

## Abdelmalek Benattayallah

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### Introduction

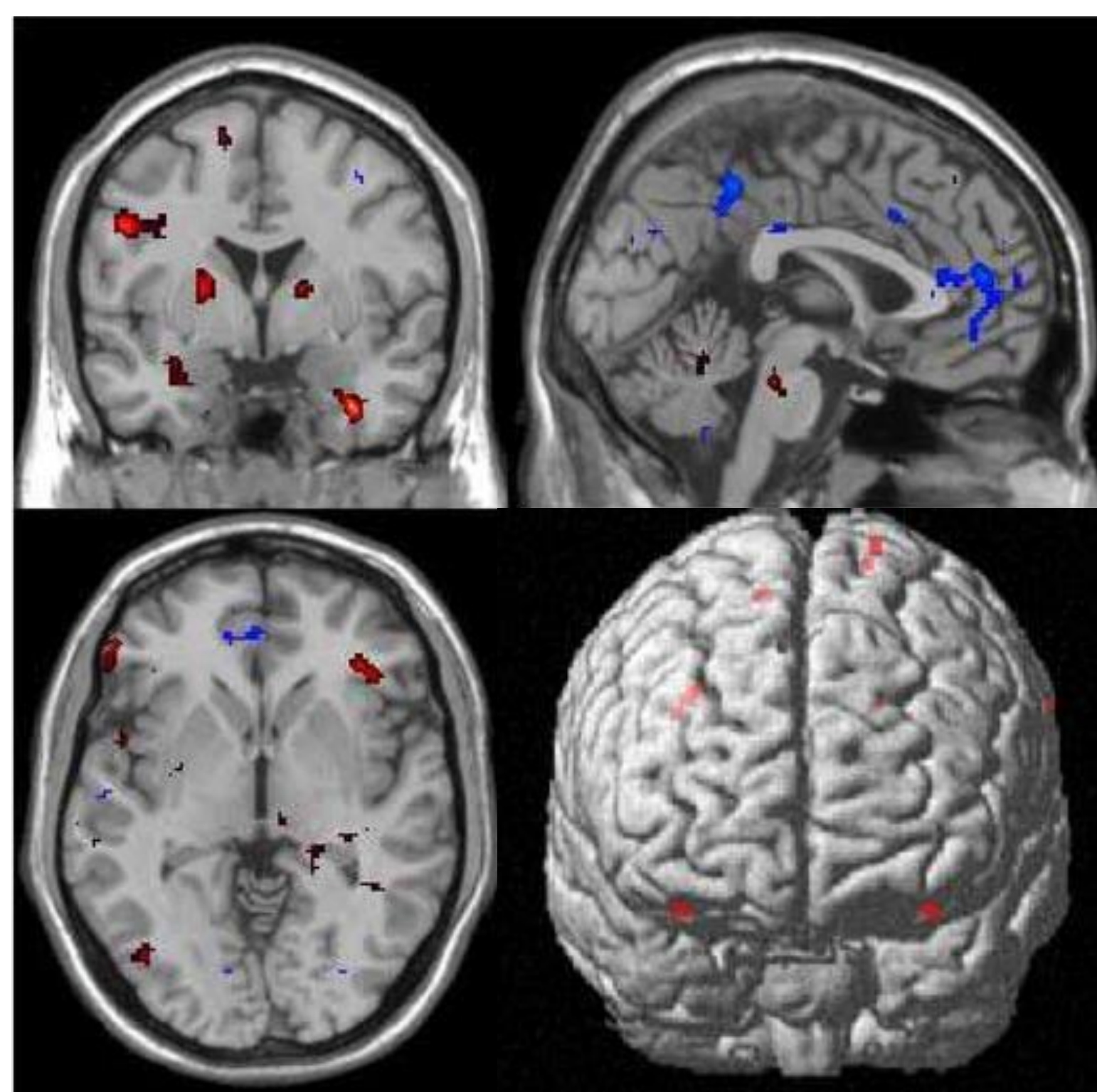
The Exeter MR Research Centre (EMRRC) houses a Philips 1.5 Tesla whole-body scanner, dedicated to Magnetic Resonance Imaging (MRI) and functional MRI (fMRI) research.

We are actively involved in a wide range of research projects cross different fields including: Brain Function, Physiology, Cardiac & Vascular, Body Composition and Modelling of MRI data. Below is details of three examples of our fMRI research that I have been heavily involved with. Some of our research studies, including these three, got a huge media coverage including TV, Radio and Magazines.

### The Effects of Exercise on Cigarette Cravings

The objective of the study was to assess the effect of exercise on regional brain activation in response to smoking related images during temporary nicotine abstinence. This study adds further evidence that a single session of exercise has the ability to reduce the desire to smoke, experienced during cigarette abstinence.

This is the first study to explore neurobiological mechanisms for how exercise acutely reduces cigarette cravings and adds support to the role that exercise can play in the management of cue-elicited cigarette cravings.



The post control condition (compared to post exercise) was associated with greater bilateral activation in the orbitofrontal area of the forebrain when viewing smoking related stimuli.

### Contact Us

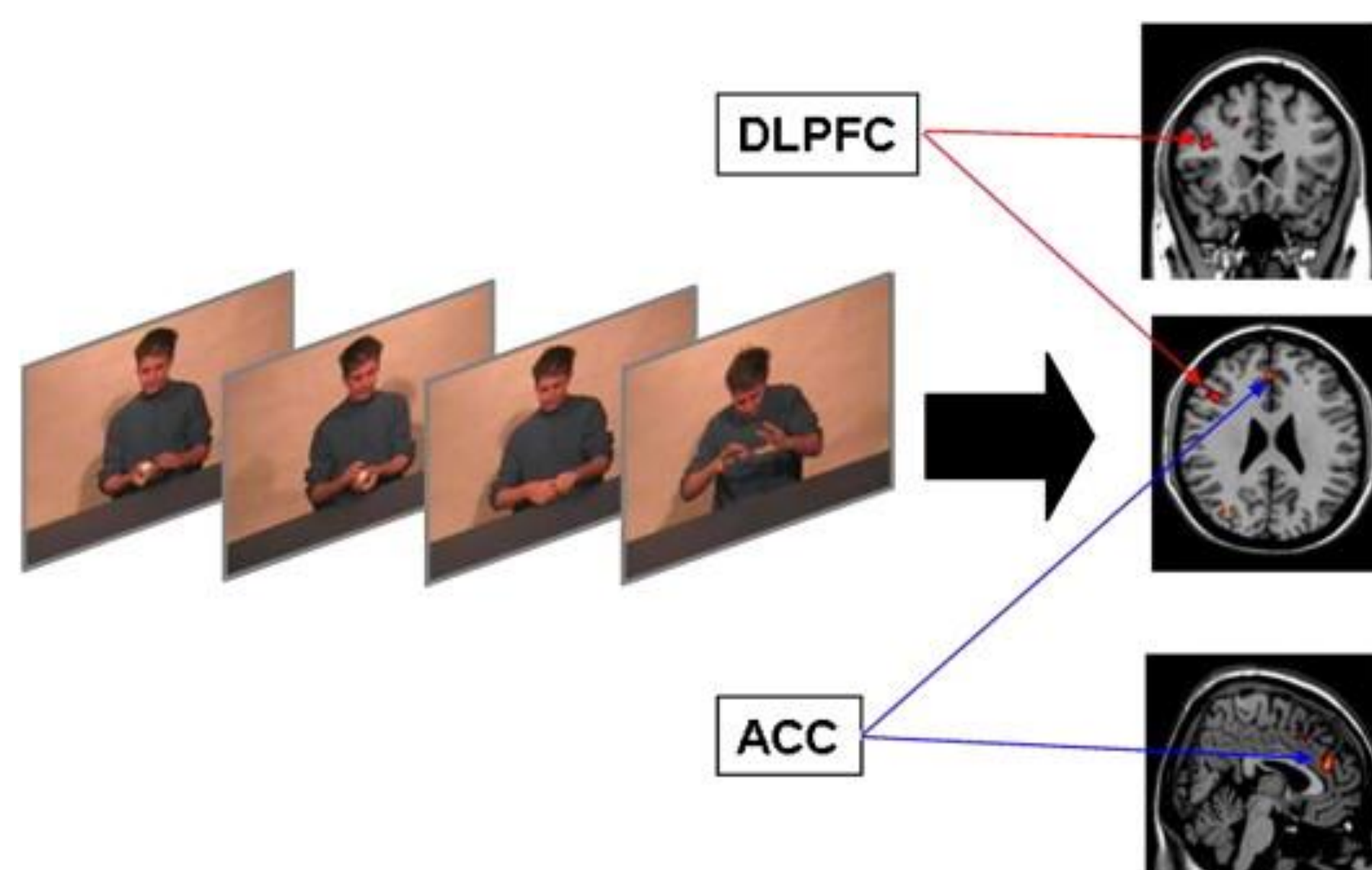
For any inquiry or for more details about our research please visit our website:

<http://centres.exeter.ac.uk/pmrrc>

Or to discuss possibilities for new collaborations or use of our imaging facilities and expertise, please contact Dr Abdelmalek Benattayallah on 01392 262982 / a.benattayallah@ex.ac.uk

### Imaging the impossible: An fMRI study of impossible causal relationships in magic tricks

This study uses magic-trick perception as a means of investigating violations of relationships that are long-established, deterministic, and that form part of the aforementioned belief system. In contrast to previous neuroimaging studies of violations of causality the present study violated causal associations that were deterministic and long-established, rather than probabilistic and task-specific

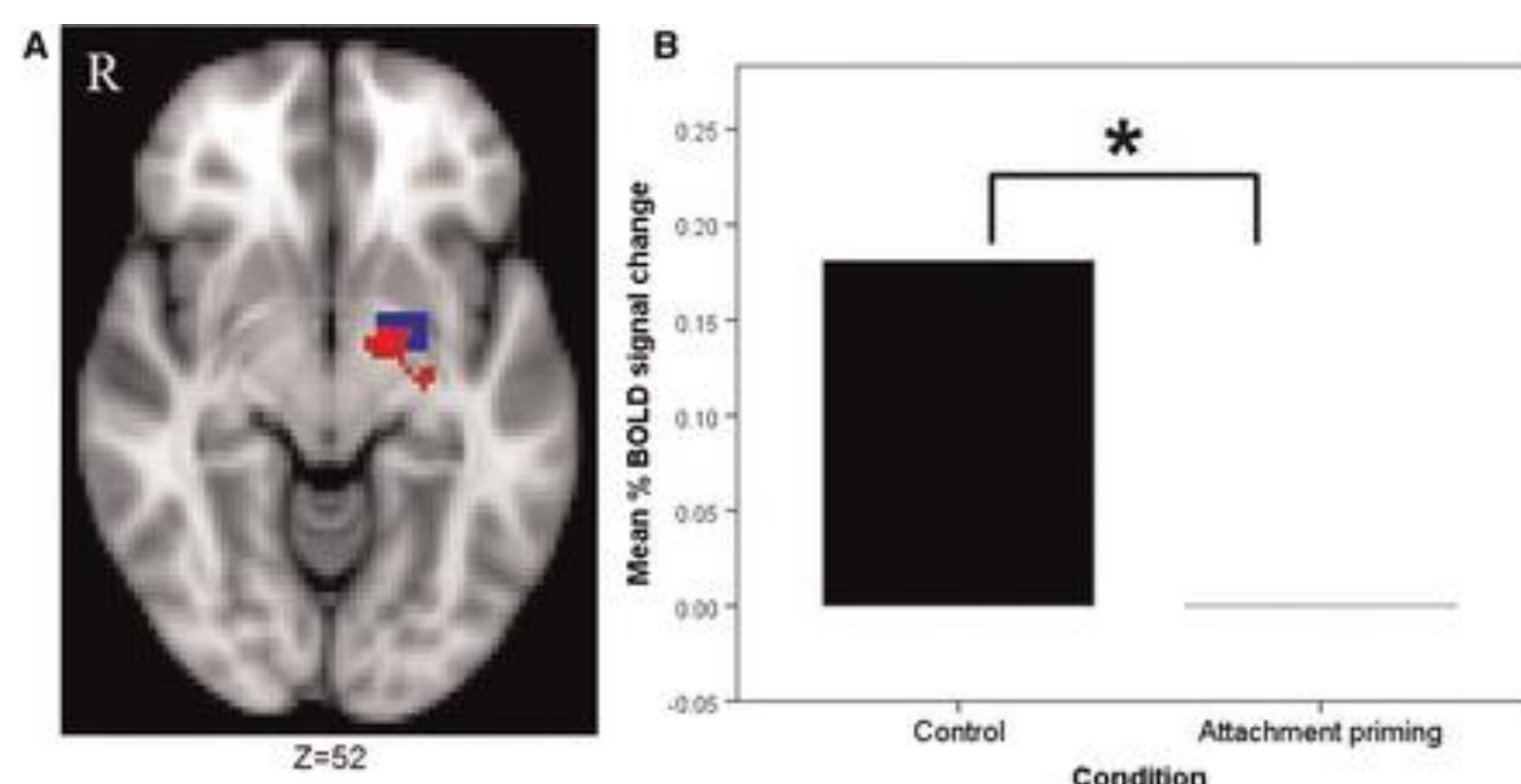


A comparison between Magic and Causal Control conditions revealed activations in left dorsolateral prefrontal cortex (DLPFC) and left dorsal anterior cingulate cortex (ACC), cognitive control regions in the left hemisphere suggesting a role for these regions in a neurobiology of disbelief.

### Brain's response to threat silenced when we are reminded of being loved and cared for

The study discovered that when individuals are briefly presented pictures of others receiving emotional support and affection, the brain's threat monitor, the amygdala, subsequently does not respond to images showing threatening facial expressions or words. Which suggests that being reminded of being loved and cared for reduces the threat response and may allow activation of soothing resources after stressful situations.

The findings are being used to refine existing treatments for posttraumatic stress disorder (PTSD) in order to improve coping with traumatic memories.



Between-group differences in left dorsal amygdala activation in the emotional faces task. (A) Shows the cluster (red) in which the control group showed greater activation compared with the attachment primed group to emotional faces, which overlaps with the left dorsal amygdala ROI (blue). (B) Shows the significant between-group difference in left dorsal amygdala activation to emotional faces.