

'Wiring' in the brain influences personality

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Have you got the new iPhone yet? Do you like changing jobs now and again because you get bored otherwise? Do you go on holiday to different places every year? Then maybe your neural connection between ventral striatum and hippocampus is particularly well developed. Both of them are centres in the brain. The reward system which urges us to take action is located in the striatum, whereas the hippocampus is responsible for specific memory functions.

In innovation-oriented people, both of these centres apparently interact particularly well. At least this is the supposition of the scientists from Bonn, Michael X. Cohen and Dr. Bernd Weber. If the hippocampus identifies an experience as new, it then sends the corresponding feedback to the striatum. There certain neurotransmitters are then released which lead to positive feelings. With people who constantly seek new experiences, striatum and hippocampus are evidently wired particularly well. The two researchers were able to show this in the survey now being published.

Method revolutionises the exploration of the brain

Up to now, it has been extremely difficult to make the individual 'wiring' of the brain visible. 'In principle this was only possible using cross sections of the brain of deceased people, which in addition had to be stained in a complex process,' Dr. Weber explains. Thanks to a new method this is now a lot easier. With modern MRI you can actually determine in which directions the water in the tissue diffuses. Nerve fibres are an impenetrable obstacle for tissue fluid. It can only flow

along them. These 'directional' streams of water are visible in the tomography image. 'With this hazard-free method we can work on completely new issues related to the function of the brain,' Cohen says enthusiastically.

In the current study the Bonn scientists focused on the 'wiring' of the striatum. Moreover, the test candidates had to choose descriptions that characterised their personality best from a questionnaire, e.g. 'I like to try out new things just for fun or because it's a challenge' or alternatively 'I prefer to stay at home rather than travelling or investigating new things.'

By contrast, descriptions such as 'I want to please other people as much as possible' or 'I don't care whether other people like me or the way I do things', were about social acceptance. Here too the researchers noticed a link. 'The stronger the connection between frontal lobe and ventral striatum, the more distinctive the desire for recognition by that person's environment,' Weber says. That is not quite unexpected. For example, it is known that people with defects of the frontal lobe violate social norms more frequently.

The Bonn scientists wish to confirm their results even more. In experiments they would like to investigate whether people actually behave differently depending on the 'wiring' of their brain.

Source: University of Bonn

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