How frequently do you forget in everyday life?
A diary study of prospective and retrospective memory errors in young and old healthy adults

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Memory Failures in Everyday life?
- Important for Older Adults
- Anecdotal evidence
- Evidence from memory research

Evidence from self-report questionnaires
CFQ, EMQ and PMRQ

Your most recent Memory Failure?
(Kvavilashvili et al., 2009)

<table>
<thead>
<tr>
<th></th>
<th>PM</th>
<th>RM</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>53%</td>
<td>35%</td>
<td>12%</td>
<td>100%</td>
</tr>
<tr>
<td>61-70</td>
<td>18%</td>
<td>54%</td>
<td>28%</td>
<td>100%</td>
</tr>
<tr>
<td>71-80</td>
<td>19%</td>
<td>55%</td>
<td>26%</td>
<td>100%</td>
</tr>
</tbody>
</table>

χ² = 26.13, df = 4, N=202, p < .0005

Aims of the present study
To conduct a systematic investigation of everyday memory errors in young and old using a diary method

Predictions 1:
If results of self-report questionnaires are valid, then no age effects in the number of errors recorded

Predictions 2:
Young adults will record more PM errors and old adults more RM errors

Method: Tasks and stages

Phase 1: Initial testing
TICS-M
deJager et al.
(2003)
COGTEL
Klingel et al.
(2007)
Prospective & Retrospective Memory Questionnaire (PMQR) (Smith et al., 2000)
PLUS other questionnaires

Instructions:
Each time you experience a memory failure, please fill in one of the brief questionnaires in your diary.

Phase 2: Questionnaires

Phase 3: 28-day diary

Phase 4: Final Questionnaires
	
	
Prospective & Retrospective Memory Questionnaire PLUS other questionnaires

Method - Participants

<table>
<thead>
<tr>
<th></th>
<th>YOUNG N=12</th>
<th>OLD N=18</th>
<th>F (1,28)</th>
<th>p-value</th>
<th>Partial eta²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>41.33</td>
<td>78.39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>9.46</td>
<td>5.24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years Education</td>
<td>15.50</td>
<td>13.56</td>
<td>4.55</td>
<td>.04</td>
<td>.14</td>
</tr>
<tr>
<td>Range</td>
<td>1.83</td>
<td>3.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TICS-M</td>
<td>30.24</td>
<td>27.50</td>
<td>4.80</td>
<td>.04</td>
<td>.15</td>
</tr>
<tr>
<td>SD</td>
<td>2.61</td>
<td>2.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>27.34</td>
<td>21.37</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
RESULTS - COGTEL (Kliegel et al., 2007)

<table>
<thead>
<tr>
<th></th>
<th>YOUNG</th>
<th>OLD</th>
<th>F</th>
<th>p-</th>
<th>Partial ( \eta^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>COGTEL -Total</td>
<td>41.93</td>
<td>33.06</td>
<td>6.60</td>
<td>.02</td>
<td>.19</td>
</tr>
<tr>
<td>Cued Recall -ST</td>
<td>6.26</td>
<td>4.61</td>
<td>6.26</td>
<td>.02</td>
<td>.18</td>
</tr>
<tr>
<td>Cued Recall -LT</td>
<td>6.00</td>
<td>4.67</td>
<td>3.90</td>
<td>.06</td>
<td>.12</td>
</tr>
<tr>
<td>Digit Span</td>
<td>7.67</td>
<td>8.33</td>
<td>0.62</td>
<td>.44</td>
<td>.02</td>
</tr>
<tr>
<td>Verbal Fluency</td>
<td>37.27</td>
<td>29.78</td>
<td>5.04</td>
<td>.03</td>
<td>.15</td>
</tr>
<tr>
<td>Letter Fluency</td>
<td>17.00</td>
<td>13.94</td>
<td>1.91</td>
<td>.18</td>
<td>.06</td>
</tr>
<tr>
<td>Categ. Fluency</td>
<td>21.08</td>
<td>15.83</td>
<td>11.31</td>
<td>.002</td>
<td>.29</td>
</tr>
</tbody>
</table>

RESULTS – COGTEL (PM task)

Instructions: “Please, interrupt me when I ask you to list as many professions and jobs as you can and tell me your date of birth”

PM performance

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>YOUNG</td>
<td>– 100%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OLD</td>
<td>– 50%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( \chi^2 = 8.57, p=.003, \text{ effect size } -.29 \)

INTERIM SUMMARY

Typical ageing pattern for laboratory cognitive tasks

Negative age effect on cued recall

Negative age effect on 2 verbal fluency tasks

Negative age effect on an event-based PM task

RESULTS - PRMQ (Smith, Della Salla, Logie & Maylor, 2000)

Main effect of AGE – NS (F<1)

Sig. Interaction – F(1, 26)=12.10, p=.002

YOUNG – PM>RM

OLD – PM=RM

RESULTS – 28 day Diary

<table>
<thead>
<tr>
<th></th>
<th>YOUNG</th>
<th>OLD</th>
<th>F</th>
<th>p-</th>
<th>Partial ( \eta^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of Recorded Errors</td>
<td>160</td>
<td>328</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min – Max</td>
<td>6 – 47</td>
<td>1 – 71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MEAN</strong></td>
<td>17.78</td>
<td>19.29</td>
<td>.04</td>
<td>.85</td>
<td>.002</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>12.14</td>
<td>21.68</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RESULTS – No of errors per week

Main effect of Week – F(1,24)=6.31, p=.02

Week1 > Week2 (p=.04)

Week1 > Week3 (p=.003)

Week 1> Week 4 (p=.025)
RESULTS – Type of errors (n=488)

- Attentional or Absent-minded (AB) errors (n=94)
- Prospective Memory (PM) failures (n=188)
- Retrospective Memory (RM) failures (n=206)

Inter-rater agreement was high – 95%

Types of PM failures
- Forgetting to do something a few seconds/minutes later
- Forgetting to do something more longer term
- Leaving things behind
- Forgetting to do actions in preparation for upcoming tasks

Types of RM errors
- Forgetting names and words (a predominant error)
- Forgetting items from shopping lists
- Forgetting facts, locations
- Forgetting that actions have already been completed
- Forgetting personal events (what happened, etc.)

Types of Absent-Minded (AB) errors
- Temporary losing content of intention - Why am I here?
- Action swap: doing one thing instead of another
- Not finishing a started sequence
- Omissions: missing a step
- Commission errors: doing the same action again
- Misplacing things
- Losing track of sequence (of sub-tasks or operations), or temporal sequence
- Disorientation: forgetting day, date or time
- Distraction: zoning out while reading

RESULTS- Types of Recorded Errors
2 (group) by 3 (error type) mixed ANOVA

Conclusions for 28-day diary study
- Number of errors recorded less than 1 a day!
- Does act of recording reduce the number of errors?
- No age effects in the number of errors recorded
OVERALL CONCLUSIONS

1. Results of Diary study support findings from self-report questionnaires
2. Further support for the validity of Prospective Memory and Ageing Paradox
3. Good news for older people?
   Age related memory impairments greatly exaggerated?

Acknowledgements

Matthias Kliegel                  Peter Rendell

To all our participants who kept a diary for 28 days

Thank You!