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Marijuana Impairs Driving-Related Skills and Workplace Performance

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Marijuana use impairs driving-related functions and is linked to a pattern of behaviors that leads to poor job performance, according to two NIDA-supported studies on the effects of marijuana on human performance. Findings from the studies were presented at NIDA's first National Conference on Marijuana Use.

At NIDA's National Conference on Marijuana Use, Dr. Stephen Heishman presented data from laboratory studies showing that marijuana impairs functions important to driving



"Driving and marijuana do not mix; that's the bottom line," said Dr. Stephen J. Heishman, a research psychologist in the Clinical Pharmacology Branch of NIDA's Division of Intramural Research. Figures from previous studies of automobile accident victims show that from 6 to 12 percent of nonfatally injured drivers and 4 to 16 percent of fatally injured drivers had tetrahydrocannabinol (THC), the psychoactive ingredient in marijuana, in their bloodstream, Dr. Heishman said. One study showed that 32 percent of drivers in a shock trauma unit in Baltimore had marijuana in their bloodstream, he noted. However, in most of these studies, the majority of subjects who tested positive for THC also tested positive for alcohol, making it difficult to single out THC's effect on driving.

In a laboratory study at NIDA's Addiction Research Center in Baltimore that controlled for alcohol's confounding effect, Dr. Heishman tested marijuana's effects on the functional components of driving. Study subjects smoked a marijuana cigarette, waited 10 minutes, then smoked another cigarette. Both cigarettes contained either 0, 1.8, or 3.6 percent THC. Twenty minutes after smoking the cigarettes, the subjects were given a standard sobriety test similar to a roadside sobriety test. The test showed that marijuana significantly impaired their ability to stand on one leg for 30 seconds or touch their finger to their nose. As the dose of THC increased, the subjects swayed more, raised their arms, and had to put their feet down in an attempt

to maintain their balance. Subjects also committed 2.5 times more errors when they attempted to touch their nose with their finger.

The data from these laboratory studies show that marijuana impairs balance and coordination - functional components important to driving - in a dose-related way, said Dr. Heishman. These effects may be related to reported marijuana-induced impairment of automobile driving, he stated.

Highway and urban driving studies conducted in the Netherlands show less impact on actual driving. However, these driving studies used very low doses of marijuana for safety reasons, Dr. Heishman said. Future research using appropriate safety measures should test the effect of higher doses of marijuana on driving as well as the combined effect of marijuana and alcohol on driving, he concluded.

In another study, Dr. Wayne Lehman of Texas Christian University looked at how marijuana affects job performance. A series of surveys he conducted among 4,600 municipal employees in four cities in the Southwest indicated that 8 percent of employees had smoked marijuana in the past year, and a large percentage of these users had smoked marijuana in the past month, Dr. Lehman said.

"Employees who report marijuana use are different from nonusers," said Dr. Lehman. They are much more likely than nonusers to have arrest histories, low self-esteem, high rates of depression, and friends who are deviant. Many marijuana smokers also have alcohol-related problems. One-third of marijuana users in the surveys reported they drank frequently, one-half said they got drunk, and 60 percent reported a problem with alcohol use, according to Dr. Lehman.

This behavioral pattern in the personal backgrounds of marijuana-smoking employees was associated with negative attitudes toward work and job performance, Dr. Lehman said. The surveys found that marijuana users were less likely than nonusers to commit to the organization, had less faith in management, and experienced low job satisfaction. These workers reported more absenteeism, tardiness, accidents, workers' compensation claims, and job turnover than workers who had not used marijuana. They were also more likely to report to work with a hangover, miss work because of a hangover, and be drunk or use drugs at work.

These data indicate that marijuana use is strongly associated with problematic alcohol use and a pattern of general deviance that leads to impaired behaviors and poor workplace performance, Dr. Lehman concluded.

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