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## THE ASHWORTH-DUTTON NEUROBIOLOGICAL MODEL OF PSYCHOLOGICAL TRAUMA: INCLUDING THE DA VINCI GAZE RESOLUTION METHOD

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Cerebellar function goes beyond the long understood role of muscular co-ordination. Each cerebellar hemisphere has a bidirectional relationship with the contralateral hippocampus. Spatial working memory has been shown to be lateralised, egocentric memory being held in the right cerebellar hemisphere and allocentric memory being held in the left. The right cerebellar left hippocampus (RCLH) deals with experiential memory forming a street view and LCRH deals with understanding and forms a map view. Traumatic events are postulated to involve a sudden change to the map view held in the LCRH. US combat veterans with PTSD have a right hippocampal volume that is 8% smaller than controls. Co-twins of PTSD patients also have smaller hippocampi, suggesting a genetic or developmental predisposition for PTSD. The anatomical connection between the two cerebellar hemispheres is via the middle cerebellar peduncles which are juxtaposed around the VI<sup>th</sup> cranial nerve nuclei. This juxtaposition is consistent with REM sleep representing middle cerebellar activity synchronising of egocentric and allocentric memories for encoding to long-term memory: this offers a theoretical mechanism by which EMDR has its effect. We demonstrate a simple exercise to encourage subconscious allocentric and egocentric synchronisation by identifying the dominant lateral gaze and using alternate cerebellar stimulation, after which patients have reported improvement in mood. This technique can be used following trauma and offered as an on-going skill that the patient can continue by brief regular daily use. Ashworth and Dutton have been using this technique that they named 'da Vinci Gaze' to train professionals (doctors, paramedics and volunteer therapists) after noting the eye position of the Mona Lisa. This model using da Vinci Gaze offers promise both in short primary care situations and for provision of rapid and effective trauma first aid in mass casualty situations.



### Recent Publications

1. Yu W and Krook Magnuson E (2015) Cognitive collaborations: Bidirectional functional connectivity between the cerebellum and the hippocampus. *Front Syst Neurosci.* 9:177.
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3. Grodd W, Hülsmann E, Lotze M, Wildgruber D and Erb M (2001) Sensorimotor mapping of the human cerebellum: fMRI evidence of somatotopic organization. *Hum. Brain Mapp.* 13:55-73.
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5. Stoodley C J, Valera E M and Schmahmann J D (2012) Functional topography of the cerebellum for motor and cognitive tasks: An fMRI study. *Neuroimage* 59(2):1560-70.

### Biography

Andrew J Ashworth is a General Medical Practitioner with experience of Combat. His interests include rapid neurological management of anxiety on which he has presented at a previous conference. He has graduated from Leeds University Medical School in 1980. He became a member of the Royal College of General Practitioners in 1985. He was a Royal Navy Medical Officer between 1980 and 1994 with experience including combat in the Falklands Conflict and in submarines at sea. He is dual qualified in Occupational Medicine. His special interest is in the treatment of psychological trauma and is qualified in brainspotting as well as CBT. He works as an NHS General Practitioner in Scotland as well as providing occupational medical services and carrying out research on trauma and anxiety.