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This press release contains:

- **Summaries of newsworthy papers:**
 - [Brain changes in young smokers *PODCAST*](#)**
 - [To drink or not to drink? *PODCAST*](#)**
- **Geographical listing of authors**

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[\[1\] Brain changes in young smokers *PODCAST*](#)

DOI: 10.1038/NPP.2014.48

Young adult smokers may experience alterations in brain structure related to cigarette exposure, dependence, and craving, according to a small study published this week in *Neuropsychopharmacology*. Although it is not certain whether the findings represent the effects of smoking or a risk factor for nicotine dependence, the results may reflect the initial effects of cigarette smoking on the brain. The work could also contribute to the understanding of why smoking during this developmental stage has such a profound impact on lifelong smoking behavior.

The age period from late adolescence to early adulthood, when the brain is still developing, is associated with the highest prevalence of smoking in the United States. The brain structure of adults has been shown to vary with smoking status, particularly in the insula — a part of the cerebral cortex involved in monitoring internal states and decision-making — although it is unclear how smoking affects the young adult brain. Edythe London and colleagues took smoking histories, assessed cigarette craving and dependence, and examined the insula using magnetic resonance imaging (MRI) in 16–22-year-old participants. 24 participants were non-smokers and 18 participants were smokers who had started smoking at around 15 years of age, and smoked fewer than seven cigarettes per day at the time of the study. The results suggest that participants with greater smoking exposure had more severe nicotine dependence, more cigarette craving, and less insular thickness than those with less exposure.

This study shows an apparent effect of smoking on brain structure in young people with a relatively short smoking history, and suggests that smoking during this critical time period produces neurobiological changes that underlie the transition to tobacco dependence in adulthood.

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Listen to the related podcast from *Neuropsychopharmacology*:

http://www.nature.com/multimedia/podcast/npp/npp_030314_smoking.mp3

Please link to the scientific paper in online versions of your report (the URL will go live after the embargo ends): <http://dx.doi.org/10.1038/NPP.2014.48>

[\[2\] To drink or not to drink? *PODCAST*](#)

DOI: 10.1038/NPP.2014.47

The relative value of alcohol may be encoded by discrete regions of the brain, according to a study of 24 men published this week in *Neuropsychopharmacology*. The study suggests that activity in these brain sites contributes to the cost-benefit analysis drinkers make when deciding whether or not to consume alcohol.

Alcohol-dependent individuals place a high value on obtaining alcohol, although little is known about the brain systems that regulate the decision-making process of drinking and that drive such high demand in alcoholics. Using functional magnetic resonance imaging (fMRI), James MacKillop and colleagues examined brain activity in 24 male volunteers, who were heavy drinkers, while they were deciding whether or not to drink alcohol priced at various levels. Specifically, the participants were given a 'bar tab' to spend in the scanner and those choices determined how much alcohol they would receive in a bar laboratory immediately following the scan. The researchers found that when participants decided to drink, activation was seen in several areas of the cerebral cortex, such as the prefrontal and parietal cortices. However, when the decision to drink was affected by the cost of alcohol, activation involved frontostriatal regions, important for the interplay between deliberation and reward value. In addition, activation of the anterior insula was particularly pronounced in decisions in which the costs of drinking

affected consumption. This region has been previously implicated in processing internal senses as well as drug cravings.

These findings identify unique motifs of brain activity that may contribute to the pathologically increased value that addicted individuals place on alcohol. Future studies with larger sample sizes will be required to determine which aspects of these neural signatures are most relevant to alcohol disorders, and whether modifying the activity of these brain sites lowers the relative value of alcohol and can alleviate persistent drinking, a defining feature of alcoholism.

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GEOGRAPHICAL LISTING OF AUTHORS...

The following list of places refers to the whereabouts of authors on the papers numbered in this release. For example, London: 4 - this means that on paper number four, there will be at least one author affiliated to an institute or company in London. The listing may be for an author's main affiliation, or for a place where they are working temporarily. Please see the PDF of the paper for full details.

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