Saturday Citations: Praising dogs; the evolution of brown fat; how SSRIs relieve depression. Plus: Boeing's Starliner

June 8 2024, by Chris Packham

Electrode placement. Photo of a dog with electrodes in the presence of the owner, right before the onset of the sleep measurement. Credit: Scientific Reports (2024). DOI: 10.1038/s41598-024-60166-8

If there's one thing I've learned about dogs, it's that praise is super-effective for training; a new Hungarian study confirms these anecdotal findings and reinforces that notion that praise is more effective as a pedagogical approach than, for instance, scolding or criticism or deliberately placing one infraclass of mammals above another one with a childish insult like this one:

Placental mammals rule, marsupial mammals drool

Brown adipose tissue, unlike white fat tissue, burns calories instead of storing them. It's essentially the body's heater organ, which researchers believe evolved in mammals to allow them to survive and diversify into colder environments. Its calorie-burning function has also inspired YouTube influencers of the keto-Stoicism-deadlift variety to immerse themselves daily in ice water, a "Jackass"-like activity intended to shed excess body fat, leading to the discovery that the metabolic effects of cold water immersion include making you ravenously hungry. Life will, ah, find a way.

Anyway, a new study from Stockholm University shows that brown fat evolved exclusively in modern placental mammals. The researchers found that marsupials have a form of brown fat that has not evolved to the sophisticated degree enjoyed by placental mammalian winter sports enthusiasts like humans and orcas. After the divergence of placental and marsupial mammals, a heat-producing protein called UCP1 became active.

In possum UCP1 transcription, many but not all of the genes expressed in brown fat are present, indicating that marsupials did not develop the fully evolved form that warms placental mammals. Additionally, the proto-form of brown fat in marsupials is not thermogenic. The researchers hope their findings can contribute to better understanding of mammalian evolution and medical

applications **related to metabolic disorders.**

Praise effective

A study by researchers at ELTE Eötvös Loránd University **found that dogs are more successful in a training scenario if, in addition to food rewards, they're rewarded with petting and praise. The researchers were investigating the relationship between learning, emotions and sleep, and the study results suggest that teaching style and sleep affect both behavior and learning success.**

In two experimental sessions conducted in the presence of the dogs' owners, dog trainers taught the dogs new commands for tricks the dogs already knew. One was conducted in a "permissive" style in which trainers gave the dogs praise and petting in addition to a food reward; the dogs were never scolded. In the second session, dogs received only a treat, with no verbal praise, and were scolded for unwanted behavior. After these sessions, the dogs slept in a sleep lab while they were monitored via EEG scans.

Training in the "controlling" style induced higher stress in dogs; they tended to sleep longer after control-style training, which reinforces previous findings that sleep is important for emotional processing. Dr. Márta Gácsi, senior research fellow of the Comparative Ethology Research Group of HUN-REN-ELTE, said, "The most exciting result is that sleep improved the dogs' learning performance only in one specific case, when the group that received 'controlling' training for the first time expected to receive similar training for the second time, but then we trained them in a 'permissive' style. We believe the combined effect of positive surprise and sleep improved their learning success."

A rare misstep for Boeing

Boeing's new Starliner space capsule was delayed by last-minute thruster issues as it prepared to dock with the International Space Station on Thursday. The capsule was already leaking helium by the time it reached orbit, and hours into its flight, two more leaks occurred. Then four of the Starliner's 28 thrusters failed. After restoring three of them, and orbiting the Earth an additional time after missing the first docking window, astronauts Butch Wilmore and Suni Williams were able to dock the craft with the space station.

Pills explained

How do antidepressants work? Is it a placebo effect? Do they really affect serotonin? Is it sorcery? Classic selective serotonin reuptake inhibitors raise serotonin levels in the brain, and for a while, researchers thought maybe antidepressants were restoring a neurochemical imbalance. But later research showed no reduced levels of serotonin in people with major depressive disorder.

So SSRIs are basically sorcery, but researchers at the University of Colorado Anschutz Medical Campus have published a new framework for understanding how classic SSRIs work; it clarifies the benefits of antidepressants even if MDD is not characterized by low serotonin. The researchers explain that, according to current evidence, MDD is associated with brain regions that fail to communicate properly.

Scott Thompson, Ph.D., professor in the department of psychiatry at the University of Colorado School of Medicine and senior author, said, "When the parts of the brain responsible for reward,

happiness, mood, self-esteem, even problem solving in some cases, are not communicating with each other properly, then they can't do their jobs properly. There is good evidence that antidepressants that increase serotonin, like SSRIs, all work by restoring the strength of the connections between these regions of the brain."

Citation: Saturday Citations: Praising dogs; the evolution of brown fat; how SSRIs relieve depression. Plus: Boeing's Starliner (2024, June 8) retrieved 26 June 2024 from https://phys.org/news/2024-06-saturday-citations-dogs-evolution-brown.html