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Smoking May Thin the Brain

Many brain imaging studies have reported that tobacco smoking is associated with large-scale and wide-spread structural brain abnormalities.

The cerebral cortex is a specific area of the brain responsible for many important higher-order functions, including language, information processing, and memory. Reduced cortical thickness has been associated with normal aging, reduced intelligence, and impaired cognition.

However, prior research had not described the impact of smoking upon cortical thickness.

A new study, published in the current issue of *Biological Psychiatry*, now reports concerning findings about the impact of smoking.

Researchers compared cortical thickness in volunteers, both smokers and never-smokers, who were without medical or psychiatric illnesses.

Smokers exhibited cortical thinning in the left medial orbitofrontal cortex. In addition, their cortical thickness measures negatively correlated with the amount of cigarettes smoked per day and the magnitude of lifetime exposure to tobacco smoke. In other words, heavier smoking was associated with more pronounced thinning of cortical tissue.

The orbitofrontal cortex has frequently been implicated in drug addiction. The current findings suggest that smoking-related cortical thinning may increase the risk for addictions, including smoking.

“Since the brain region in which we found the smoking-associated thinning has been related to impulse control, reward processing and decision making, this might explain how nicotine addiction comes about,” explained Dr. Simone Kühn. “In a follow-up study, we plan to explore the rehabilitative effects of quitting smoking on the brain.”

“The current findings suggest that smoking may have a cumulative effect on the brain,” noted John Krystal, M.D., Editor of *Biological Psychiatry* and Professor and Chair of Psychiatry at Yale University. “This concerning finding highlights the importance of targeting young smokers for antismoking interventions.”

For now, this study adds to a long and ever-growing list of reasons that smokers should consider quitting.

The article by Simone Kühn, Florian Schubert, and Jürgen Gallinat. Kühn and Gallinat are affiliated with St. Hedwig Krankenhaus, Clinic for Psychiatry and Psychotherapy, Charité University Medicine, Berlin, Germany. Kühn is also affiliated with the Faculty of Psychology and Educational Sciences, Department of Experimental Psychology and Ghent Institute for Functional and Metabolic Imaging, Ghent University, Ghent, Belgium, and also the Institute of Cognitive Neuroscience, Department of Psychology, University College London, London, United Kingdom. Schubert is with Physikalisch-Technische Bundesanstalt, Department of Medical Metrology, Berlin, Germany.