NIDA
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ON DRUG ABUSE
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# NewsScan
## NIDA ADDICTION RESEARCH NEWS

NEWS UPDATE

## Research News

### Novelty-Seeking Teens May Be More Easily Influenced by Tobacco Advertisements

Teens with higher levels of a personality trait known as novelty-seeking have been shown to be more receptive to tobacco industry promotional campaigns than teens with low levels of the trait. Novelty-seeking is a heritable trait characterized by a tendency toward excitement in response to new experiences; engagement in sensation-seeking, impulsive, and risk-taking behavior; and sensitivity to reward. Scientific data indicate that teens' receptivity to tobacco marketing campaigns may play an important role in the choice to start smoking. Building on this research, scientists at the University of Pennsylvania and Georgetown University found that teens with high levels of the novelty-seeking trait may be more than twice as likely as those low in the trait to be moderately to highly receptive to tobacco promotional campaigns.

The research team, led by Dr. Janet Audrain-McGovern, collected survey data from 1,071 9th-graders at 5 Northern Virginia high schools. Surveys included questions about smoking habits, peer and family smoking exposure, novelty-seeking personality traits, and demographics. Researchers used a standardized scale to measure the teens' receptivity to tobacco advertising and marketing campaigns.

Overall, 33 percent of the teens reported high levels of receptivity to the advertising campaigns and 20 percent reported minimal levels of receptivity. Almost one-half of the highly receptive teens also scored high for novelty-seeking compared with one-quarter of the teens who were minimally receptive to tobacco advertising.

Of the teens who had never smoked, 37 percent of those highly receptive to tobacco promotions scored high for novelty-seeking compared with 19 percent of the teens who were minimally receptive. However, this relationship was not significant among teens who had ever smoked.

In a separate study, Drs. Kenneth Tercyak and Janet Audrain-McGovern administered standardized questionnaires to 1,136 10th-graders enrolled in Mid-Atlantic high schools to evaluate their tendencies for novelty-seeking, symptoms of attention deficit hyperactivity disorder (ADHD), lifetime cigarette smoking, and age of first cigarette. They found that teens with high degrees of symptoms for ADHD who had smoked cigarettes during their lifetimes also rated highest for novelty-seeking compared with other teens. The researchers say that teens with ADHD and novelty-seeking traits may be at a higher risk for smoking cigarettes than teens without these traits. This is likely because novelty-seeking and ADHD symptoms have common, basic behavioral elements such as poor self-control, attention dysfunction, and risk-taking behavior, which may contribute to tobacco use.

- **WHAT IT MEANS**: Novelty-seeking teens may be more vulnerable to cigarette smoking. Therefore, anti-tobacco campaigns that take this trait into consideration may be the most effective in preventing these teens from smoking.

Dr. Audrain-McGovern, Dr. Tercyak, and colleagues published the studies in the October 2003 issue of *Health Communication* and the December 2003 issue of *Substance Use and Misuse*. The studies were funded in part by NIDA.

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## Behavioral Symptoms May Indicate Increased Smoking Risk Among Adolescents

Adolescents who show a high level of aggression and hyperactivity may be at greater risk for smoking cigarettes than those who do not present these behavioral symptoms, according to a study by researchers at NIDA's Intramural Research Program, the University of California, Los Angeles, and the National Institute of Mental Health.

The researchers recruited 59 adolescents ages 12 to 14 in the Baltimore-Washington, DC area, with no history of substance use, to participate in the study. At the beginning of the study, the adolescents and their parents completed standardized questionnaires to assess the adolescents' aggression, hyperactivity, conduct problems, inattention, impulsivity, anxiety/depression, and social problems. Followup interviews were conducted at 4-month intervals for the next 2 years, and researchers recorded if and when the adolescents began smoking as well as how often they smoked. Family, school, social functioning, and substance use status also were updated.

The researchers found that more than 30 percent of the adolescents began smoking an average of 19 months after the study began. Adolescents who started smoking were more aggressive, more hyperactive, and tended to have more conduct problems upon entering the study than the adolescents who did not smoke.

- **WHAT IT MEANS**: These findings indicate that the severity of certain behavioral symptoms, such as aggression and hyperactivity, may help identify adolescents who are at higher risk of smoking at a young age. Determining risk factors for smoking among adolescents may aid in the development and implementation of more effective prevention programs.

Lead investigators Drs. Monique Ernst and Michelle K. Leff published this study in the September 2003 issue of the *Journal of Child and Adolescent Substance Abuse*. It was funded by NIDA and the American Psychiatric Association's Drug Abuse Research Scholars Program in Psychiatry.

## Prevention Program Curbs Drug Abuse Among Middle-School Youth

Results of a recently published study show that Project ALERT, a widely used school-based drug abuse prevention program, successfully curbs the use of alcohol, cigarettes, and marijuana among middle-school students.

Researchers from RAND Health conducted a randomized, controlled study in 55 South Dakota middle schools from 1997 to 1999. More than 4,000 seventh-grade students were assigned to Project ALERT classes or to a control group that was exposed to drug prevention measures already in place at their schools. The analysis assessed drug use 18 months later.

Results showed that Project ALERT lessons significantly reduced the proportion of new cigarette users by 19 percent and new marijuana users by 24 percent. When compared with the control group, marijuana initiation rates were 38 percent lower for ALERT students who had not tried cigarettes or marijuana at the start of the study, and 26 percent lower for higher risk students who had tried cigarettes. Scores reflecting overall alcohol abuse (binge drinking and drinking that led to fights, for example) were 24 percent lower for all ALERT students.

Project ALERT is designed to modify student attitudes and behaviors toward alcohol, cigarettes, and marijuana. Students are exposed to 11 lessons in seventh grade and 3 reinforcement or booster lessons in eighth grade. The lessons help students identify and resist prodrug pressures and understand the social, emotional, and physical consequences of using harmful substances.

The original Project ALERT was tested in urban, suburban, and rural schools in Oregon and California. Thus, it has been shown to be effective for students in a variety of communities. The present study shows it also can be used successfully in regions with comparatively high rates of alcohol dependence, binge drinking, and current smoking.

- **WHAT IT MEANS**: Drug prevention programs are critical to school-based antidrug efforts and they can effect behavior change in nonusers and in youth who already smoke and drink.

The study, by lead researcher Phyllis Ellickson and her colleagues, appeared in the November 2003 issue of the *American Journal of Public Health*.

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## Long-Lasting Medication Shows Promise for Treatment of Heroin Addiction

NIDA-funded scientists report that a single injection of a sustained-release formulation of buprenorphine effectively relieved withdrawal symptoms for 6 weeks in heroin-dependent patients. A tablet form of buprenorphine, a medication developed through research also supported by NIDA, is already used in the United States and around the world as a once-daily treatment for opioid dependence.

The research team, led by Dr. George Bigelow at Johns Hopkins University School of Medicine, administered the buprenorphine injection to five addicted heroin users. During 4 weeks of residential treatment and 2 weeks of outpatient treatment, the scientists assessed patients for signs and symptoms of heroin withdrawal. The patients also received weekly injections of the opioid hydromorphone Dilaudid to test whether their sensitivity to this class of opioids was reduced by the buprenorphine treatment.

The researchers found that a single dose of the sustained-release form of buprenorphine provided relief of withdrawal symptoms and reduced the effects of the test opioid for 6 weeks.

- **WHAT IT MEANS**: The findings from the current study, the first to test this new formulation of buprenorphine in humans, may lead to more treatment options for individuals addicted to heroin. A long-acting form of buprenorphine may increase patient adherence to treatment, ease the burden of visits to treatment providers, make treatment more accessible, and reduce the risk of buprenorphine being misused.

This study was published in the January 2004 issue of *Drug and Alcohol Dependence*.

## Buprenorphine May Help Those Addicted to Heroin and Cocaine

A recently published study shows that buprenorphine, an effective and well-tolerated office-based treatment for opiate addiction, may significantly reduce abuse of heroin and cocaine in people addicted to both drugs.

In the study, conducted at NIDA's Intramural Research Program in Baltimore, scientists tested different doses of liquid buprenorphine in 200 men and women addicted to heroin and cocaine. The researchers found that the highest dose of buprenorphine—16 mg daily—was well tolerated and effective in reducing use of both drugs.

The chief outcome measures were urine concentrations of cocaine and heroin metabolites. Participants who received higher doses of buprenorphine had statistically significant decreases in the cocaine metabolite benzoylecgonine (BZE) or in urine morphine. For those who received 16 mg of buprenorphine daily, mean BZE concentrations fell by almost 95 percent, and mean morphine concentrations fell by 92 percent. For those who received 8 mg of buprenorphine daily, mean BZE concentrations fell by 90 percent and mean morphine concentrations fell by 83 percent.

Qualitative findings showed that, for participants who received 16 mg of buprenorphine daily, the number who tested positive for cocaine fell by nearly 53 percent and the number who tested positive for heroin fell by almost 43 percent by the end of the study. For those who received 8 mg of buprenorphine daily, the number who tested positive for cocaine fell by nearly 22 percent and the number who tested positive for heroin fell by almost 30 percent.

Participants also received weekly individual drug abuse counseling during the randomized, double-blind, 13-week study in which they received different regimens of active medication.

The scientists say further studies are needed to clarify the optimal dose of buprenorphine for treatment of individuals addicted to both cocaine and heroin, and to identify variables that will allow physicians to select patients who have the greatest chance of benefiting from this therapy.

- **WHAT IT MEANS**: Previous research has pointed to buprenorphine's usefulness as an office-based treatment for the more than 1 million Americans addicted to opiates. According to the study's lead author, up to 75 percent of patients in methadone treatment programs for heroin addiction also abuse cocaine. This study potentially expands the drug's clinical applications to this large proportion of dually addicted people.

Dr. Iván D. Montoya, of NIDA's Division of Treatment Research and Development, and his colleagues published the study in the January 2004 issue of *Clinical Pharmacology and Therapeutics*.

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## Scientists Use Visual Attention Tool To Help Explain How Smoking Cues Affect Smokers

Smoking cues are known to play a role in maintaining nicotine use and relapse, but little is understood about how these cues exert their effects. Recent data suggest that cues can have an impact on cognitive processes, including attentional processes. Drs. Andrew Waters at Georgetown University, Saul Shiffman at the University of Pittsburgh, and Brendan Bradley and Karin Mogg at the University of Southampton, England, have expanded this research by investigating smokers' attentional responses to visual smoking cues.

The researchers recruited 141 heavy smokers who were enrolled in a smoking cessation program. About 2 weeks before quitting smoking, and while not deprived of nicotine, each participant completed a visual probe task consisting of a series of photograph pairs that were briefly presented on a computer screen. One photograph contained smoking-related scenes while the other was closely matched for content, but lacked smoking-related cues. After the photographs disappeared, a dot (probe) appeared in the position formerly occupied by one of the photographs. Participants were told to press a key as quickly as possible to indicate whether the dot appeared on the left or right side of the screen. Half of the time, the dot appeared in the same location as the smoking photograph and the rest of the time it appeared in the location of the unrelated photograph.

Participants were faster and more accurate when responding to a visual probe that replaced a smoking photograph than to a photograph without smoking cues. The researchers say that this indicates that participants had an attentional bias towards the smoking cues.

- **WHAT IT MEANS**: These findings suggest that smoking cues may become conditioned incentives that grab attention. The visual probe task may provide useful information for future studies on attentional responses to smoking cues. Research using another attentional task has suggested that smokers with greater attentional bias are less successful at quitting.

Dr. Waters and his colleagues published the study, funded by NIDA, in the October 2003 issue of the journal *Addiction*.

**For more information about any item in this *NewsScan*:**

- **Reporters**, call **Michelle Person** at 301-443-6245.
- **Congressional staffers**, call **Mary Mayhew** at 301-443-6071.

The National Institute on Drug Abuse (NIDA) is a component of the National Institutes of Health, U.S. Department of Health and Human Services. NIDA supports more than 85 percent of the world's research on the health aspects of drug abuse and addiction. The Institute carries out a large variety of programs to ensure the rapid dissemination of research information and its implementation in policy and practice. Fact sheets on the health effects of drugs of abuse and other topics are available in English and Spanish. These fact sheets and further information on NIDA research and other activities can be found on the NIDA home page at **http://www.drugabuse.gov**.

(29)