

Neuroscience shows why not everyone learns from their mistakes

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(Medical Xpress)—Some people do not learn from their mistakes because of the way their brain works, according to research led by an academic at Goldsmiths, University of London.

The research, led by Professor Joydeep Bhattacharya in the Department of Psychology at Goldsmiths, examined what it is about the brain that defines someone as a 'good learner' from those who do not learn from their mistakes.

Professor Bhattacharya said: "We are always told how important it is to learn from our errors, our experiences, but is this true? If so, then why do we all not learn from our experiences in the same way? It seems some people rarely do, even when they were informed of their errors in repeated attempts.

"This study presents a first tantalising insight into how our brain processes the [performance](#) feedback and what it does with this information, whether to learn from it or to brush it aside. "

The study, published in a recent issue of the *Journal of Neuroscience*, investigated brainwave patterns of 36 healthy human volunteers performing a simple time estimation task. Researchers asked the participants to estimate a [time interval](#) of 1.7 seconds and provided feedback on their errors. The participants were then measured to see whether they incorporated the feedback to improve their future performances.

'Good learners', who were successful in incorporating the feedback information in adjusting their future performance, presented increased [brain responses](#) as fast as 200 [milliseconds](#) after the feedback on their performance was presented on a computer screen.

This brain response was weaker in the poor learners who did not learn the task well and who showed decreased responses to their performance errors. The researchers further found that the good learners showed increased communication between [brain areas](#) involved with performance monitoring and [sensorimotor](#) processes.

Caroline Di Bernardi Luft, one of the research paper's co-authors from the Federal University of Santa Catarina, commented: "Good learners used the feedback not only to check their past performance, but also to adjust their next performance accordingly."

The [brain](#) responses correlated highly with how well the volunteers learned this simple task over the course of the experiment, and how good they were at maintaining the learned skill without any guiding feedback.

"Though these results are very encouraging in establishing a correlation between brains responses and learning performance, future studies are needed to identify a causal role of these effects," Professor Bhattacharya added.

More information: www.jneurosci.org/content/33/5/2029.abstract

Provided by Goldsmiths, University of London

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