

# Reassessing the Marijuana Gateway Effect

Andrew R. Morral, Ph.D.<sup>1</sup>, Daniel F. McCaffrey, Ph.D.<sup>2</sup> & Susan Paddock, Ph.D.<sup>2</sup>

**Abstract** ~ *Aims.* Strong associations between marijuana use and initiation of hard drugs are cited in support of the claim that marijuana use per se increases youths' risk of initiating hard drugs (the "marijuana gateway" effect). This report examines whether these associations could instead be explained as the result of a common factor, drug use propensity, influencing the probability of both marijuana and other drug use. *Design.* A model of adolescent drug use initiation in the United States is constructed using parameter estimates derived from U.S. household surveys of drug use conducted between 1982 and 1994. Model assumptions include: 1) individuals have a nonspecific random propensity to use drugs that is normally distributed in the population; 2) this propensity is correlated with the risk of having an opportunity to use drugs and with the probability of using them given an opportunity; and 3) neither use nor opportunity to use marijuana is associated with hard drug initiation after conditioning on drug use propensity. *Findings.* Each of the phenomena used to support claims of a

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1: RAND Public Safety and Justice. 2: RAND's Drug Policy Research Center

"marijuana gateway effect" are reproduced by the model, even though marijuana use has no causal influence over hard drug initiation in the model. *Conclusions.* Marijuana gateway effects may exist. Our results demonstrate, however, that the phenomena used to motivate belief in such an effect are consistent with an alternative simple, plausible common-factor model. No gateway effect is required to explain them. The common-factor model has implications for evaluating marijuana control policies that differ significantly from those supported by the gateway model.

A new study by the RAND Drug Policy Research Center casts doubt on claims that marijuana acts as a "gateway" to the use of cocaine and heroin, challenging an assumption that has guided U.S. drug policies since the 1950s. However, the study does not argue that marijuana should be legalized or decriminalized.

Evidence supporting claims of marijuana's gateway effects has been found in many epidemiological studies of adolescent drug use. For instance, these studies found that marijuana users are up to 85 times more likely to use hard drugs than those who do not use marijuana, and few hard drug users do not use marijuana first.

However, "[we have] shown that the marijuana gateway effect is not the best explanation for the link between marijuana use and the use of harder drugs," said Andrew Morral, associate director of RAND's Public Safety and Justice unit and lead author of the study. "An alternative, simpler and

more compelling explanation accounts for the pattern of drug use you see in this country, without resort to any gateway effects. While the gateway theory has enjoyed popular acceptance, scientists have always had their doubts. Our study shows that these doubts are justified."

RAND researchers tested the marijuana gateway theory by creating a mathematical model simulating adolescent drug use. Rates of marijuana and hard drug use in the model matched those observed in survey data collected from representative samples of youths from across the United States. Without assuming any gateway effect, the model produced patterns of drug use and abuse remarkably similar to what is experienced across the nation, showing that a marijuana gateway effect is not needed to explain the observed behavior.

### **Conclusions**

The study demonstrates that associations between marijuana and hard drug use could be expected even if marijuana use has no gateway effect. Instead, the associations can result from known differences in the ages at which youths have opportunities to use marijuana and hard drugs, and known variations in individuals' willingness to try any drugs, researchers found.

"The people who are predisposed to use drugs and have the opportunity to use drugs are more likely than others to use both marijuana and harder drugs," Morral said. "Marijuana typically comes first because it is more available. Once we incorporated

these facts into our mathematical model of adolescent drug use, we could explain all of the drug use associations that have been cited as evidence of marijuana's gateway effect."

"This is a very important study with broad implications for marijuana control policy," said Charles R. Schuster, a former director of the National Institute on Drug Abuse and now director of the Addiction Research Institute at Wayne State University. "I can only hope that it will be read with objectivity and evaluated on its scientific merits, not reflexively rejected because it violates most policy makers' beliefs."

RAND researchers say it is unlikely that any study will be conducted that definitively settles the marijuana gateway debate. But the authors say their study should raise questions about the legitimacy of basing national drug policy decisions on the assumption that one of the harmful effects of marijuana use is the increased risk of using more dangerous drugs.

"If our model is right, it has significant policy implications," Morral said. "For example, it suggests that policies aimed at reducing or eliminating marijuana availability are unlikely to make any dent in the hard drug problem. When enforcement resources that could have been used against heroin and cocaine are instead used against marijuana, this could have the unintended effect of worsening heroin and cocaine use."

However, the study does not conclude that marijuana-

na should be legalized or decriminalized. "Even without the effects of a marijuana gateway, relaxing marijuana prohibitions could affect the incidence of hard drug use by diminishing the stigma of drug use generally, thereby increasing adolescents' willingness to try hard drugs," Morral said. "Moreover, marijuana itself can be a serious problem for those who become dependent on it."

### Reference

Morral, A. R., McCafrey, D. F., & Paddock, S. M. (2002). Reassessing the marijuana gateway effect. *Addiction*, 97, 1493-1504.

A series of commentaries about the report are published in the same December edition of *Addiction* (2002).

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