- YOD or mental health?
- YOD or "malingering"
- AD or VaD
- Cortical/sub-cortical
- LBD
- FTD, behavioural and language
- PCA

RBANS dementia profile comparison (from Randolph et al., 1998)



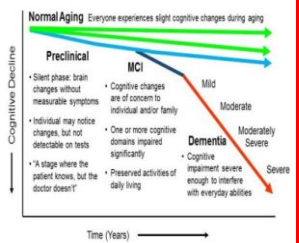
RBANS AD vs VaD profile comparison (from Fox et al., 2006)



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A word about MCI

- Whatever is Mild Cognitive Impairment?
- DSM V and MCI due to Alzheimer's/LBD...
- A euphemism or WL control mechanism?
- Definitions vary
- Significant impairment?



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- BPS resource on early stage dementia care pathway
- free to download
- Chapter on Neuropsychological Assessment by Daniel Collerton

<https://shop.bps.org.uk/clinical-psychology-in-the-early-stage-dementia-care-pathway.html>



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Thank you!

.... Any Questions?

Reinhard Guss

Twitter: [FPOP Dementia Lead@ReinhardGuss](#)

Email: reinhardguss@btinternet.com

Reinhard.Guss@sussexpartnership.nhs.uk



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