Office-based Dementia Assessment of Daily Function

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Scale development: Amsterdam IADL Questionnaire © (copyright of the Alzheimer Center Amsterdam) 
Cognitive-Functional Composite (CFC) (copyright of the Alzheimer Center Amsterdam)

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Take home messages

• Measuring functional decline is highly relevant and a clinical meaningful addition to clinical practice

• Despite its relevance, there are several unmet needs in the measurement of functional impairments

• Novel assessment methods, such as the Amsterdam IADL, have brought improvements to the measurement of clinically meaningful functional decline.
The relevance of measuring daily functioning

Cognition in everyday life: Instrumental activities of daily living (IADL)

Assessing IADL is important for the diagnostic process, prognosis and evaluating treatments.

Measurement of clinically relevant changes  
Prediction of decline  
Diagnosis

Sikkes et al. (2011); Reppermund et al. (2013); Fauth et al. (2013); Verlinden et al. (2016); Gerstenecker et al. (2016)
Unmet needs - *what* to measure

‘Potato eaters’ by Vincent van Gogh
https://www.vangoghmuseum.nl/nl/collectie/s0005V1962

‘8 o’clock news’ by Marius van Dokkum
http://www.mariusvandokkum.nl/schilderijen/echtparen
Many office-based assessments contain out-of-date activities and are of insufficient quality.
# Unmet needs - *quality* of measurement

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Content validity</th>
<th>Internal consistency</th>
<th>Criterion validity</th>
<th>Construct validity</th>
<th>Reproducibility</th>
<th>Responsiveness</th>
<th>Floor or ceiling effect</th>
<th>Interpretability</th>
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<td>?</td>
<td>-(a)/NA(b)</td>
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**Shortcomings in basic psychometric properties**
Unmet needs - quality of measurement

Novel approaches are necessary

Shortcomings in basic psychometric properties

Double-barreled and unclear questions are a threat to the validity

In the past 3 months, did he/she complete complex activities such as hobbies or pastimes, for example playing card games, reading books, gardening?

- you do not know
- as well as usual, with no difficulty
- with some difficulty
- with a lot of difficulty
- he/she did not do this activity at all

- it took longer
- he/she made errors

Paying attention to, understanding, discussing TV, book, magazine
Novel approaches in IADL assessments: self-report and performance-based assessments

The Harvard Automated Phone Task (APT)
Navigating an interactive voice response system (IVRS)

Novel assessment approaches show promise in early-stage AD

Cognitive Functioning Instrument (CFI)
Self-report as an early marker of cognitive decline

Amariglio et al. 2015; Rueda et al. 2015
Novel approaches in IADL assessments: Amsterdam IADL Questionnaire

Proxy (spouse, child, friend) completes the questionnaire

Administration time: 20 minutes, or 10 minutes for the short version
Amsterdam IADL scores correspond to the global impression of everyday functioning, thereby supporting the clinical meaningfulness.
IADL: related to neurodegeneration

Findings in correspondence with Roy et al. (2014); Melrose et al. (2011)
IADL: related to neurodegeneration, amyloid and clinical measures

Findings in correspondence with Roy et al. (2014); Melrose et al. (2011)

Sikkes, Knol, Pijnenburg, de Lange, Uitdehaag & Scheltens Neuroepidemiology (2013)

β = .146, 95% CI .066 -.491, p=.010
Frontal, parietal and temporal regions

Sikkes, Gehrels, Tijms, Habert, Hampel, Epelbaum, Tandetnik, Bakardjian, Scheltens, Dubois, in preparation
Capturing disease progression using IADL

Capturing disease progression using IADL & diagnostic value


Amsterdam IADL Questionnaire - in summary

**Content validity**
Definition and content development in collaboration with experts, dementia patients and caregivers

Sikkes et al., 2009; Sikkes et al., 2012; Jutten et al., 2017b

**Reliability**
High test-retest reliability, unidimensional construct, high internal consistency

Sikkes et al., 2012; Jutten et al., 2017b

**Construct validity**
Related to cognition, traditional measures, gray matter atrophy. Unrelated to age, education, gender and mood

Sikkes et al., 2013a; Jutten et al., 2019

**Diagnostic value**
Added diagnostic value in the memory clinic

Sikkes et al., 2013b

**Responsiveness**
Decline in IADL is related to cognitive decline as measured with neuropsychological instruments

Koster et al., 2015

The questionnaire is free for use for academic and not-for-profit organizations following a registration at https://www.alzheimercentrum.nl/professionals/amsterdam-iadl/
IADL: cross-cultural issues

Cultural differences in everyday activities

- Amsterdam IADL: Most relevant activities selected by international experts for short version
- Cross-cultural validation across 8 countries in Europe and USA
- Minimal differences in item endorsement between countries
- Differential item functioning analysis showed no meaningful bias at the item level: $R^2$ effect sizes 0-0.03
- A-IADL-Q scores can be reliably compared between countries

Dubbelman, Verrijp, Facal, Sanchez-Benavides, Brown…Epelbaum, Scheltens & Sikkes Under review
Clinical case with Amsterdam IADL

Woman (73), family history of AD. Others say that she forgets things, but she has no complaints herself

Son: memory problems (loses keys, forgets appointments), disoriented, gets lost

Cognitive testing: MMSE 16/30, CAMCOG 63/104

MRI: not possible

CSF: AD profile

IADL: DAD 95 /100, Amsterdam IADL questionnaire 41.86

Diagnosis: Alzheimer’s Disease
Clinical case with Amsterdam IADL (2)

Man (57), business support manager who presents with a detailed description of his memory problems and word finding difficulties

Spouse: progressive forgetfulness since 2014, problems with complex daily tasks, increasingly insecure

Cognitive testing: MMSE 24/30, CAMCOG 81/84

MRI: MTA 3/2

Amsterdam IADL questionnaire: 39.26

Multidisciplinary meeting: Alzheimer’s Disease

<65, highly educated: traditional IADL instruments less suitable
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