The TIME Treatment Study:

Investigating the effect of anti-epileptic drugs on memory in Transient Epileptic Amnesia

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Background

- TEA is a subtype of temporal lobe epilepsy (TLE).
- The primary symptom is recurring episodes of transient amnesia[1].
- Patients with TEA report interictal memory disturbances of:
  - recall for autobiographical events.
  - newly acquired memories, which fade over hours or weeks (a.k.a. accelerated long-term forgetting, ALF).
  - memory for familiar places and routes.
- The clinical symptoms of TEA are well described but the effects of anti-epileptic drug (AED) treatment on these memory difficulties have not been studied systematically.
- Case studies suggest that symptoms of ALF may resolve with treatment, however losses of autobiographical and retrograde memory do not appear to recover[2,3].
- **Aim**: to investigate the effect of AED treatment on memory in a cohort of TEA and TLE patients.

Hypotheses

1. Patients with TEA and TLE will improve on measures of ALF and topographical memory over a 6-month period.
2. Recall of affected autobiographical memories will not improve in these groups over the same time period.

Method - Participants

- 3 groups will be studied:
  1. Patients with adult onset, untreated TEA
  2. Patients with adult onset, untreated TLE
  3. Matched healthy controls from Exeter
- Current recruitment figures are as displayed below:

Group	Recruited	Target
TEA	5	20
TLE	8	20
Healthy Controls	15	20

- Patients recruited via Patient Identification Centres and research sites at 20 UK NHS locations.
- Eligibility criteria include:
  - TEA: ≥ 2 amnesic episodes; no other neurological conditions or psychiatric disorders.
  - TLE: ≥ 45 years of age; no amnesic attacks; no other neurological conditions or psychiatric disorders.
- Healthy controls recruited through the Exeter 10,000 project and controls must have no history of epilepsy, or other neurological or psychiatric disorder.
  - Selected will match TEA and TLE patients in age, gender distribution, education history and IQ measures.

Methods - Procedure

Participants complete two neuropsychological assessments, 6 months apart. Our test battery includes:

- General cognitive ability measures (WTAR/WASI).
- Anterograde memory (WMS-III, Logical Memory, Rey Complex Figure, Warrington's RMT).
- Semantic memory (Graded Naming Test).
- Executive function (Verbal fluency, Trail Making Test).
- Accelerated long-term forgetting (Word list from RAVLT; Memory for Designs - see Fig. A, MFD). Participants learn stimuli, then are asked for recall at intervals of 40 seconds, 30 minutes and 3 days.
- Topographic memory (The Four Mountains Test, see Fig. B).
- Autobiographical memory (Revised Levine Interview).

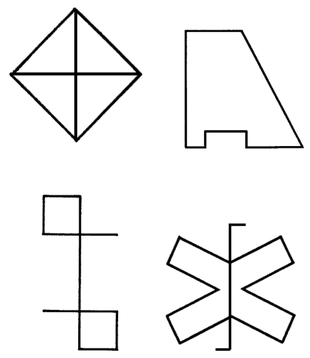

Figure A: A sample of shapes used in the MFD.

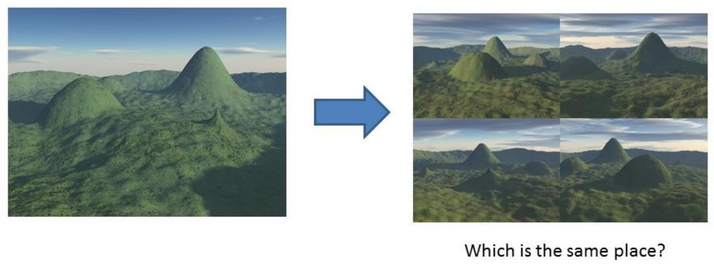

Figure B: An example of stimuli used in the Four Mountains Test.

Assessments

- Takes 3-4 hours to complete.
- Conducted either at home or at the University of Exeter.
- A follow up phone call 3 days later to assess long term recollection and recognition of RAVLT and MFD stimuli.
- The full assessment is repeated 6 months after baseline.
- To prevent practice effects we employ counterbalanced measures where possible (WMS-III story, RCF, RAVLT and MFD tasks).

Current Progress

- Recruitment is ongoing, we have recently begun to collect some 6-month follow up data.
- Baseline data collected until August 2017, and all follow up data collected by March 2018.

Contact Details

- Our website is https://projects.exeter.ac.uk/time/ and we can be contacted at time@exeter.ac.uk.

References

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