Perception: Brainwaves & Visual Attention

Neuroscientists have recently demonstrated a link between brainwave activity and visual perception.

New research published in “The Journal of Neuroscience” by Dr Tony Ro & colleagues demonstrates that the brain cannot detect images during 'troughs' in brainwaves of certain frequencies.

"We may have our eyes open, but we sometimes miss seeing things," Professor Ro said. "When the brain is in a state of readiness, you see; when it is not, you don't see."

Professor Ro and his colleagues demonstrated how the phase of an alpha wave can reliably predict visual detection; the latter breaking off when the former is 'in a trough'. The research has potential applications in improving safety. For example, automobile accidents often occur because drivers miss seeing something, even if for a split second, he explained.

However, it may be the alpha state itself or the initiation of the learning cycle that produces these results. In cases where a task requires sustained attention and “beta” rhythm, subjects could lapse periodically into alpha, either to process information that might be important, or even to daydream if bored! The research doesn't seem to study other kinds of brainwaves (although the summary we received was poor).

It also makes sense that when we start to pay sustained attention, the learning cycle will slip from observation into modeling. Visual attention will be “inner” for short periods and outer again only to check accuracy. During those 'inner' seconds, there will be no awareness of external visuals unless there is an attention-grabbing change, which as far as we can tell this study didn't provide. But if this is the true interpretation it is fascinating -because we have never seen that particular processing fragment up close and personal before. So Prof, Ro may have discovered something most people in the mainstream don't understand yet, possibly including him!

We would need data from all brainwave patterns to ascertain this: does this 'on/off', 'inner/outer' visual attention phenomenon happen with all types of wave? I would guess that it probably doesn't, but only with two types (probably alpha & beta, possibly alpha & gamma).

Why? Because I suspect one will occur when we are doing the “cut” process of modeling and the other will occur when we're doing the “paste” half. (note this is only an hypothesis, not a fact -ed.)

Professor Ro said future research will investigate what occurs when images are flashed by a strobe light at intervals to match these brainwave frequencies, so they may be about to catch up with the rest of us and rediscover neurofeedback :)

Sources

City College of New York, April 2nd, 2009 in Medicine & Health / Neuroscience http://www.physorg.com/news157898608.html