

Report of 18 August 2016 Meeting Royal Society Southern Highlands Branch

Speaker: Ian Skinner, Neuroscience Research Australia (NeuRA)

Topic: **Pain: What is it? Why do we experience it? How do we experience it? What to do about it?**

With such an open and intriguing title for this lecture, it was hardly surprising to see the enormous interest it created in the community as judged by the 65 audience members attending to hear Ian Skinner. Chronic pain is a massive, growing public health issue, with 1 in 5 Australians living with chronic pain today. When not conducting research, Ian works at a Private Pain Clinic as a physiotherapist implementing current best practice for acute and chronic pain management.

NeuRA is an independent, not-for-profit research institute based in Sydney, Australia. Its goal is to prevent, treat and cure brain and nervous system disease, disorders and injuries through medical research. Ian's main interest lies in investigating the role of cognitive bias in the development of low back pain. His hypothesis is that a subgroup of people who have recently injured their backs will continue to experience pain as a result of their cognitive processing. Specifically, some people may pay more attention to their back pain, a behavior that results in a poor recovery.

Ian spent a great part of the lecture discussing the hugely subjective nature of pain across a range of individuals. He demonstrated many studies that are clearly showing that the context of a noxious stimulus affects the pain it evokes. For example, in the study of light colour (red or blue) on participant response, it was clearly shown that participant responses regarding pain unpleasantness and intensity were heightened when associated with the colour red, and lessened under blue conditions, although the stimuli used were identical but for the light colour. A common example of this phenomenon is also seen when a person receiving an injection reports more pain when they are looking directly at the needle, rather than away.

Ian described pain as an unpleasant and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. It seems that changing the way we think about pain, and our perception of it, may be a key factor in bringing relief to those with chronic pain. Pain is an adaptive response, and is our brain's way of alerting us to a potential threat. Understanding all the sources of that threat is often enough to reduce pain intensity and help recovery.

Ian also commented on a recent international study in which NeuRA participated. This study examined the relationship between chronic back pain and the volume of grey matter in particular areas of the brain in 111 people with chronic back pain and 432

healthy controls. The technique used was voxel-based morphometry, a non-invasive neuroimaging technique which allows researchers to investigate the structure of the brain.

The study showed that people with chronic back pain had decreased volume of grey matter in areas of the brain associated with producing pain, for example, areas associated with the anticipation and unpleasantness of pain, as well as emotional regulation and cognitive processing. This would lead to the conclusion that brains of people who have back pain for a long time process everyday experiences differently from those who do not have pain. Clearly, another verdant field for research into pain, and its effect on the human brain.

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