



Investigating links between repetitive negative thinking and Alzheimer's disease



What is the focus of the research?

Examining the connections between increased levels of repetitive negative thinking (RNT) and cognitive decline, as well as biological markers of Alzheimer's disease.



Why is it important?

Targeting our modifiable risk factors for dementia (things we can influence, such as our mental health) can prevent or delay up to 40 per cent of diagnoses. Scientists have proposed that reducing a person's lifetime prevalence of depression could be a pathway to reducing risk and incidence of dementia. Unfortunately, the best way to do this is still unclear.

One way to reduce a person's risk of depression may be to target repetitive negative thinking, which is the continuous rumination on the past, present and future. While experiencing worry and occasional negative thoughts are a normal part of life, frequent repetitive negative thinking can be harmful.

Research has uncovered relationships between repetitive negative thinking and greater rates of depression and/or anxiety, chronic stress responses, systemic inflammation and

neuroinflammation. All of these conditions have independently been associated with an increased risk of dementia.

People who engage in frequent repetitive negative thinking can have a greater toxic build-up of brain proteins amyloid beta and tau, which are characteristic of Alzheimer's disease. These people also experience a faster rate of decline in cognition and memory.

While previous studies have identified the independent links between dementia and anxiety/depression, inflammation, chronic stress and neuroinflammation, Dr Dang will, for the first time, investigate these risk factors altogether in one group of people. Importantly, she will assess if the content of their thoughts plays a role. This may help determine whether targeting thought frequency or content is most effective at reducing Alzheimer's disease risk and improving quality of life. Dr Dang is also hoping to determine if any blood biomarkers can help predict if someone will be diagnosed with a neurodegenerative disease in the future.



How will this happen?

Stage 1: recruit 75 participants from a neuropsychiatry service who have an already-established history of cognitive, neurological, and psychiatric symptoms that may be indicative of a neurodegenerative disorder.

Stage 2: participants to provide blood samples and researchers to assess their RNT (including content), cognition, mental health and life satisfaction. This will be repeated in one year.

Stage 3: data analysis to examine relationships between RNT and mental health, cognition and blood-based biomarkers. Further analysis to examine if RNT can predict diagnosis of neurodegenerative/neuropsychiatric conditions. Relationships between RNT content/themes and biomarkers to be explored.



What will it mean for mental health interventions?

- A non-pharmaceutical way to improve mental health and reduce dementia risk.
- Evidence-based interventions that reduce repetitive negative thinking.
- Evidence as to whether blood biomarkers can predict diagnosis.



Who's undertaking the research?

Christa Dang, National Ageing Research Institute

Dr Dang is a research fellow at the National Ageing Research Institute. Her projects centre around the quality of care for older people and its impact on their wellbeing. She also works with the Markers in Neuropsychiatric Disorders (MiND) Study at The University of Melbourne and is an instructor with the Graduate Diploma of Psychology Advanced at Monash University.

Dr Dang completed her PhD at The University of Melbourne, where her thesis focused on trajectories of cognitive and brain ageing in the presence and absence of Alzheimer's disease neuropathological changes. This work showed that ageing without cognitive decline and minimal brain volume loss is possible; thus, the key question that drives her research is, '*How do we make that more probable?*'

The title of her project is *MiND your thinking: Examining relationships between patterns of repetitive negative thinking and blood-based biomarkers of Alzheimer's Disease, neurodegeneration, inflammation and stress.*

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