

Assessment of Prospective Memory

Summer Scholarship Project
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Prospective Memory - Concept

- “Realisation of Delayed Intention” (Ellis, 1996)
- Used everyday by everyone
- Failures can be memorable!
- Very important for independent living
- Deficit in wide range of disorders (acquired brain injury, Parkinson's disease, early dementia, schizophrenia, depression)

Prospective Memory - Theories

- Multiprocess Model (Einstein & McDaniel, 2001)
 - Plurality of processes to retrieve intention
 - Automatic to effortful, strategic monitoring
- Preparatory Attentional and Memory Process Theory (Smith, Hunt, McVay & McConnell, 2007)
 - Retrieval is never automatic, always comes at cost to ongoing activities (online resource consuming)

PM – System Approach

- Pragmatic Hierarchical Model (Fish et al, 2010)
 - No Case Reports of pure PM deficit
 - Memory (espc. Retrospective Memory)
 - Executive Functions (e.g. attention, monitoring, planning, inhibition, set switching, working memory)
 - Not mutually exclusive!

PM - Tasks

- Commonly divided into 3 types:
 - Event-Based
 - Time-Based
 - Activity-Based

PM Assessment – Core Features

- Required parameters of PM Assessment (McDaniel & Einstein, 2007)
 - Execution of intention is not immediate
 - PM task is embedded in an ongoing activity
 - The window for response is constrained
 - Time frame for response execution is limited
 - There must be intention
- Revealing clock requires conscious action (Einstein, McDaniel, Richardson, Gynn & Cunfer, 1995)

PM Assessment – Cautionary Note

(Or WTF am I measuring – the curse of cognitive science)

- Vigilance?
 - i.e. waiting for a cue to produce instructed response
- Dual-Task Paradigm?
 - i.e. temper the engagement in one task by need to remember another
- PM?
 - Is 'it' measurable??
 - What does an assessment of failure tell us?

PM Assessment – Laboratory Tests

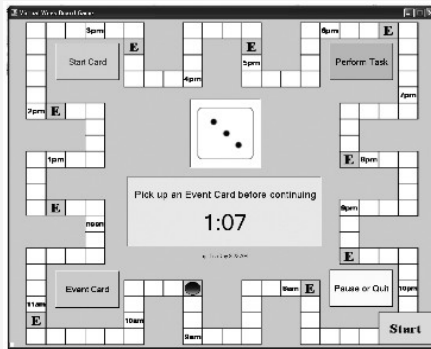
- Typical Paradigm
 - Participants engaged in a task such as rating words on a dimension such as degree of pleasantness
 - Instructed this is their major task
 - At some significant time before experiment are also instructed to perform some action (e.g. press key) when a particular word (cue) appears. (PM Task)
 - Performance measured by proportion of trials in which PM task correctly performed.

PM assessment - Clinical

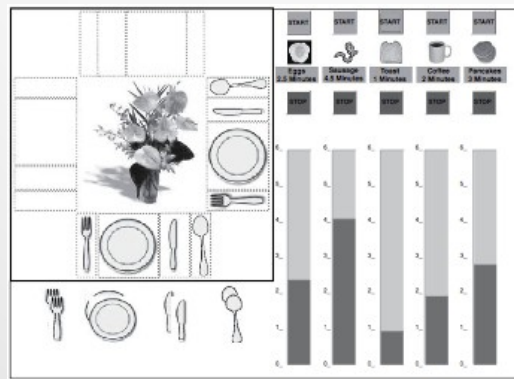
- Cambridge Prospective Memory Test (CAMPROMT) (Wilson, 2005)
- Memory of Intentions Screening Test (MIST) (Raskin and Buckheit, 1998)
- Comprehensive Assessment of Prospective memory (CAPM) (Waugh, 1999)
- Royal Prince Alfred Prospective Memory Test (RPA-ProMem) (Radford, Lah, Say & Miller, 2010)
- No Gold Standard
- Not used in isolation

PM Assessment – Computer (Misc.)

- The Virtual Week (Rendell & Craik, 2000)

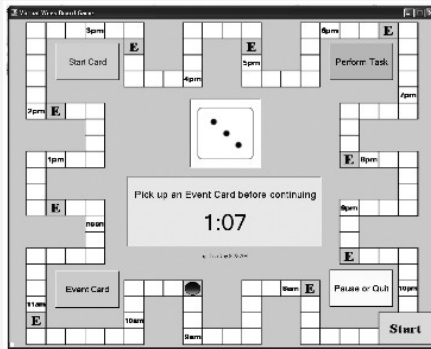


- The Breakfast Task (Craik, Bialystock, 2006)

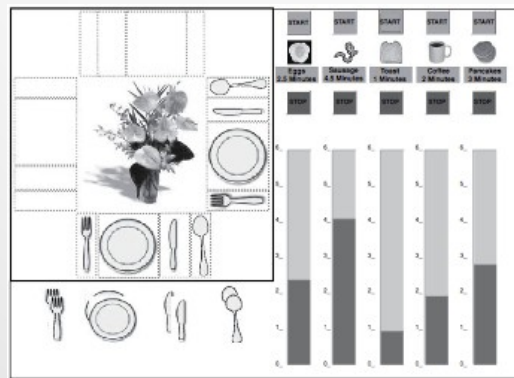


PM Assessment – Computer (Misc.)

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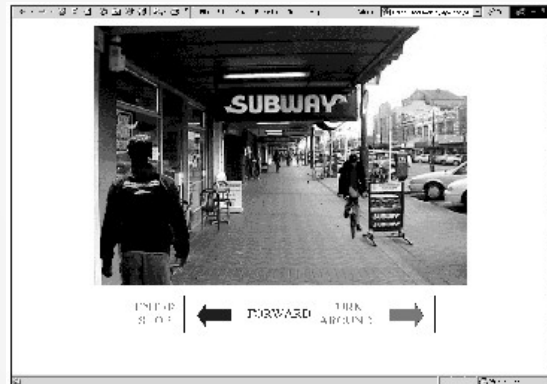


- The Breakfast Task (Craik, Bialystock, 2006)



PM Assessment – Video/Slide

- Prospective Remembering Video Procedure (PRVP) (Titov & Knight, 2000)
- The Virtual Street (Farrimond, Knight & Titov, 2006)



- *Test écologique de mémoire prospective* (TEMP) (Potvin, Rouleau, Audy, Charbonneau & Giguere, 2011)

PM Assessment - VR

- (Brooks, Rose, Potter, Jayawardena & Morling, 2004)

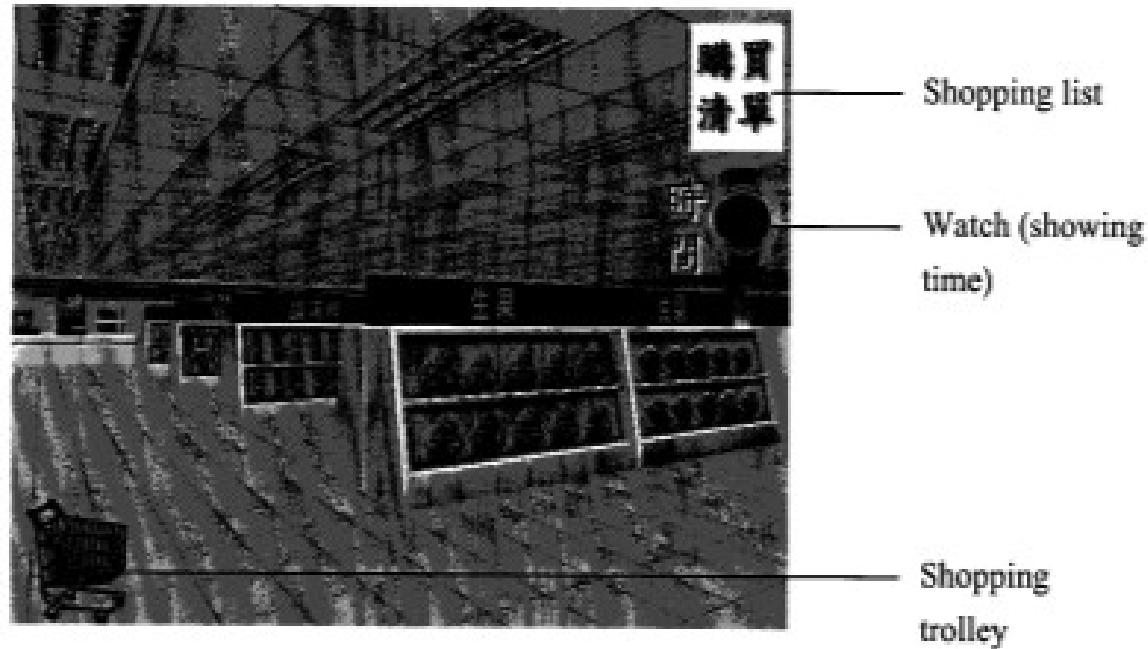


- Edinburgh Virtual Errands Task (EVET) (Trawley, Law & Logie, 2011)



PM Assessment – VR Treatment

- Intelligent Virtual Reality Prospective Memory (IVRPM) (Yip & Man, 2011)



Proposed PM Tool - Variables

- Total Time to complete scenario
- Number of clock checks
- Immediate recall of tasks
- Delayed recall of tasks
- Accuracy
 - Time based tasks (including time completed and action performed)
 - Event based tasks (number of times passing cue before action completed, action performed)
 - Ongoing task (number of correct items collected, number incorrect items collected, num missed)

Proposed PM Tool - Tasks

- Ongoing tasks
 - List of items available on request through scenario
 - Find and collect correct items
- Time based tasks
 - Time-Action pair to encode
 - Action to collect or operate item/object
- Event based tasks
 - Cue-Action pair to encode
 - Action to collect or operate
 - Cue to be present in scenario (i.e. passed whilst carrying out ongoing tasks)

Proposed PM tool - Environment

- Be computer based!
- Face validity
- Ecological validity
- Allow control over variables (task intensity etc)

PM Assessment Tool

Demonstration