

Moderate levels of secondhand smoke deliver nicotine to the brain

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Exposure to secondhand smoke, such as a person can get by riding in an enclosed car while someone else smokes, has a direct, measurable impact on the brain—and the effect is similar to what happens in the brain of the person doing the smoking. In fact, exposure to this secondhand smoke evokes cravings among smokers, according to a study funded by the National Institute on Drug Abuse (NIDA), part of the National Institutes of Health.

The study, published today in *Archives of General Psychiatry*, used positron emission tomography (PET) to demonstrate that one hour of secondhand smoke in an enclosed space results in enough [nicotine](#) reaching the brain to bind receptors that are normally targeted by direct exposure to tobacco smoke. This happens in the brain of both [smokers](#) and non-smokers.

Previous research has shown that exposure to secondhand smoke increases the likelihood that children will become teenage smokers and makes it more difficult for adult smokers to quit. Such associations suggest that secondhand smoke acts on the brain to promote smoking behavior.

"These results show that even limited secondhand smoke exposure delivers enough nicotine to the brain to alter its function," said NIDA Director Nora D. Volkow, M.D. "Chronic or severe exposure could result in even higher [brain](#) nicotine levels, which may explain why [secondhand smoke](#) exposure increases vulnerability to nicotine

addiction."

"This study gives concrete evidence to support policies that ban smoking in public places, particularly enclosed spaces and around children," said Arthur Brody, M.D., of the UCLA Department of Psychiatry & Biobehavioral Sciences and corresponding author for the article.

Provided by National Institutes of Health

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