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The features marked with a star (*) are based entirely on material taken straight from standard research (and other Official and Therefore Always Correct) literature. Many of the other articles are genuine, too, but we don't know which ones.

ANNALS OF

IMPROBABLE RESEARCH



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Where There's More

There's always new improbable — it's not what you expect! — stuff on the **Improbable Research blog** at IMPROBABLE.COM

On the Front Cover

Many coffee beans, and one teabag.



On the Back Cover

An advertisement for a cremation free lunch, mailed to our office in early 2020. (We have blurred out the contact info.)



Some Coming Events

See IMPROBABLE.COM for details of these and other events:

NOTE: The 2020 Ig Nobel EuroTour was scheduled to occur in March and April, but was truncated after the first show, because of the COVID-19 pandemic. The cancelled events will be re-scheduled.

NOTE: Several other events, elsewhere, also will be re-scheduled.

NOTE: Because of the pandemic, we will not do the 2021 Ig Nobel Prize ceremony, and the Ig Informal Lectures, in the usual way. They will be done entirely via the internet, rather than in Sanders Theatre. Please check our web site WWW.IMPROBABLE.COM for updates!

September 17, 2020 – 30th First Annual Ig Nobel Prize ceremony – WEBCAST

Fall 2020 (Date TBD) – The Ig Informal Lectures – WEBCAST

October 2, 2020 – Gothenburg, Sweden (virtual)

MAR/APR 2021 (pandemic permitting) – Ig Nobel EuroTour



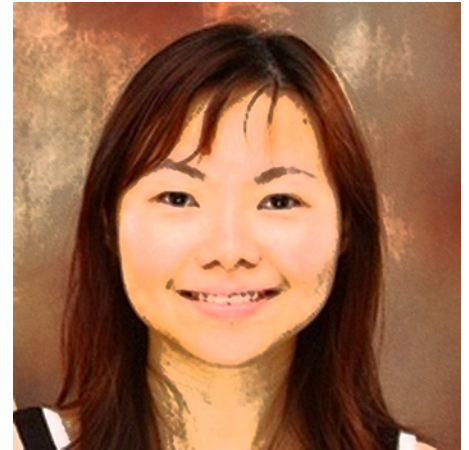
COFFEE AND THE BRAIN: ATTENTION, MAKE, REACT, THREAT

compiled by June Moon and Roy G. Biv, *Improbable Research* staff

A Device to Gauge One's Attention and Dispense Coffee

“Designing a Neurofeedback Device to Quantify the Attention Levels Using Coffee as a Reward System,” Kok Suen Cheng, Jun Xiang Lee, and Poh Foong Lee, *International Journal of Occupational Safety and Ergonomics*, epub 2018. The authors, at University Tunku Abdul Rahman, Malaysia, explain:

A brain-computer interface (BCI) system was adopted to interface brainwave signals to a coffee maker via three ascending levels of laser detectors. The preliminary test with this prototype was to characterize the attention level through the collected coffee amount. Here, the preliminary testing was comparing the correlation between the attention level to the participants' cumulative grade point average (CGPA) and scores from the 21 item Depression, Anxiety, and Stress (DASS-21) and the Attentional Control Scale (ACS) using ordinal regression.... Conclusion: This simple and cost-effective prototype has the potential to enable everyone to know their immediate attention level and predict the possible correlation to the mental state.



Poh Foong Lee, co-author of the study “Designing a Neurofeedback Device to Quantify the Attention Levels Using Coffee as a Reward System.” Drawing by Nan Swift.

Using the Brain to Make a Cup of Coffee

“It Takes the Whole Brain to Make a Cup of Coffee: The Neuropsychology of Naturalistic Actions Involving Technical Devices,” Karoline Hartmann, Georg Goldenberg, Maike Daumüller, and Joachim Hermsdörfer, *Neuropsychologia*, vol. 43, no. 4, 2005, pp. 625-637. The authors, at Bogenhausen Hospital, Munich, Germany, explain:

Patients with LBD [Lewy body dementia] and aphasia, patients with RBD [REM behavior disorder], and healthy controls were examined on experimental tests assessing [various brain functionalities], and were confronted with two naturalistic tasks involving technical devices: preparing coffee with a drip coffee maker and fixing a cassette recorder....

Coffee making showed strong correlations to tests of verbal abilities and to non-verbal tests of functional knowledge.

It takes the whole brain to make a cup of coffee: the neuropsychology of naturalistic actions involving technical devices

Karoline Hartmann, Georg Goldenberg*, Maike Daumüller, Joachim Hermsdörfer

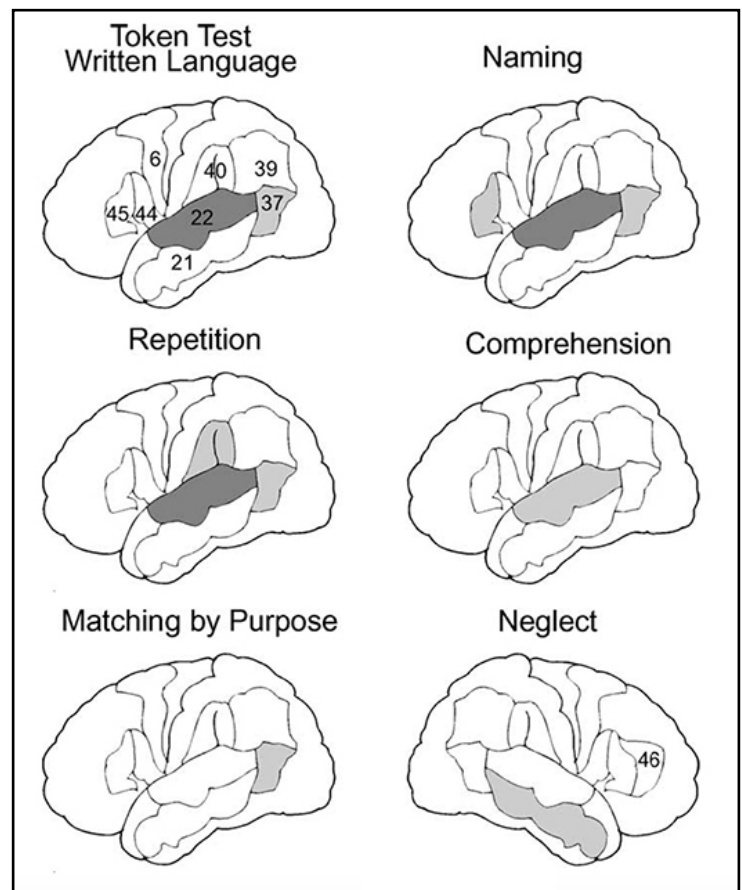
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Received 20 December 2003; received in revised form 22 May 2004; accepted 6 July 2004

Abstract

Left hemisphere dominance has been established for use of single familiar tools and tool/object pairs, but everyday action in natural environment frequently affords multi-step actions with more or less novel technical devices. One purpose of our study was to find out whether left hemisphere dominance extends to such naturalistic action. Another aim was to analyze the cognitive components contributing to success or failure. Patients with LBD and aphasia, patients with RBD, and healthy controls were examined on experimental tests assessing retrieval of functional knowledge from semantic memory, inference of function from structure, and solution of mechanical and non-mechanical multi-step problems, and were confronted with two naturalistic tasks involving technical devices: preparing coffee with a drip coffee maker and fixing a cassette recorder.

Detail from the study “It Takes the Whole Brain to Make a Cup of Coffee: The Neuropsychology of Naturalistic Actions Involving Technical Devices.”



continued >

COFFEE AND THE BRAIN [CONTINUED]

Electromagnetically Detecting the Effect of Coffee on the Brain

“Dataset for EEG Signals Used to Detect the Effect of Coffee Consumption on the Activation of SSVEP Signal,” Bikash K. Pradhan, Kishore K. Tarafdar, Suraj K. Nayak, Anwesha Khasnobish, Sumit Chakravarty, Sirsendu S. Ray, and Kunal Pal, *Data Brief*, vol. 29, p. 105174, January 25, 2020. The authors, at The National Institute of Technology, Rourkela, India; Research and Innovation, Kolkata, India; and Kennesaw State University, Marietta, GA, USA, report:

A set of electroencephalogram (EEG) data was obtained in the National Institute of Technology, Rourkela, India, from six individuals in the presence of seven photic stimuli of different frequencies (range: 3 Hz-30 Hz). The EEG data were recorded prior to, and post-consumption of caffeinated coffee for detecting the influence of coffee consumption on the initiation of steady-state visual evoked potential (SSVEP) signals in different regions of the brain.

Effect of Coffee on the Brain of a Threatened Person

“Storm in a Coffee Cup: Caffeine Modifies Brain Activation to Social Signals of Threat,” Jessica E. Smith, Andrew D. Lawrence, Ana Diukova, Richard G. Wise, and Peter J. Rogers, *Social Cognitive and Affective Neuroscience*, vol. 7, no. 7, 2012, pp. 831-840. The authors, at the University of Bristol and Cardiff University, UK, explain:

Results showed that caffeine induced threat-related (angry/fearful faces > happy faces) midbrain-periaqueductal gray activation and abolished threat-related medial prefrontal cortex wall activation. Effects of caffeine on extent of threat-related amygdala activation correlated negatively with level of dietary caffeine intake. In concurrence with these changes in threat-related brain activation, caffeine increased self-rated anxiety and diastolic blood pressure....

[The] present results are the first demonstration in humans of modification by caffeine of brain activation to social signals of threat in brain regions implicated in anxiety.

Storm in a coffee cup: caffeine modifies brain activation to social signals of threat

Jessica E. Smith,¹ Andrew D. Lawrence,² Ana Diukova,^{2,3} Richard G. Wise,^{2,3} and Peter J. Rogers¹

¹School of Experimental Psychology, University of Bristol, ²School of Psychology and ³Cardiff University Brain Research Imaging Centre (CUBRIC), Cardiff University, UK

Caffeine, an adenosine A₁ and A_{2A} receptor antagonist, is the most popular psychostimulant drug in the world, but it is also anxiogenic. The neural correlates of caffeine-induced anxiety are currently unknown. This study investigated the effects of caffeine on brain regions implicated in social threat processing and anxiety. Participants were 14 healthy male non-/infrequent caffeine consumers. In a double-blind placebo-controlled crossover design, they underwent blood oxygenation level-dependent functional magnetic resonance imaging (fMRI) while performing an emotional face processing task 1 h after receiving caffeine