Wellbeing AUSTRALIA
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What is the impact of mental wellbeing on the brain?

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Various research studies have demonstrated observed changes in the brain with different mental health problems like anxiety and depression. But what do we know of the opposite pattern? What does the structure and function of the brain look like in someone who is flourishing and rating high in mental wellbeing?

Are some brain regions larger or smaller than others? Do certain brain regions process specific information faster or more efficiently? And what are the implications for the rest of us wanting to increase our wellbeing?

These are some of the key questions that I asked as a Group Leader and Senior Research Scientist at NeuRA and UNSW.

I had the privilege of leading a research project that aims to identify the neuroscience of wellbeing in a large sample of 1,600 healthy adult twins tested across Australia. The first phase of testing for this study started in 2009. During this initial phase, my team collected various measures including saliva samples for DNA testing, measures of brain structure and function using magnetic resonance imaging (MRI) and electroencephalography (EEG) techniques, and other basic online measures of health, personality and cognition.

So far, my team have made several discoveries.

One key outcome is the development of a new questionnaire to measure wellbeing called COMPAS-W (Gatt et al., 2014, Psychiatry Research). This is a 26-item questionnaire that provides a combined measure of both subjective (hedonia) and psychological (eudaimonia) wellbeing.

By comparing twins on this scale, my team were able to show that **wellbeing is 48% heritable**. This means that our genetics are contributing about half towards our wellbeing, and the other half is driven by our environment; that is, our life experiences.

In 2019, my team plan to embark on a 10 year follow-up phase of this project. This will involve retesting many of the same twins again to examine changes in mental health outcomes over time. The plan is to characterise profiles of risk versus resilience for mental health problems, and to then observe how these profiles map onto actual changes in the brain over time.

By comparing identical to non-identical twins, we will also be able to pinpoint the role of genetics and environment on these pathways over time.

Together, this information could be used to inform effective healthy strategies to boost mental wellbeing for different individuals.