Assessing Cognition in Emergency and Acute Medicine.

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Assumptions

• Underlying neuropsychological processes can be inferred from tests and task performance - *with sufficient therapist skill.*

• Measuring instruments, including the therapists assessing cognitive function, are loaded with measurement error - inconsistency, bias, but this is the nature of multidimensional assessment.

• Focusing on latent constructs may assist. Problem formulation should not depend on one error in a task, or one score in a screening test.

• A thorough history and informant report is gained; relevant medical issues considered. 3-Ds considered.
Focus of session

AHPs need to be able to evaluate the likely impact of cognitive impairment to inform their decisions.

The referral question is not a diagnosis question.

AHPs need to be able to effectively evaluate cognitive function in non-routine and multiple ways.

Combined cognitive screening, domain specific assessment and functional assessment is required.

This is not being pragmatic; it's about good latent variable modelling.

Subjective Report as assessment of affect, efficacy and cognitive function.
CONCLUSION

Physical and occupational therapists show modest abilities to detect the cognitive status of their geriatric rehabilitation patients. Both disciplines are better at identifying patients who have intact cognition and minimal depressive complaints. Detection of moderate or severe depression in patients was poor in this sample, perhaps secondary to the nature of rehabilitation treatment. Given the potential negative impact of either of these disorders on rehabilitation treatment planning and goal attainment for geriatric patients, I recommend that rehabilitation teams include a mental health professional and that they use standardized tools to assess cognition and mood.
What is the referral question?

Is there a problem?

Functional performance
- Will it matter?
  - Will impact d/c decision
  - Will impact occupational performance
- What to do?

Cognitive impairment
- What is wrong?
  - What is wrong?
  - Cognitive domains?
  - Functional evidence?

Ecological validity
Occupational therapy cognitive assessment

- List
- List
- List

- Face validity more important than other structural factors in measurement selection by OT (Belchoir et al 2015).

- Atheoretical but ecologically valid, a worthwhile trade off?
- Both Procedural & Explicit.

- Lack of clarity in problem identification; careless use of language.

- Transactional nature of cognition and performance is the real focus
Coffee With Jelly or Unbuttered Toast: Commissions and Omissions Are Dissociable Aspects of Everyday Action Impairment in Alzheimer’s Disease

Tania Giovannetti, Brianne Magouirk Bettcher, and Laura Brennan
Temple University

David J. Libon
New Jersey Institute for Successful Aging, University of Medicine and Dentistry in New Jersey-School of Osteopathic Medicine

Rachel K. Kessler and Katia Duey
Temple University

difficulties,” and so on. Our rudimentary understanding of everyday action is surprising, as everyday impairment is a criterion for the clinical diagnosis of dementia (American Psychiatric Association, 2000) and poses devastating consequences for both patients

Giovanetti et al 2008a
Analysis by principal components.

you, for example.

Measurement error

Latent construct.

Name recall
Address
List recall

Memory
Errors, not performance

- Orientation
- Medication
- Follow instruction

Memory

- Anticipate difficulties
- Money management
- Simplifying tasks

Executive

Cognition

- Orientating clothes
- Navigating frame
- Cup->saucer

Avoid reification fallacy.
Evaluate Errors and do a principal components estimate.
Giovanetti et al., 2008a, 2008b

- Errors, not performance focus, can distinguish between unimpaired, MCI and AD.
- Specifically in NC and MCI, errors of commission, not omission, will distinguish.
- Errors of omission characterise the AD performance.
- Assessment should also include IADL assessment.
Coffee With Jelly or Unbuttered Toast: Commissions and Omissions Are Dissociable Aspects of Everyday Action Impairment in Alzheimer’s Disease

Table 1. NAT comprehensive error score categories [19, 20]

<table>
<thead>
<tr>
<th>Error category</th>
<th>Definitions</th>
<th>Examples from toast and coffee (item 1) and present (item 2) tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omission</td>
<td>a step or subtask is not performed</td>
<td>does not add sugar to coffee</td>
</tr>
<tr>
<td>Substitution</td>
<td>semantically related or perceptually similar alternate object used in place of target object</td>
<td>spreads butter on toast with spoon instead of knife</td>
</tr>
<tr>
<td>Anticipation-omission</td>
<td>anticipation of a step which entails a subsequent omission (anticipation-omission), steps or subtasks are performed in reverse order (reversal)</td>
<td>applies butter on bread, without first toasting bread; applies jelly on bread, then applies butter</td>
</tr>
<tr>
<td>Perseveration</td>
<td>a step or subtask is performed more than once; an action is performed repetitively or for an excessive amount of time</td>
<td>toasts multiple slices of bread</td>
</tr>
<tr>
<td>Commission*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>task performance is grossly inadequate</td>
<td>pours too much cream into coffee so that the cup overflows</td>
</tr>
<tr>
<td>Gesture substitution</td>
<td>correct object is used, but with an inappropriate gesture</td>
<td>grasps knife incorrectly</td>
</tr>
<tr>
<td>Spatial misorientation</td>
<td>object is misoriented relative to the hand/body or another object</td>
<td>misorients wrapping paper with respect to the gift</td>
</tr>
<tr>
<td>Spatial misestimation</td>
<td>the spatial relationship between objects is incorrect</td>
<td>cuts too small a piece of wrapping paper</td>
</tr>
<tr>
<td>Tool omission</td>
<td>action is performed without a tool/implement</td>
<td>rips wrapping paper (i.e. does not use scissors)</td>
</tr>
<tr>
<td>Action-addition</td>
<td>performance of an action not readily interpreted as a task step</td>
<td>eats toast; puts tape on garden shears</td>
</tr>
</tbody>
</table>

* Commission errors entail task steps that are performed inaccurately. However, in the case of commissions, the steps are easily identified as relevant to the task and necessary to achieve the task objective.
- Goal Setting - Self Inhibiting
- Planning - Self Directing
- Problem Solving - Self Initiation
- Organising - Self Monitoring
  (Complex & novel)
- Working Memory - Task specific (lasts seconds)
- LTM - Episodic (events)
- Semantic (knowledge) (future)
- Object recognition (visual) linked to memory
  (where: spatial awareness)

Is the behaviour normal for pt?

1 + 5 + 1

1. Arousal - too low, too high
2. Focus, Sustained, Selective, Shifted
3. Spatial Attention (left, right)
Hierarchy of Skills

- Executive Skills
- Praxis
- Memory
- Object Recognition
- Visual and Spatial Perception
- Attention
- Sensory Registration

Ownership: Harrison Training
Cognition

Memory?
- orientation
- Medication
- follow instruction
- anticipate difficulties
- money management
- simplifying tasks
- orientating clothes
- navigating frame
- cup->saucer
- Name recall
- Address
- List recall
- Trails A & B
- Fluency
- Tap 1 or 2
- Clock
- Cube
- dot count

Executive?
- Memory
- Executive
- perception

Perceptual?
- Cognition

Executive
- Cognition

Memory
Age and Prospective memory effects
(Phillips, Henry, & Martin 2008)

• episodic memory age effects are seen in both lab and natural (ecologically valid) situations
• medication adherence is a prospective task - remembering to take - with age non-adherence increases to 59%, in others its about 10%.
• The criterion might be key. If doctor prescribed meds is the basis for adherence then 59% may be correct, if intent-adherence is measure, than adherence rates drop
• People may be complying with their own intended regime very well.

• This also underlines the importance of loading assessment tasks correctly.
Subjective report

• General ‘memory questions’ and memory questionnaires appear to tap mood disorder, not cognitive ability.
• Memory complaint is not diagnostic and needs further evaluation.
• Increased specificity in questioning, or in measurement can increased validity of this method (Hertzog 2002).
• Along with being sensitive to mood disorder, they are sensitive to efficacy.
• Efficacy is relevant because it relates to deployment of effort.
Summary

• Activity Analysis and functional task observation are inherent to good cognitive assessment. This is not a pragmatic response to being unable to complete a screen.
• Ecological validity can distinguish performance on tests-of-planning and planning-tasks (Phillips et al., 2006).
• Combined domain-focused and function focused assessment in OT is recommended for older people care (Douglas, et al 2007; Belchoir et al 2015).
• Functional assessment should focus on errors, combined with cognitive test performance and process observations to refine latent constructs.


<table>
<thead>
<tr>
<th>Developmental stage</th>
<th>Reflective</th>
<th>Symbolic</th>
<th>Sensori-motor</th>
<th>Reflex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage of dementia</td>
<td>Early dementia</td>
<td>Early to middle dementia</td>
<td>Middle to late dementia</td>
<td>Late dementia</td>
</tr>
<tr>
<td>Relationship to the world</td>
<td>Aware of others</td>
<td>Increasing egocentricty</td>
<td>Egocentric</td>
<td>Perceived environment very narrow (bubble)</td>
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<tr>
<td></td>
<td>Alert to a broad environment</td>
<td>Perceived environment shrinking</td>
<td></td>
<td>Dependent upon others</td>
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<tr>
<td></td>
<td>Equality in relationships</td>
<td>Increasing dependence in relationship</td>
<td></td>
<td>World is ‘me’</td>
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<tr>
<td></td>
<td>Adapts self to the world</td>
<td>Assimilates world to self</td>
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<tr>
<td>Thinking</td>
<td>Flexibility for thought</td>
<td>Concrete thinking</td>
<td>Little to no evidence of directed thought</td>
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<tr>
<td></td>
<td>Ability to handle multiple stimuli</td>
<td>One stimulus at a time</td>
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<tr>
<td></td>
<td>Deductive reasoning</td>
<td>Lack of direction in thinking</td>
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<td></td>
<td>Facility with language</td>
<td>Language impairment</td>
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<td></td>
<td></td>
<td>Increased reliance upon symbol</td>
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<tr>
<td>Doing</td>
<td>*Speculation and planning new courses of action</td>
<td>* Compliance</td>
<td>* Interest</td>
<td>Ability to move body in space (stand/walk/righting response)</td>
</tr>
<tr>
<td>*Key feature</td>
<td>Anticipation of secondary effects of actions on objects</td>
<td>Use of hands to manipulate objects</td>
<td>Use of hands to manipulate objects</td>
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<tr>
<td></td>
<td>Synchrony of sequencing</td>
<td>Effects of actions on objects noted</td>
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<tr>
<td></td>
<td>Planning in the absence of material objects</td>
<td>Sequencing of actions through known steps</td>
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<td></td>
<td>Self-directed learning</td>
<td>Understanding of tool use evident</td>
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<tr>
<td>Nature of activity</td>
<td>Goal-directed</td>
<td>Learning by trial and error</td>
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<td></td>
<td>Rule-orientated</td>
<td>Increasingly inappropriate</td>
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<td>Competition</td>
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<td>Co-operative group</td>
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<tr>
<td>Activity</td>
<td>Games</td>
<td>Music</td>
<td>Movement</td>
<td>Snoezelen</td>
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<td>Discussions</td>
<td>Movement</td>
<td>Stacking</td>
<td>Gardening</td>
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<td>Sports</td>
<td>Dance</td>
<td>Massage</td>
<td>Roofing</td>
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<td></td>
<td>Crafts</td>
<td>Drama</td>
<td>Dolls and soft toys</td>
<td>Smiling</td>
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<td>Quizzes</td>
<td>Art</td>
<td>Reminiscence</td>
<td>Holding</td>
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<td>End-product tasks</td>
<td>Pottery</td>
<td>Story-telling</td>
<td>Stroking</td>
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<td>Non-verbal communication</td>
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<td>Singing</td>
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<td>Rooking</td>
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<td>Cuddling</td>
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