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Brain training apps – are they worth it?

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Brain-training game that reduces dementia risk by 29% is the first to prevent the condition, 10-year study reveals

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Analysis

Can brain training reduce dementia risk? Despite new research, the jury is still out

Ian Sample

Science editor

There are good reasons to be cautious about a new study claiming computer-based training can reduce the risk of dementia. But what does work?



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Science. That feels like games.

Our scientists take tasks from the lab and adapt them into easy-to-learn brain games.



Exercise Your Brain

(so you can be your best)

BrainHQ is your online headquarters for working out your brain. Think of it as a personal gym, where you exercise your memory, attention, brain speed, people skills, intelligence and navigation instead of your abs, delts, and quads. Just as our bodies require care and exercise over the course of life, so do our brains. BrainHQ provides the exercise your brain needs to be at its sharpest.



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The science behind Peak is based on the concept of Neuroplasticity – ie the brain can change over time, responding to challenges. Peak's neuroscientists learn from ongoing research in this area, and it works with academics to develop specific games and conduct research to understand the impact of cognitive training.

The current debate

- Brain training websites are (understandably) very positive
- Scientific literature is more contradictory
 - Generally accepted brain training doesn't work in MCI/dementia
 - Healthy ageing literature = more complex



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The cognitive benefits are proven
(It really works!)

More than 100 published scientific papers show the benefits of BrainHQ exercises and assessments. Most of these were independently conducted by scientists at respected universities, such as the University of California, Stanford, and Johns Hopkins. Of course, every study is conducted on a different group of people, and individual results vary. Click any benefit below to learn more about the studies behind the benefit.

The infographic displays 15 benefits of BrainHQ exercises in a grid format, each with an icon and text:

- more self-confidence
- better memory
- larger useful field of view
- better self-rated health
- better hearing in noisy places
- improved word-finding
- fewer dangerous driving moves
- faster auditory processing
- increased brain activation
- faster neural timing
- less likely to develop depressive symptoms
- lower medical costs
- protection against health decline
- happier days
- better mood
- improved visual AND auditory attention
- fewer at-fault car crashes
- faster visual processing

A Game a Day Keeps Cognitive Decline Away? A Systematic Review and Meta-Analysis of Commercially-Available Brain Training Programs in Healthy and Cognitively Impaired Older Adults

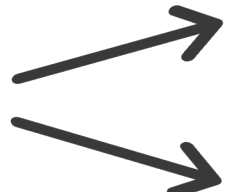
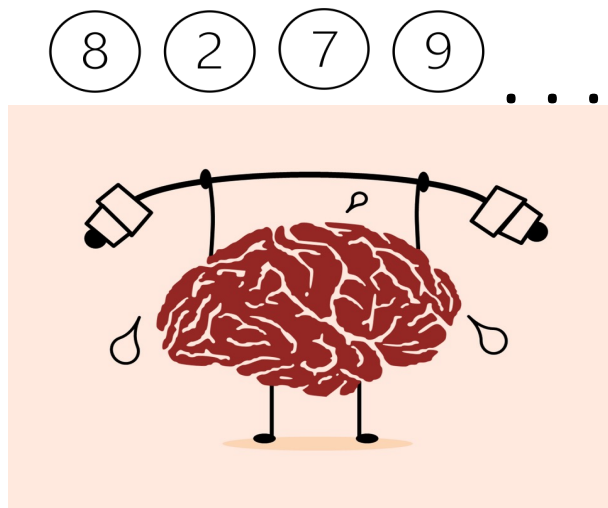
Lan Nguyen¹ · Karen Murphy¹ · Glenda Andrews¹

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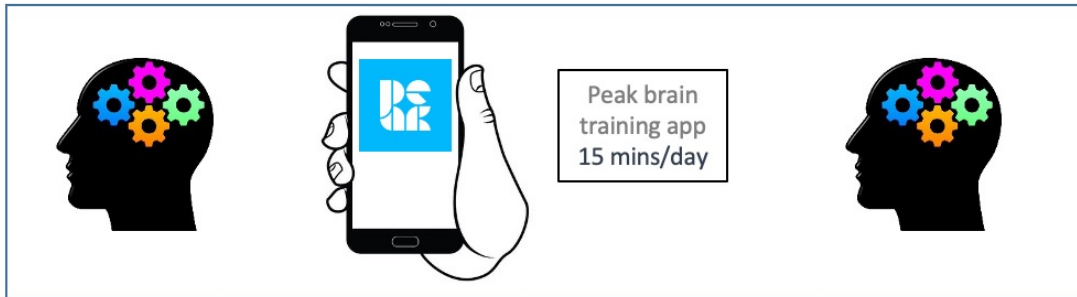
Key question – does brain training transfer?

Practice effects vs. *transfer effects*

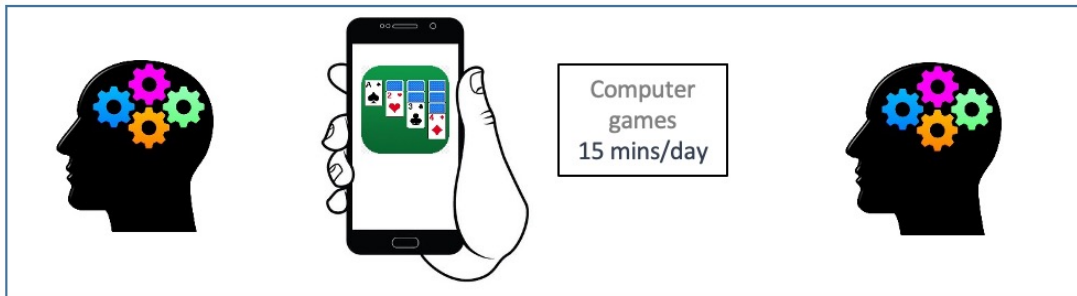


Pre ————— 3 months —————> Post

Intervention group



Active control group



Cognitive health

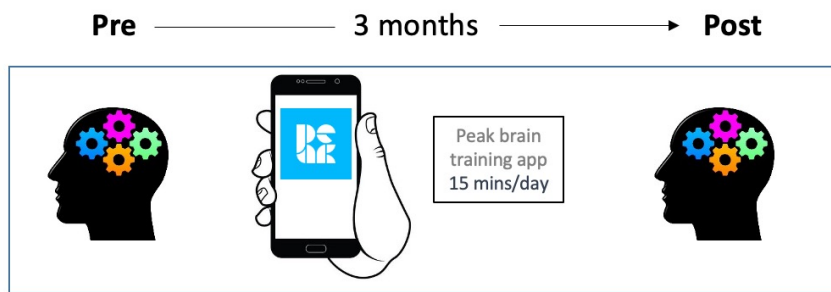


- Working memory (DSF, N-back)
- Processing speed (CRT, letter comparison)
- Attention (ANT)
- Language (Tip-of-the-tongue)

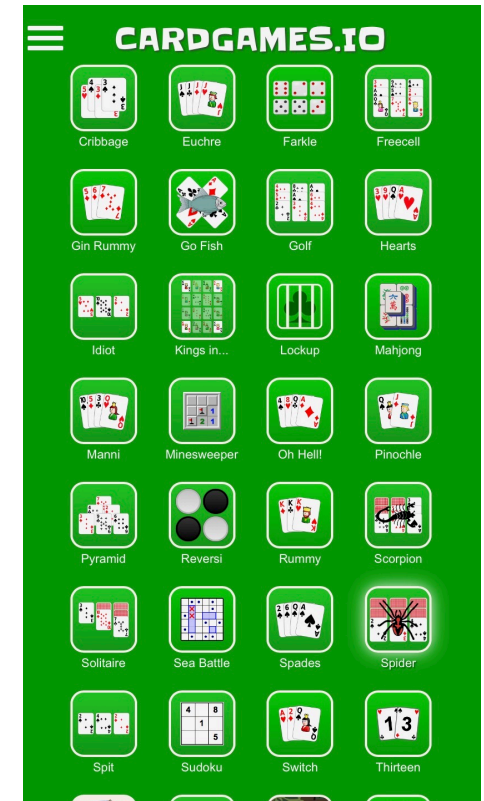
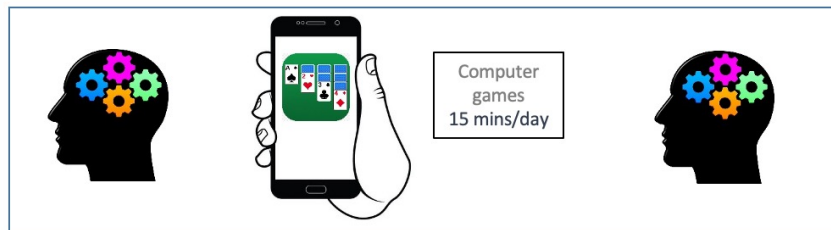


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Intervention group



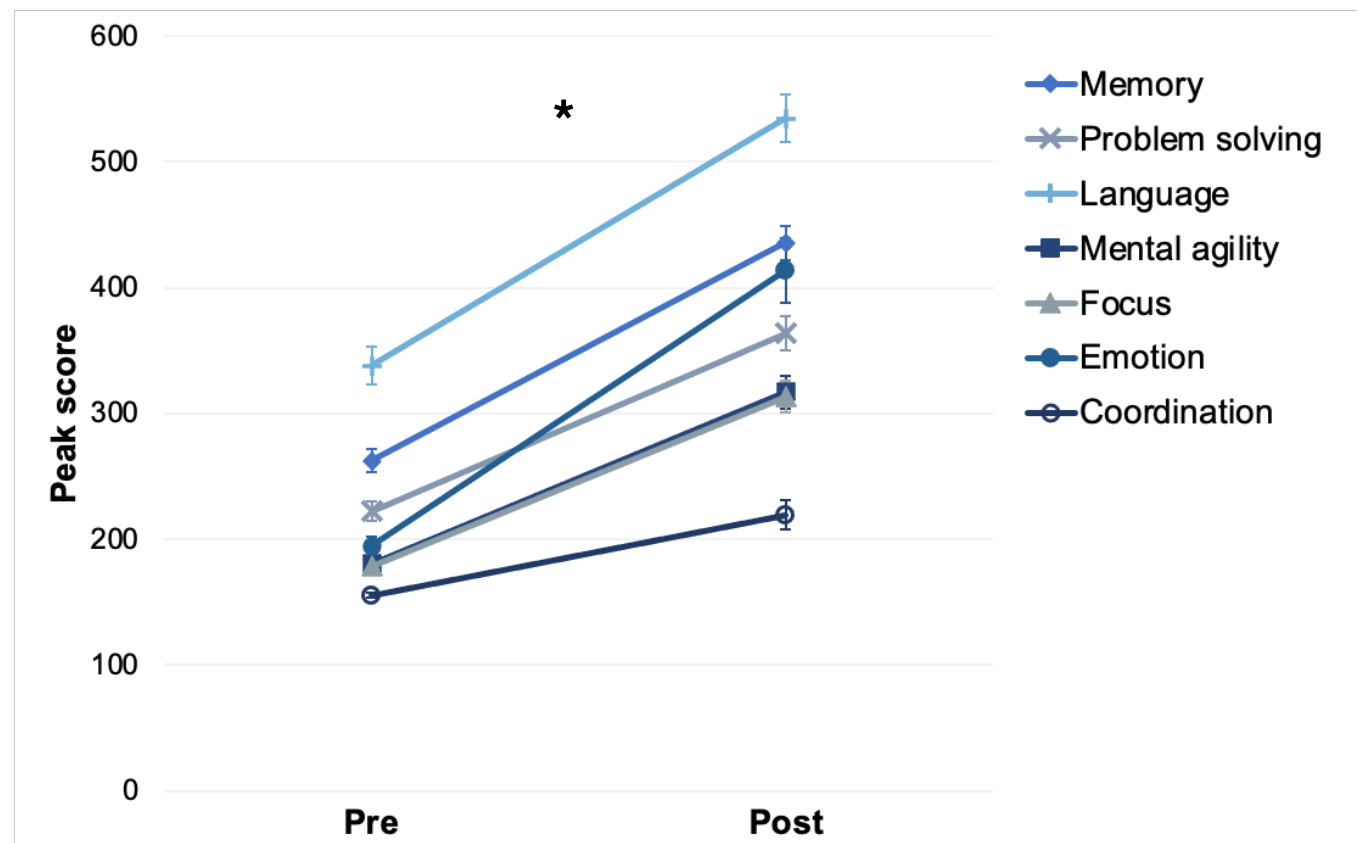
Active control group



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Results: Practice effects in the intervention group ✓

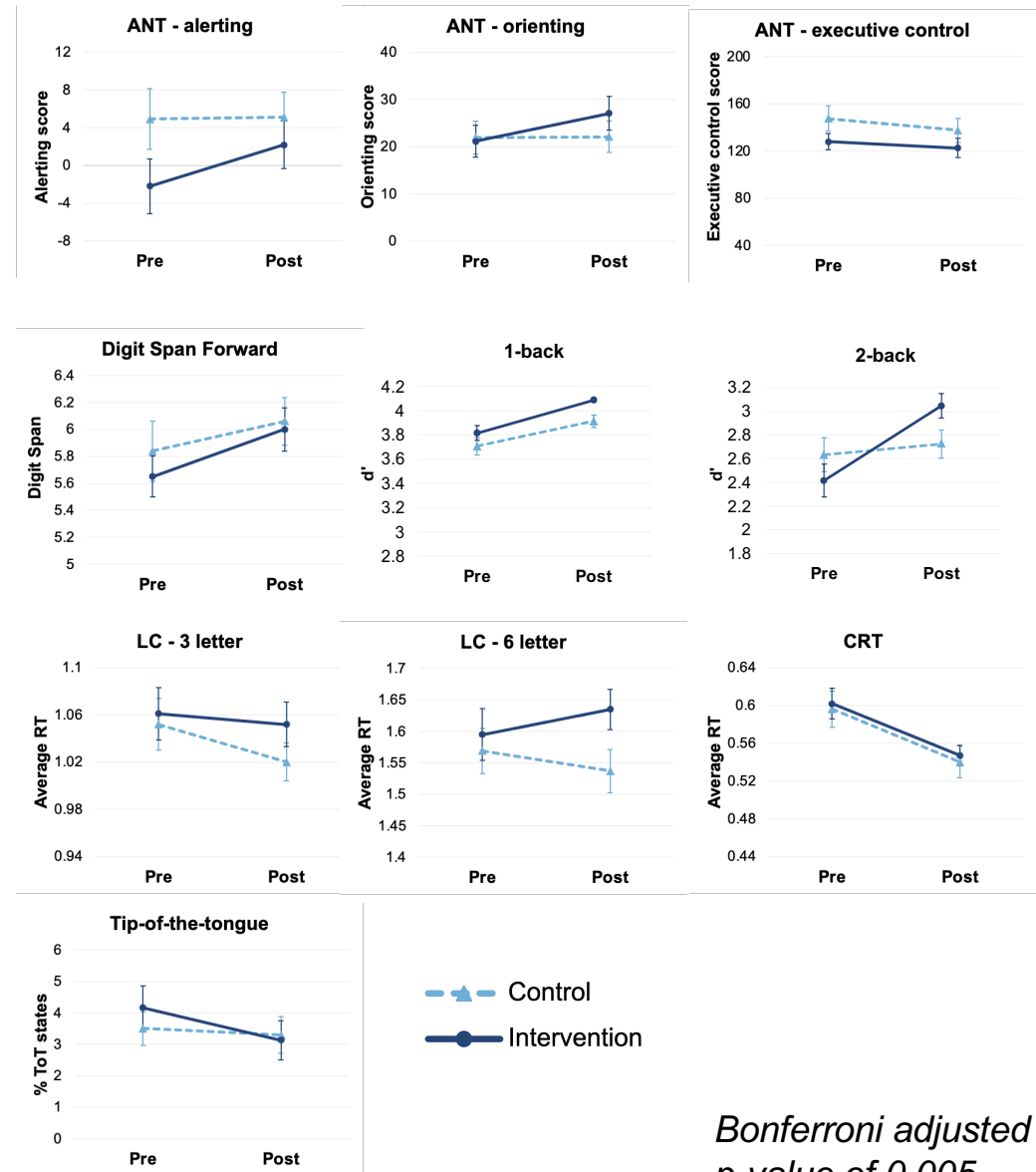
Peak scores



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Results: Transfer effects ✗

Compared pre- vs post- scores for cognitive outcome measures
No positive effects of brain training compared to active control



Bonferroni adjusted p-value of 0.005



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Conclusions

- Rarely a negative effect of these training games (apart from cost, potentially)
- Hopefully opened up both sides of the brain training debate
- Take home message: interpret findings carefully!

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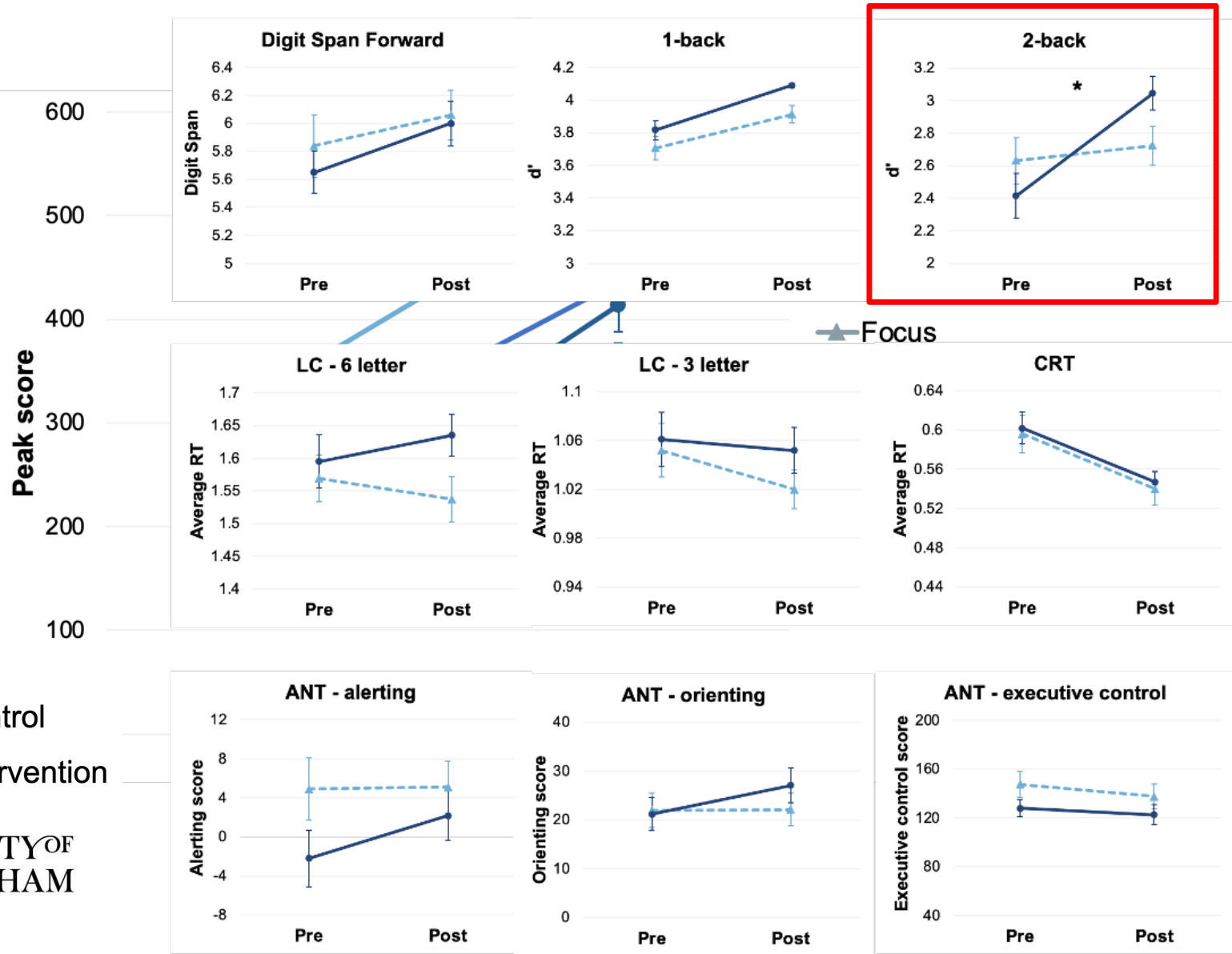
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Cognitive outcome measures

- **Working memory**
 - Maximal Forward Digit Span
 - Visual/spatial n-back task: 1-back d', 2-back d'
- **Processing speed**
 - Choice RT task average RT
 - Letter Comparison task: 3-letter average RT, 6-letter average RT
- **Attention (Attention Network Task; ANT)**
 - Alerting score
 - Orienting score
 - Executive control score
- **Language functioning (tip-of-the-tongue task)**
 - % tip-of-the-tongue



Results



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