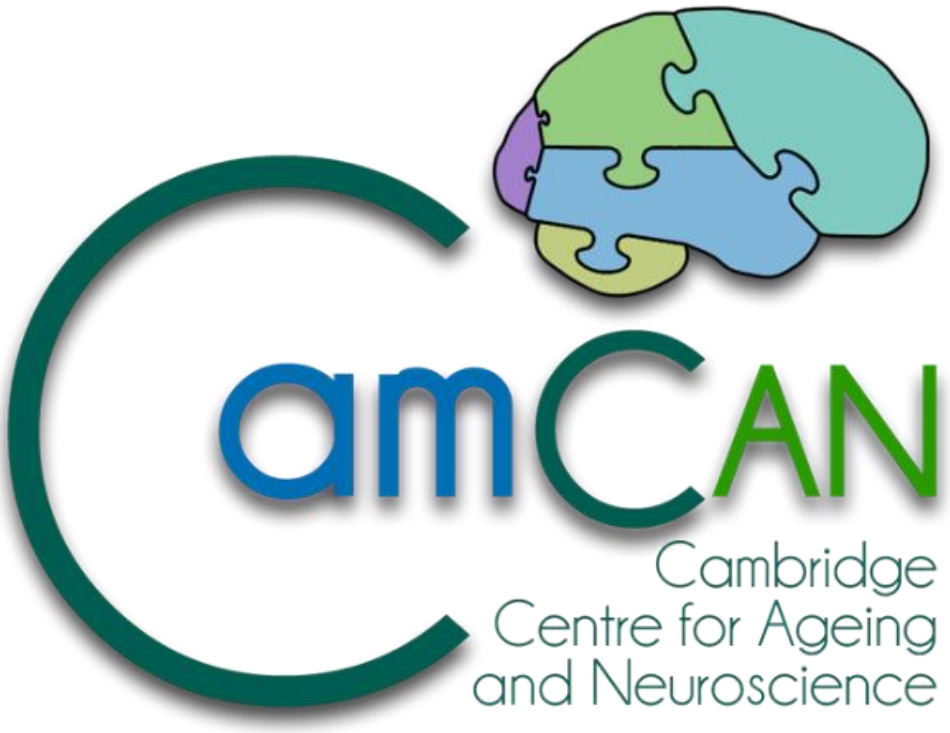


24th July 2018

CAMCAN SOCIAL EVENT

The Cambridge Centre for Ageing and Neuroscience (CamCAN) has conducted a wide range of multi-disciplinary and multi-modal research over the last 8 years, contributing to the scientific understanding of healthy ageing – an achievement that would not have been possible without the near 3,000 participants that make up the CamCAN cohort. On Tuesday 24th July 2018, we invited our original core volunteers to return to the MRC CBU for a CamCAN Social Event to say thank-you for their continual dedication and effort.

In a series of talks from Lorraine Tyler, Meredith Shafto, Rik Henson, Sophia Borgeest and Rogier Kievit, our guests got to hear about how their data has contributed to exciting and inspiring research on how individuals can best retain cognitive abilities into old age. Later, researchers and participants enjoyed some refreshments and were able to share their personal experiences of the study.

With lots of positive feedback, emerging ideas, and the formation of a Participant Advisory Panel it's safe to say that the event was a huge success, and we continue to be thankful to our participants for their ongoing contributions!

NEWSLETTER CONTENTS:

EVENT TALKS: SUMMARIES

1. Professor Lorraine Tyler: Update on CamCAN.

The principal investigator of CamCAN, Professor Lorraine Tyler, welcomed guests and expressed extensive appreciation for their ongoing contributions to the CamCAN project. With their time and effort over the last 8 years, CamCAN has become a unique cohort with rich and diverse data. The scientific questions asked of these data have had a huge impact all around the world. CamCAN has also joined the LifeBrain project, whose goal is to harmonise the data across various European cohorts: https://www.lifebrain.uio.no/

2. Dr Meredith Shafto: Our experience of the research.

The current CamCAN dataset provides a range of measures that is unusual for large-scale studies of ageing, and uniquely challenging to gather. We highlighted some key features of the CamCAN data that underpin some of the major challenges of the data collection, and in doing so, acknowledged that our success requires dedication from both CamCAN personnel and participants. This talk introduced the dozens of researchers and administrators who carried out research sessions, provided insight into the challenges of using cognitive neuroscience tasks on a large scale, and highlighted some of the unique requirements when recruiting participants across the adult lifespan (18-88 years of age).

3. Professor Rik Henson: The importance of mid-life activities with healthy cognitive ageing.

- The concept of **"cognitive reserve"** has been used to explain why some people maintain their cognitive abilities in old age despite normal **age-related atrophy** of their brains.
- 205 retired people aged 66-88 from CamCAN performed a cognitive test of IQ, had a brain scan and completed a questionnaire about the activities they had undertaken during their youth, middle-age and (current) old-age.
- A **composite score** of their mid-life intellectual, physical and social activities made a unique contribution in predicting current **cognitive ability**, over and above their education in youth.
- Neither mid-life occupation nor current activities in old-age made a unique contribution. Furthermore, the higher the mid-life activity score, the less dependent was cognitive ability on a **global measure** of brain structural health: in other words, mid-life activities behaved as a form of cognitive reserve.
- The potential modifiability of these mid-life activities has implications for maintaining function in the ageing population and potentially reducing the impact of dementia.

TERMINOLOGY
(for words in bold)

UNDERSTANDING OUR AREAS OF INVESTIGATION

Age-related atrophy: A physiological process as we age involving the breakdown of brain cells, leading to reduced **brain volume in an MRI scan.**

Modifiable activities: Activities or lifestyle factors that you can change, which have subsequent effects on healthy ageing.

UNDERSTANDING COGNITION

The mental action or process of acquiring knowledge and understanding through thought, experience, and senses.

Cognitive ability: Mental activity associated with learning and problem solving. Example: **Mental Speed**, the ability to understand and react to information received.

Cognitive reserve: The notion that late-life cognitive ability is influenced by factors occurring in early life that contribute to successful ageing (and improving the mind's resistance to the damage of the brain).

Cognitive tests: Assessments of cognitive abilities including IQ.

4. Sophia Borgeest: Leading an intellectually and socially active life is associated with healthy cognitive ageing.

- Sophia demonstrated how CamCAN data were used to explore what sorts of activities might increase people's chances of healthy cognitive ageing
- Using a **data-driven approach**, Sophia categorized various aspects of the participants' lives into five factors: physical health, mental health, education/socio-economic status (SES), intellectual engagement and social engagement.
- They found that all five aspects of lifestyle were associated with better cognitive health, and this was true across the lifespan (i.e. at any given age). This suggests that better mental and physical health, increased levels of education/SES and more engagement in intellectual and social engagement is beneficial for cognition.

- The team also found that intellectual and social engagement were more important than physical and mental health, and that this was true independently of someone's socio-economic status.
- Such findings are promising, as they suggest that potentially **modifiable activities**, such as learning a new language, reading or getting involved in a community, might allow people to age more healthily.

UNDERSTANDING OUR RESEARCH TECHNIQUES

Composite score: A measurement based on multiple variables e.g. Memory

Global measure: A single, overall measure based on several different factors, which could include composite scores e.g. IQ

Cross-sectional studies: The study of a population at a specific time point.

Data-driven approach: Research is based on information extracted from data.

Longitudinal data collection: The study of a population on multiple occasions

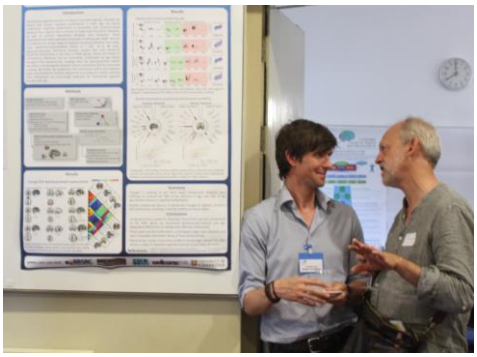
5. Dr Rogier Kievit: The benefits of long term data collection.

- **Cross-sectional studies**, where we study different individuals and compare them, have taught us a lot about healthy ageing.
- However it can be difficult to establish the processes of ageing: What comes first? Which things follow from each other?
- To help develop the best advice to support healthy ageing, we are moving towards **longitudinal data collection**. This will allow us to tease apart processes and mechanisms that unfold across the lifespan.
- *This is why we hope you will continue to be involved in CamCAN!*

OTHER HIGHLIGHTS

POSTER PRESENTATIONS: TAKE HOME MESSAGES

- Prof Rik Henson: Age affects different types of memory in different ways.
- Dr Rogier Kievit: Mental speed and brain integrity helps problem solving in old age.
- Dr Meredith Shafto: Cognitive ageing is a diverse and lifelong process, which requires understanding a wide range of abilities across a wide age range.
- Sophia Borgeest: Having a socially active lifestyle is associated with healthy cognitive ageing.
- Dr Kamen Tsvetanov: A well-connected brain is the key to mental agility in old age.
- Dr David Nesbitt & Dr Delia Fuhrmann: Cardiovascular fitness in old age supports healthy brain ageing.
- Dr Darren Price: The brain slows down with age, but there are different ways this can happen, and some areas do not slow down at all.



Thank you to all those who attended, and to all of our volunteers for their time and effort, we couldn't do this research without your ongoing efforts!

Best wishes, the CamCAN team.

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