

Brain noise is a good thing

July 4 2008

Canadian scientists have shown that a noisy brain is a healthy brain.

"Brain noise" is a term that has been used by neuroscientists to describe random brain activity that is not important to mental function. Intuitive notions of brain-behaviour relationships would suggest that this brain noise quiets down as children mature into adults and become more efficient and consistent in their cognitive processing.

But new research from the Rotman Research Institute at Baycrest, published in the July 4, 2008 issue of the *Public Library of Science - Computational Biology*, overturns this notion.

"What we discovered is that brain maturation not only leads to more stable and accurate behaviour in the performance of a memory task, but correlates with increased brain signal variability," said lead author, Dr. Randy McIntosh, a senior scientist with the Rotman Research Institute at Baycrest. "This doesn't mean the brain is working less efficiently. It's showing greater functional variability, which is indicative of enhanced neural complexity."

In the study, 79 participants representing two main age groups – children (eight to 15) and young adults (20 to 33 years of age) – completed a series of face memory tasks to measure their ability to recall faces with accuracy. EEG recordings were collected to measure their brain signal activity while performing the task. EEG – electroencephalography – is a powerful brain imaging tool that allows for precise measurement of the timing of brain activity in response to external stimuli.

Researchers found that not only did the young adults score better on the face recognition tasks (i.e. they showed more stable and accurate cognitive behaviour) compared to the children, but the young adults' brain signal variability actually increased – got noisier.

"These findings suggest that the random activity that we think of as noise may actually be a central component of normal brain function," said Dr. McIntosh.

Source: Baycrest Centre for Geriatric Care

Citation: Brain noise is a good thing (2008, July 4) retrieved 28 September 2023 from <https://phys.org/news/2008-07-brain-noise-good.html>

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