UNIVERSITY OF EXETER

time
The Impairment of Memory in Epilepsy

# Prognosis:

# What happens in Transient Epileptic Amnesia: over TIME?


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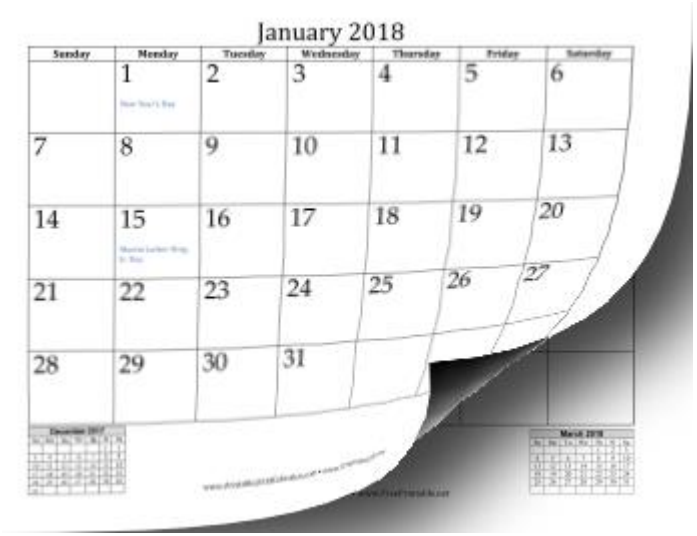
*TEA Day, June 2018*

# At onset, most commonly….

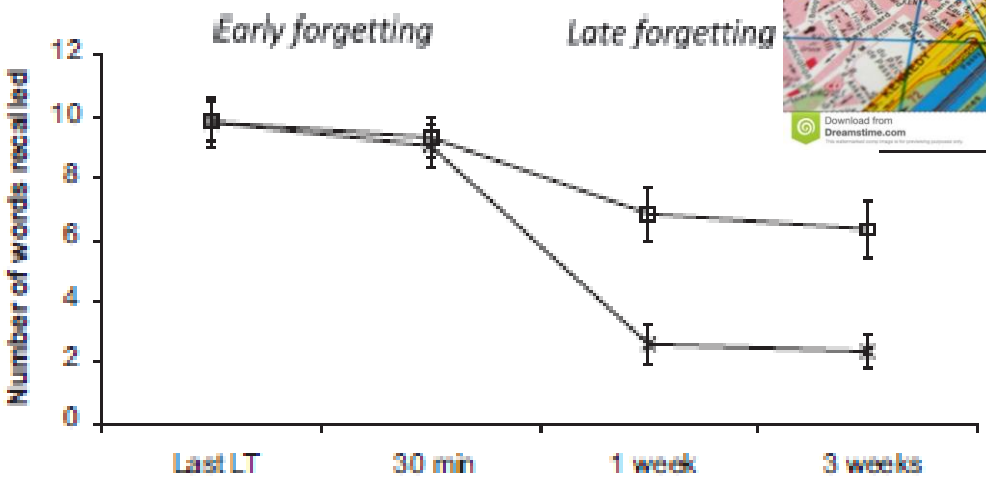



(Butler et al., 2007)



# Common memory difficulties

- Certain life events
- Routes/ places
- new information



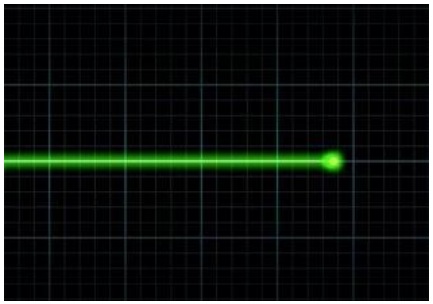
(Hoefeijzers et al., 2013)

# TEA short-term outcome:

Short-term (6-24 months after commencing medication):

- good seizure control (Butler et al., 2007)
- stable intellectual abilities (Del Felice et al., 2014)

- Some improvements in memory for new information (Midorikawa & Kawamura, 2008; Razavi et al., 2010)
- Improved memory for recent life events (Mosbah et al., 2014)

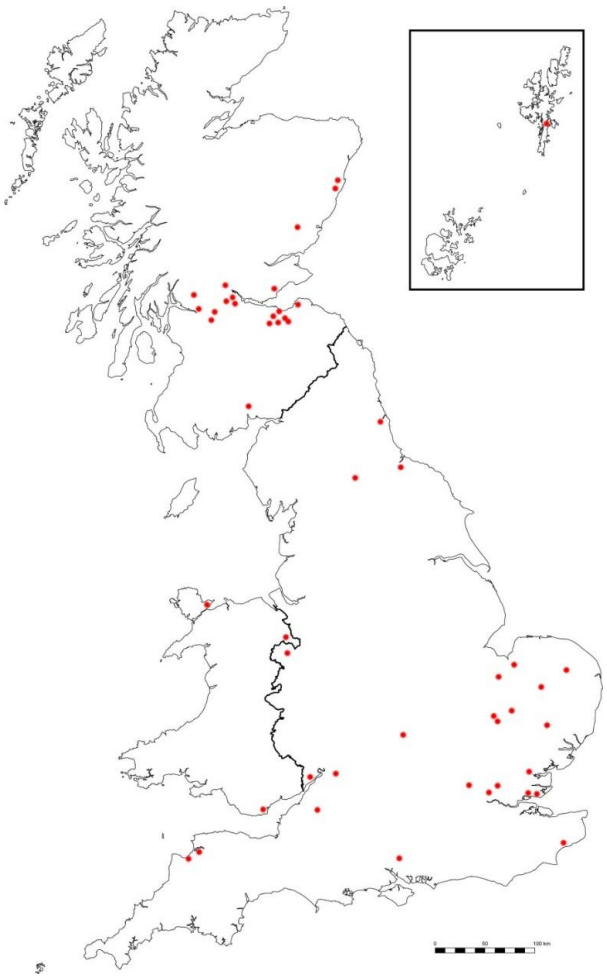


# Medium to longer-term outcome?

Research to-date:

- 5-yr follow-up: stable (Kapur, 1989)
- 16-yr follow-up: risk of Alzheimer's Disease? (Cretin et al., 2014)

# Aims



to investigate outcomes of TEA over 10 (or in some cases 20 years)

- Follow up with people seen through TIME
- Collect medical info
- Repeat cognitive assessment



# Participants

**Zeman et al 1998 cohort (C1)**

- 9 men; 1 woman
- Age of onset: 49 – 78 years (average = 63 years)
- Seizures well controlled on medication (80%)

**Butler et al 2007 cohort (C2)** - additional 42 people

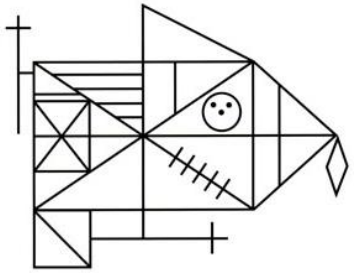
- 27 men; 15 women
- Age of onset: 44 – 77 years (average = 62 years)
- Seizures well controlled on medication (96%)

# Method: Medical history

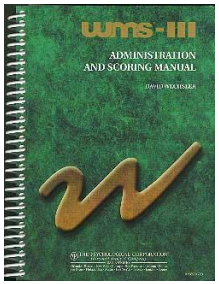
Summaries from GP

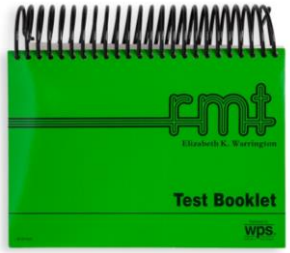
- Seizure and medication history
- Record of cognitive problems (e.g. memory, planning)
- Cause of death, where applicable

# Method: Cognitive ability

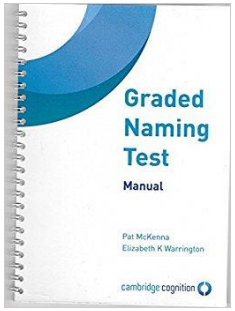


- Standard memory tests
  - Story recall
  - Visual recall (geometric figure)
  - Recognition test (words and faces)




- Standard cognitive tests
  - General ability (IQ)
  - Visual skills (drawing)
  - General knowledge (picture naming)
  - Executive function (problem solving)

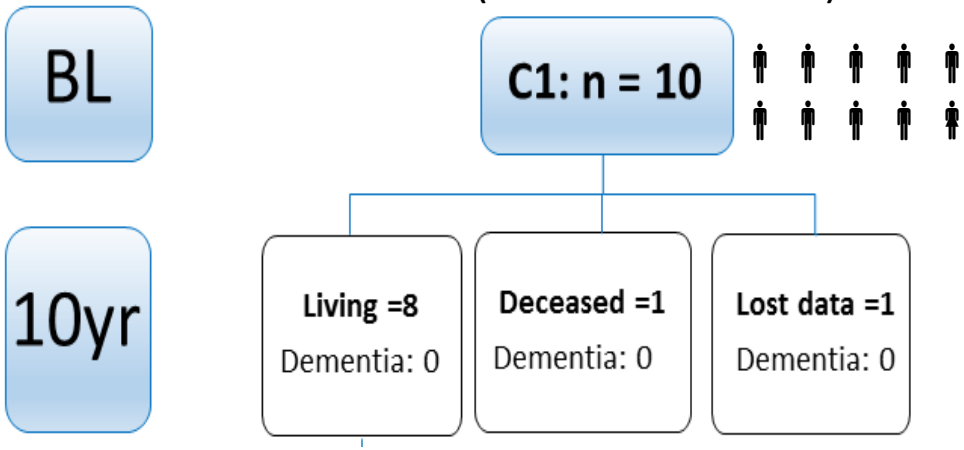




# Results - Clinical outcome

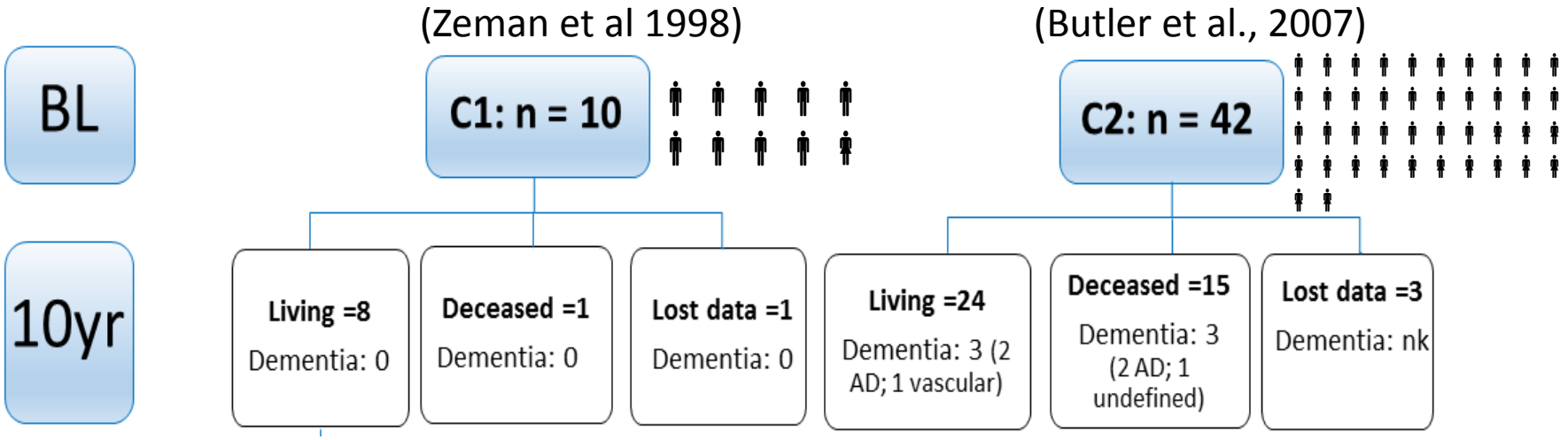


(Zeman et al 1998)



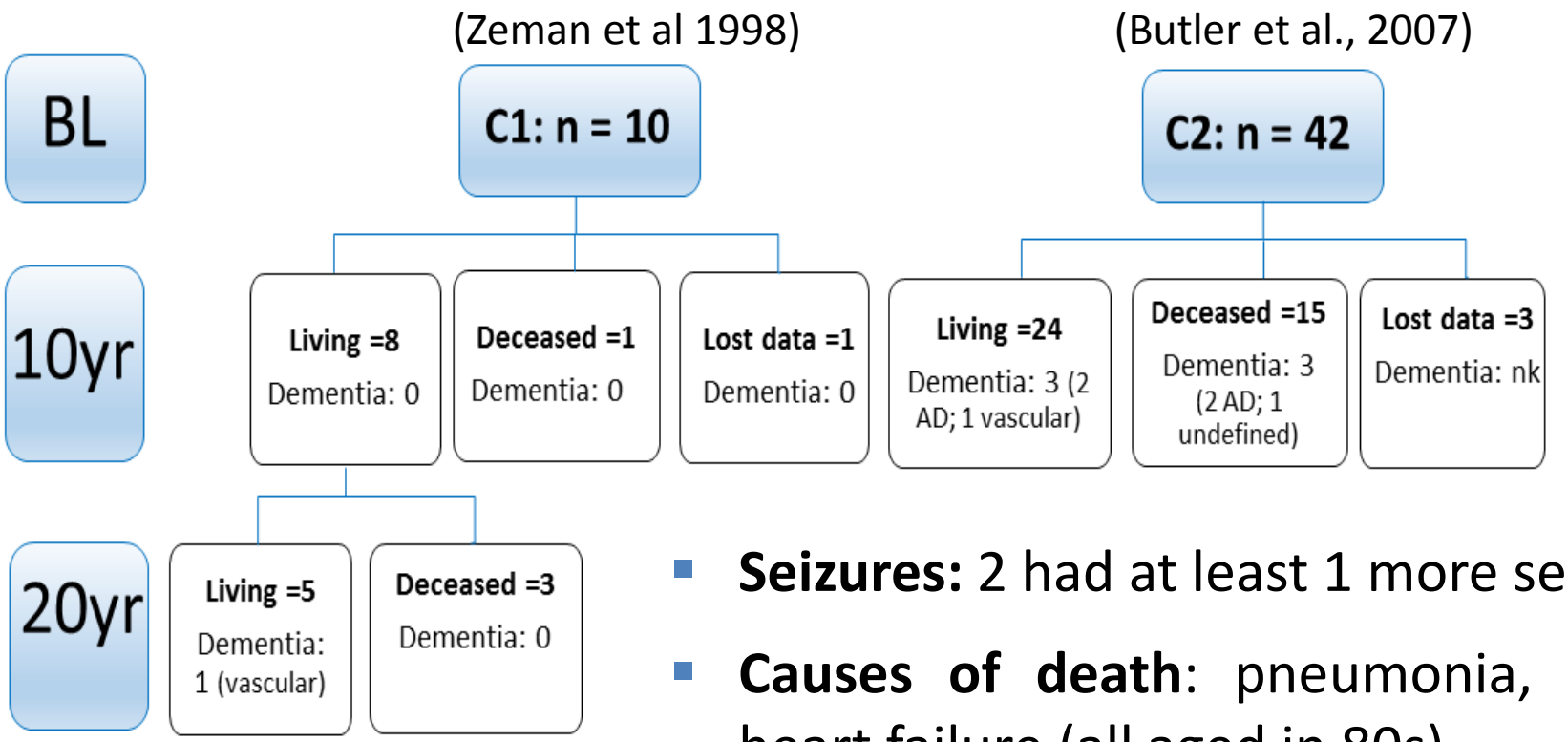

- **Seizures**: controlled (7 with medication; 1 not)
- **Cause of death**: ruptured aneurysm
- **Dementia**: None diagnosed

(Savage et al 2016; Seizure)




- **Seizures:** 20% of people had at least 1 more seizure.
- **Life expectancy:** did not appear reduced (average= 82 years)
- **Causes of death**: pneumonia, cancer
- **Dementia:** 6 cases (AD cases: 8.6%)

(Savage et al 2016; Seizure)




- **Seizures:** 2 had at least 1 more seizure.
- **Causes of death**: pneumonia, cancer, heart failure (all aged in 80s)
- **Dementia:** 1 case

(Savage et al 2016; Seizure)

# Participants – Cognitive outcome

| Demographics | TEA-BL (n=50) | TEA-10yr (n=19) | TEA-20yr (n=3) |
|---|---|---|---|
| Average age | 66yrs | 75yrs | 83yrs |
| Sex (M : F) | 34 : 16 | 15 : 4 | 2 : 1 |

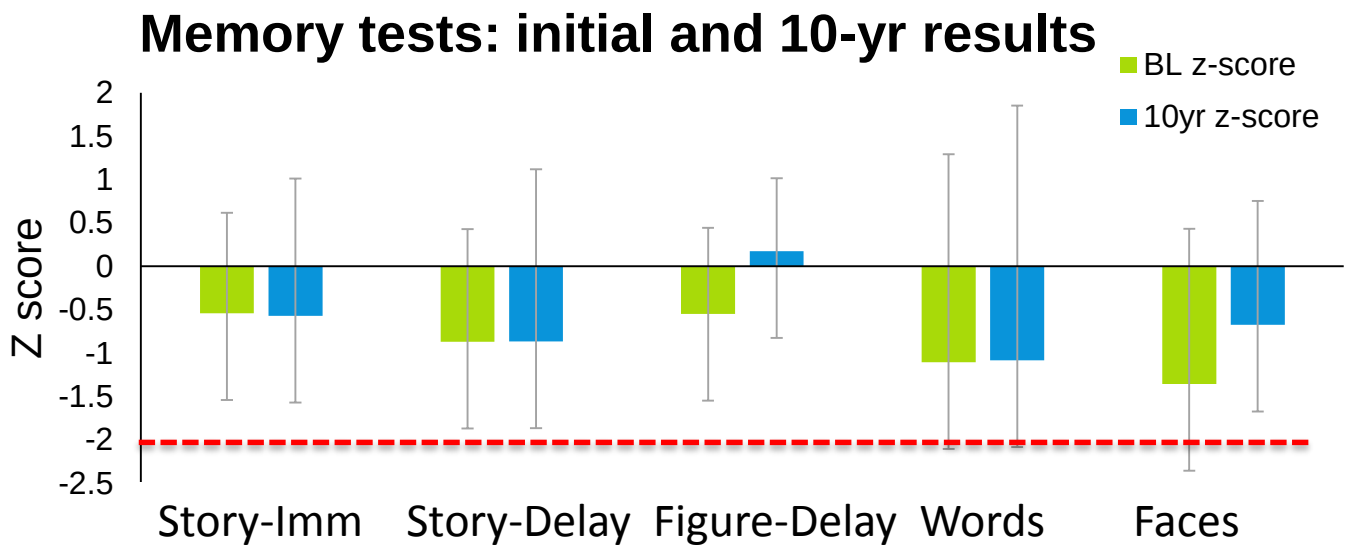
People with TEA

Similar people but without TEA



# Cognitive ability

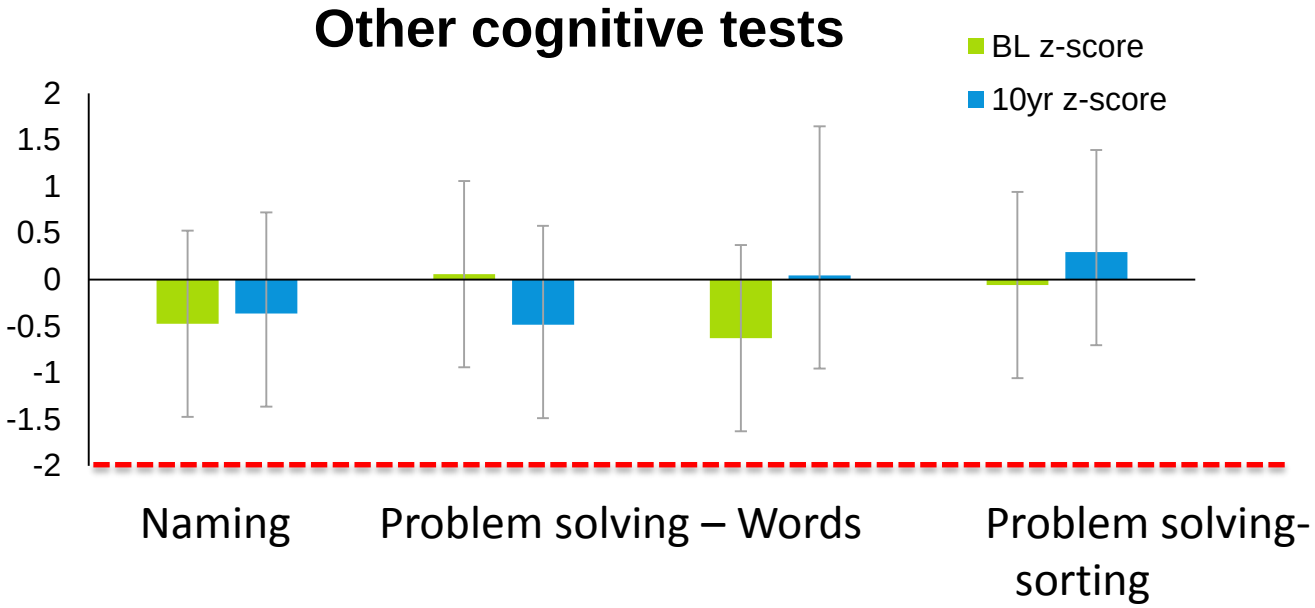
TEA participants compared with IQ and age matched controls




(21% below) (26% below) (0% below) (26% below) (16% below)

# Cognitive ability

TEA participants compared with IQ and age matched controls



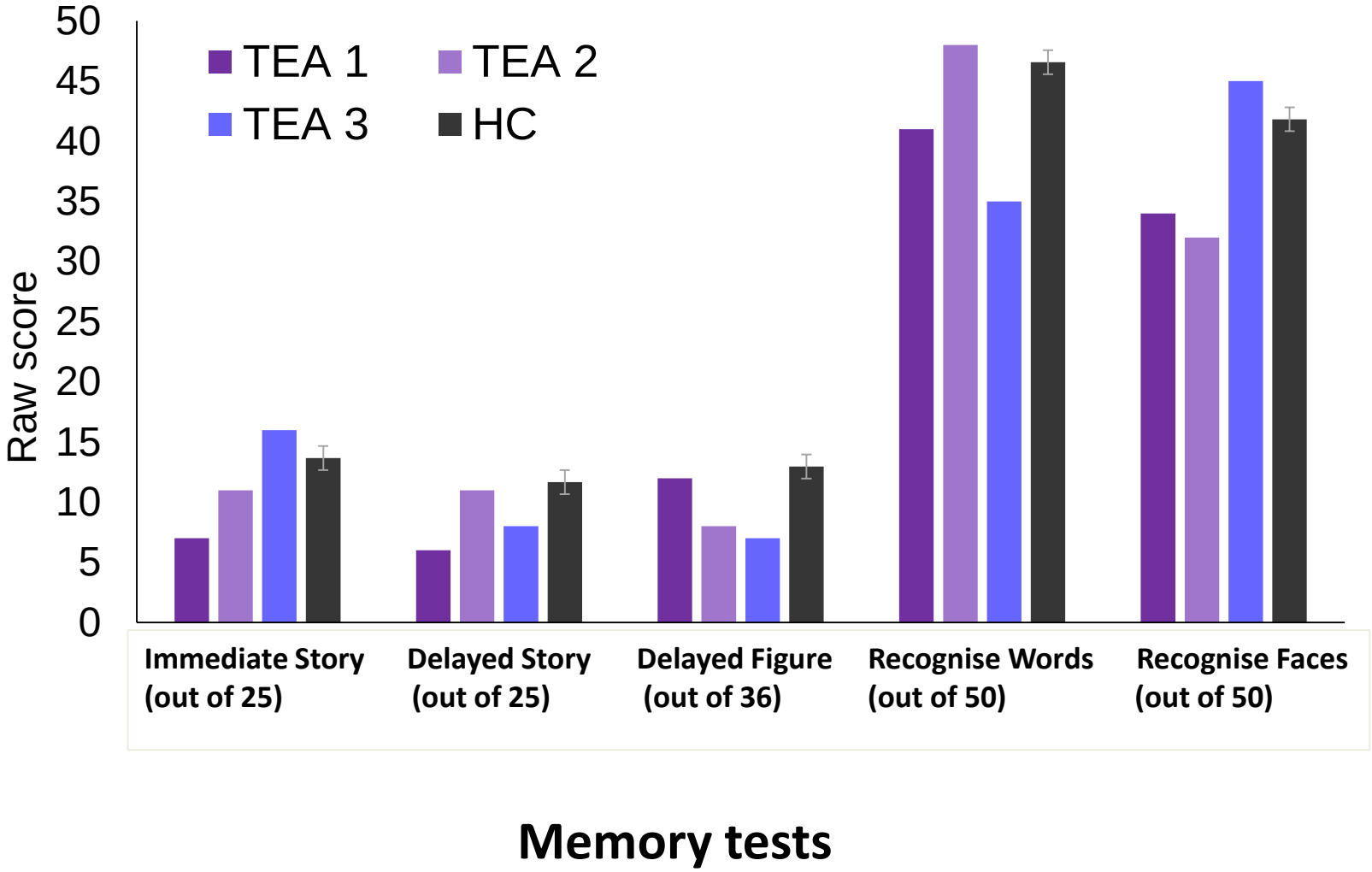

(5% below) (11-17% below) (0% below)

# Comparison with matched adults

- Mild memory difficulties are common in TEA (green bars)
- And often persist over time (blue bars)
  - For some individuals: stable or improvements;
  - in others: declines
- In other intellectual abilities, people with TEA generally perform in keeping with their peers and do not show declines over a 10-year period



# Memory at 20-year follow up



# So what did we learn overall?

- Seizures generally remain well controlled, but some adjustments to medication may be required from time to time
- Memory difficulties commonly persist in TEA
  - For some: stable or some improvement over 10-20 years;
  - in others: some declines
- BUT: compared with matched community participants, people with TEA generally perform in keeping with their peers
- Across the two cohorts, prevalence of Alzheimer's Disease (8.6%) was similar to population data (9.7%)



# Acknowledgements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***to the families involved***

***to the funding bodies***


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# Thank you for listening

Comments or questions?



# References


- Butler CR et al. The syndrome of transient epileptic amnesia. Ann Neurol. 2007 Jun 1;61(6):587–98.
- Cretin B, et al. Can the syndrome of transient epileptic amnesia be the first feature of Alzheimer's disease? Seizure. 2014 Nov;23(10):918–20
- Del Felice A, et al. Transient epileptic amnesia mistaken for mild cognitive impairment? A high-density EEG study. Epilepsy Behav EB. 2014 Jul;36:41–6.
- Hoefeijzers, S. et al. Accelerated Long-term Forgetting in Transient Epileptic Amnesia: an acquisition or consolidation deficit? *Neuropsychologia*, 2013;51:1549-1555.
- Kapur N, Young A, Bateman D, Kennedy P. Focal Retrograde Amnesia: A Long Term Clinical and Neuropsychological Follow-Up. Cortex. 1989 Sep;25(3):387–402
- Mosbah A, et al. Clinical, neuropsychological, and metabolic characteristics of transient epileptic amnesia syndrome. Epilepsia. 2014 May 1;55(5):699–706.
- Manes F et al. Autobiographical amnesia and accelerated forgetting in transient epileptic amnesia. J Neurol Neurosurg Psychiatry. 2005 Jan 10;76(10):1387–91.




# References


- Midorikawa A, Kawamura M. Recovery of Long-Term Anterograde Amnesia, but Not Retrograde Amnesia, after Initiation of an Anti-Epileptic Drug in a Case of Transient Epileptic Amnesia. Neurocase. 2008 May 15;13(5–6):385–9.
- Razavi M, Barrash J, Paradiso S. A longitudinal study of transient epileptic amnesia. Cogn Behav Neurol. 2010;23(2):142–5.
- Savage, S et al. (in press). The evolution of accelerated long-term forgetting: Evidence from the TIME study. *Cortex*
- Savage, S et al. (2016) Transient Epileptic Amnesia over twenty years: long-term follow-up of a case series with three detailed reports. *Seizure,* 43, 48-55
- Zeman AZJ, Boniface SJ, Hodges JR. Transient epileptic amnesia: a description of the clinical and neuropsychological features in 10 cases and a review of the literature. J Neurol Neurosurg Psychiatry 1998;64:435–43.