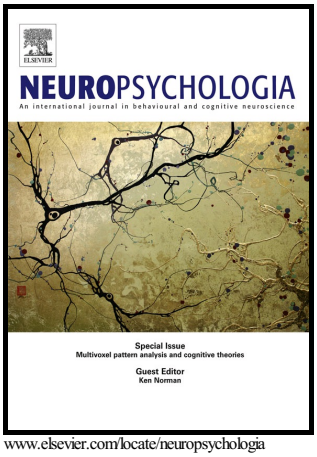

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Pronounced reduction of acquisition of conditioned eyeblink responses in young adults with focal cerebellar lesions impedes conclusions on the role of the cerebellum in extinction and savings

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Abstract

Human cerebellar lesion studies provide good evidence that the cerebellum contributes to the acquisition of classically conditioned eyeblink responses (CRs). As yet, only one study used more advanced methods of lesion-symptom (or lesion-behavior) mapping to investigate which cerebellar areas are involved in CR acquisition in humans. Likewise, comparatively few studies investigated the contribution of the human cerebellum to CR extinction and savings. In this present study, young adults with focal cerebellar disease were tested. A subset of participants was expected to acquire enough conditioned responses to allow the investigation of extinction and saving effects.

19 participants with chronic surgical lesions of the cerebellum and 19 matched control subjects were tested. In all cerebellar subjects benign tumors of the cerebellum had been surgically removed. Eyeblink conditioning was performed using a standard short delay protocol. An initial unpaired control phase was followed by an acquisition phase, an extinction phase and a subsequent reacquisition phase. Structural 3 T magnetic resonance images of the brain were acquired on the day of testing. Cerebellar lesions were normalized