DEWS INVESTIGATES

Warning Signs for Early Marijuana Users
Among Maryland's Public School Students

June 2004

HIGHLIGHTS

An estimated 43% of Maryland 12th graders have ever used marijuana, and 20% used the drug before age 15. Utilizing data from the 2002 Maryland Adolescent Survey (MAS), we studied the relationship of the age of onset of marijuana use to other drug use and problems, and then constructed a scale of warning signs that identified early marijuana users.

Key Issues: What are the drugs that youths tend to use first? How does early marijuana use relate to other illicit drug use and related problems? What warning signs identify early marijuana users?

Findings:

- The earlier that students began using alcohol, cigarettes, and/or marijuana, the more likely they were to use other illegal drugs and to develop related problems.

- Early marijuana users (students who first used the drug prior to age 15) had the highest risk of using other illegal drugs and developing serious drug- and alcohol-related problems.

- A scale of 9 "warning signs" was designed to see if we could identify early marijuana users among 12th graders; this scale also identified early marijuana users in the 8th and 10th grades.

- The 9 warning signs provide important insights into the important roles that law enforcement staff, prevention staff, educators, and parents have to play in identifying and responding to early marijuana using youths. Of greatest significance was the finding that 97% of students with none of the warning signs were not early marijuana users.

The Maryland Adolescent Survey

Since 1973, the Maryland State Department of Education (MSDE) has conducted the Maryland Adolescent Survey (MAS) to monitor drug use trends in public school students. In 2002, nearly 34,000 students in the 6th, 8th, 10th, and 12th grades completed the anonymous survey.

The MSDE provided CESAR with a copy of the 2002 MAS dataset, thus enabling DEWS staff to conduct additional analyses of student drug use. This report presents our first set of analyses, focusing on the relationship of early marijuana use to other drug use and problems among 12th graders. We focus on marijuana because, of the three drugs students most commonly used first, early use of marijuana is most strongly associated with other drug use and problems.

The Current Study

According to the 2002 MAS, an estimated 23,898 Maryland 12th graders in public schools reported having used marijuana at least once in their lives, nearly half of whom (11,600) had used the drug in the past 30 days. Relatively little is known about which students are likely to use marijuana, at what age they first use it, or the kinds of problems that result. We chose to focus on the 12th graders to maximize the amount of time available for students to experience problems and consequences resulting from early drug use. We begin by focusing on the drugs that youths tended to use first. Refer to page 4 for a detailed description of our study methods.

Which drugs are used most widely before age 15?

As shown in Table 1, alcohol, marijuana, and cigarettes were the three most widely used substances. About 70% of 12th graders had used alcohol at least once in their lifetime, while about 40% had used cigarettes and/or marijuana. Approximately one quarter (24%) had used any of the other 14 drugs asked about in the survey. These three substances were also those most likely to have been used before age 15. By age 15, many of these 12th

Table 1. Substances used by 12th graders in Maryland public schools.

	Percent of 12th graders who …	
	Used at least once	Started before age 15
Alcohol	70%	36%
Cigarettes	40%	27%
Marijuana	43%	20%
Any other drug*	24%	9%

*Note: includes 14 "other" illegal drugs: inhalants, nitrates, crack, cocaine, LSD, PCP, other hallucinogens, methamphetamines, designer drugs, heroin, amphetamines, barbiturates, narcotics, and Ritalin.®

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graders had used alcohol (36%), cigarettes (27%), and/or marijuana (20%).

How does early use of alcohol, cigarettes, or marijuana relate to other drug use?

Students who begin using drugs at the youngest age have been found by other researchers[1] to be at highest risk for subsequent drug use and related problems. Given the findings above demonstrating the early use of alcohol, cigarettes, and marijuana among Maryland 12th graders, we examined how the age of first use of these drugs related to use of 14 other illegal drugs (i.e., drugs other than alcohol, cigarettes, and marijuana). We found that the earlier students started using alcohol, cigarettes, and/or marijuana, the more likely they were to have used other illegal drugs (Figure 1). For example, students who used marijuana prior to age 11 went on to use an average of 5.74 other illegal drugs (out of 14), compared with an average of 0.12 other illegal drugs used by students who had never used marijuana. Similar trends were found for students who used alcohol and/or cigarettes at an early age, although the trend is more pronounced with marijuana. We, therefore, focused our remaining analyses on youths who began using marijuana at younger ages.

Figure 1. Mean number of other illegal drugs* used in lifetime among 12th graders, by age at first use of marijuana, cigarettes, and alcohol.
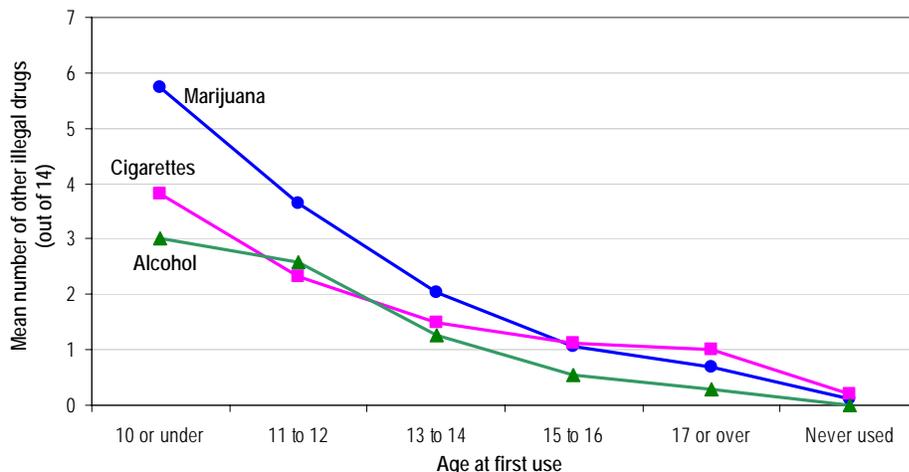
* See note on Table 1.

Are any MAS items "warning signs" that detect early marijuana users?

We focused our attention on the 20% of 12th graders who had begun using marijuana before age 15—early marijuana users. We examined all of the MAS survey items to uncover those that might be related to being an early marijuana user, including items on students' substance abuse knowledge, perceived risks of substances, parenting practices, influence of parents and friends, and resistance to per-

suasion. We found that 9 items best differentiated 12th graders who had used marijuana early from those who had not. We designated these 9 items as "warning signs" for early marijuana users (Table 2). Interestingly, drug knowledge, race/ethnicity, and county of school were all unrelated to early marijuana use.

While 20% of all 12th graders were early marijuana users, the rate was much higher among those who had a prior arrest for drugs (65%) or alcohol (56%) and those who had 20 or more unexcused absences (51%) or thought their parents approved of their use of marijuana (51%). In fact, each item in Table 2 was related to at least twice the rate of early marijuana use among all 12th graders.

We created a scale to count how many of the warning signs each student reported. As shown in Table 3, 48.6% of 12th grad-

Table 2. Percentage of 12th graders with "warning signs" who ever used marijuana or initiated use before age 15.

Warning Signs	Estimated number (percent) of 12th graders with each warning sign	Percent of 12th graders with warning sign who ...	
		Ever used marijuana	First used marijuana before age 15
Behaviors			
First used cigarettes before age 15	14,750 (27.1%)	77%	50%
First used alcohol before age 15	19,495 (35.5%)	71%	44%
20+ unexcused absences in current school year	561 (1.1%)	77%	51%
Ever arrested because used drugs	2,201 (4.3%)	88%	65%
Ever arrested because drank alcohol	2,210 (4.3%)	82%	56%
Attitudes/Opinions			
I think it's safe for me to smoke marijuana.	6,260 (12.3%)	84%	47%
I think it's safe for me to smoke cigarettes.	3,199 (6.2%)	68%	40%
My parents/guardians would think it's OK if I were to smoke marijuana.	4,158 (8.2%)	80%	51%
My parents/guardians would think it's OK if I were to smoke cigarettes.	6,678 (13.1%)	72%	42%
TOTAL (All 12th graders)	55,324 (100%)	43%	20%

Table 3. Number of warning signs (out of 9) among 12th graders.

| Number of warning signs	Estimated number of students	Percent of students
None	26,902	48.6
One to two	20,945	37.9
Three to four	5,497	9.9
Five	1,069	1.9
Six or more	911	1.7
All 12th graders	55,324	100.0

Figure 2. Percentage of 12th graders who used marijuana before age 15, by number of warning signs.
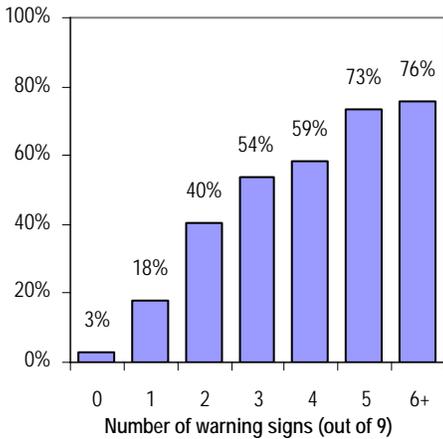
ers had none, and 1.7% had 6 or more.

This new scale of warning signs might serve as a useful tool for identifying students most likely to be early marijuana users. As Figure 2 shows, the more warning signs a student had, the more likely s/he was to have used marijuana early. In fact, about three-quarters (76%) of students with six or more warning signs were early marijuana users, compared with almost none (3%) of the students who had zero warning signs. Students with a greater number of warning signs also had used a greater number of other illegal drugs (Figure 3) and had experienced a greater number of serious problems resulting from drug and alcohol use (Figure 4). We also found that the more warning signs a student had, the more likely s/he was to have used marijuana in the past month and the past year

Figure 3. Mean number of other illegal drugs* used in lifetime among 12th graders, by number of warning signs.
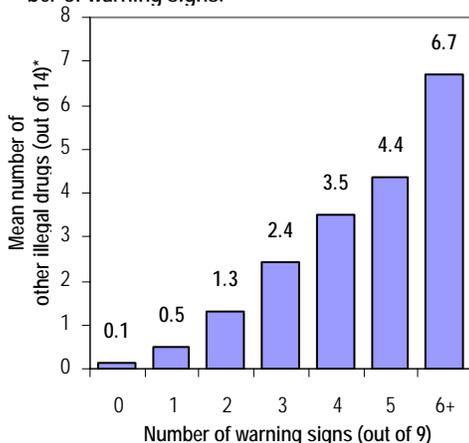
* See note on Table 1.

(Figure 5).

Do these warning signs also identify early marijuana users in 8th and 10th grades?

We tested the validity of our 9 warning signs by applying the scale to girls and boys separately, and with data from 8th graders and 10th graders. We found that our scale of 9 warning signs developed for the 12th graders also detected early marijuana users among 8th and 10th graders (Figure 6). Furthermore, the scale applied similarly to boys and girls.

Implications and Recommendations

Our study focused on identifying Maryland 12th graders who were early marijuana users. These students were most likely to have gone on to use other illicit drugs and to have developed alcohol and other drug problems. We developed a scale of 9 warning signs for identifying early marijuana users among 12th graders and found that the scale also worked for 8th and 10th graders. The fact that these warning signs were relevant for students in all three grades suggests that they are relatively consistent indicators of early marijuana use.

Our scale of warning signs may be especially insightful for parents or school administrators because the nine items may be assessed without the need to ask students directly about their use of marijuana or other drugs. Rather, the items are based on observable behaviors (arrests, school absences, and early use of alcohol or cigarettes) and some self-reported opinions (safety of marijuana or cigarettes or parents' approval of these drugs).

The specific nature of these warning signs provides valuable clues for law enforcement personnel, prevention staff, educators, and parents as to when and how to intervene with youths. Even though some warning signs may occur after marijuana use has begun, the warning signs should still be considered indicators of marijuana use, if not predictors. For example, youths who are arrested for alcohol or other drug offenses should be identified immediately as being at high risk for being an early marijuana user. These youths should probably be targeted for special post-

Figure 4. Mean number of alcohol and drug problems* among 12th graders, by number of warning signs.
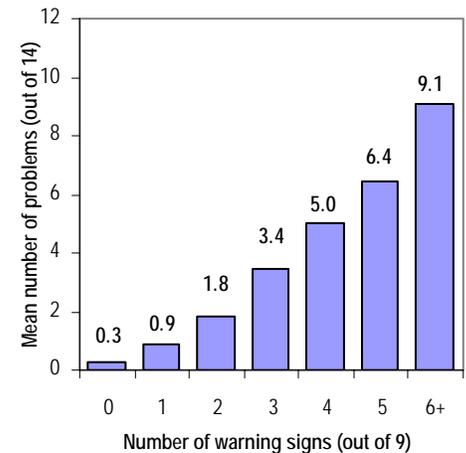
*Note: Students were asked about the following problems resulting from drug and alcohol use: school absences, health problems, family problems, being high/drunk at school, poor school performance, inability to stop using drugs/alcohol, and driving while under the influence of alcohol/drugs.

arrest or release programs and long-term monitoring.

Recommendation 1: Maryland's Department of Juvenile Services (DJS) staff should work closely with schools and parents to encourage post-release interventions for youths arrested/detained for alcohol- or drug-related offenses.

Similarly, prevention staff and educators should consider providing any youths who have multiple unexcused absences with special interventions and counseling. This could be an important signal to

Figure 5. Twelfth graders with more warning signs are also more likely to have used marijuana within the past year and month.
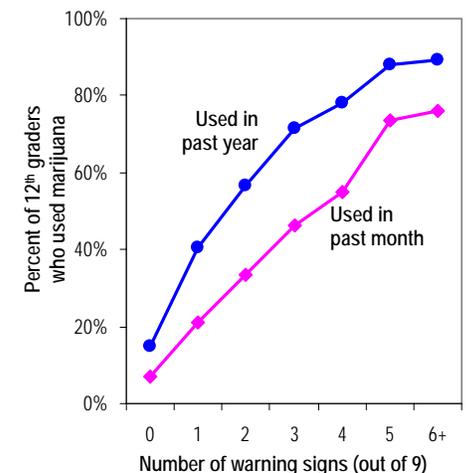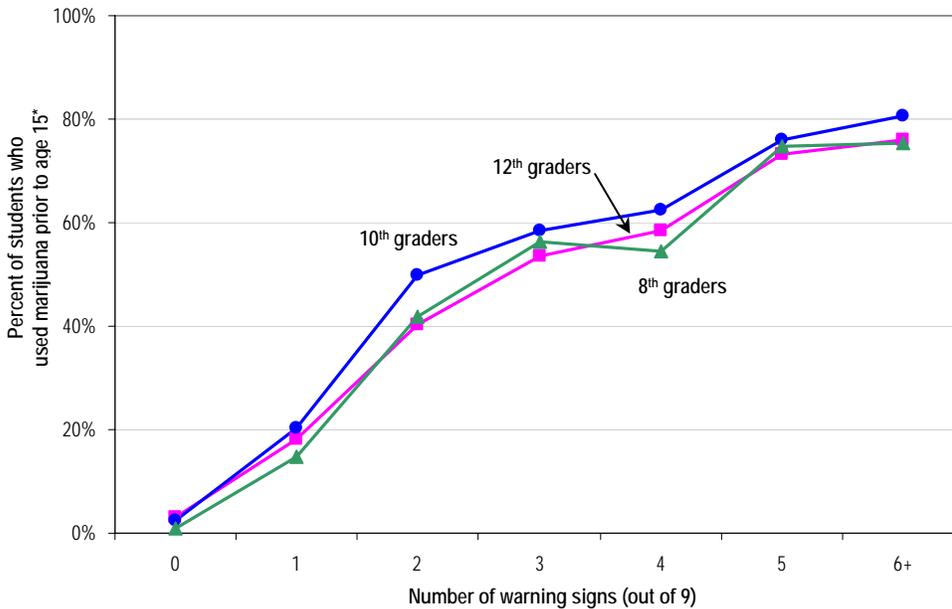
Figure 6. Warning signs are related to early marijuana use for 8,[th] 10,[th] and 12th graders.

* Note: Use of marijuana prior to age 15 is underestimated among 8th graders because 81% of them were aged 13 or younger at the time the survey was administered.

**The 9 Warning Signs
For Early Marijuana Use**

Five Student Behaviors
- Cigarette use before age 15
- Alcohol use before age 15
- 20 or more unexcused absences
- Drug arrest
- Alcohol arrest

Four Student Attitudes/Opinions
- Smoking marijuana is safe
- Smoking cigarettes is safe
- My parents think it's okay to smoke marijuana
- My parents think it's okay to smoke cigarettes

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refer a student to the Maryland Student Assistance Program (MSAP). Referral to MSAP could also be required for all students found to be using cigarettes and/or alcohol prior to age 15.

Recommendation 2: MSAP staff should implement policies and protocols to ensure that students with warning signs receive appropriate intervention and assessment.

Educators (and parents) also have an important role to play in teaching youths about the dangers of illegal drug use. We found that early marijuana users think smoking marijuana or cigarettes is safe. While this attitude may seem to be a hall-mark of adolescence, it was not univer-sally held in this study and served as an important warning sign for marijuana and other drug use.

Recommendation 3: Educators and preven-tion staff should continue to emphasize the dangers of cigarette and marijuana smok-ing, and to ensure that students are in-formed about the risks of illegal drug use.

Parents who find that their children are smoking cigarettes or drinking alcohol before age 15 should be advised that these early behaviors may be indicative of an increased risk for future drug problems. Our results also send a clear message that parents' attitudes about drugs matter. Students who think their parents approve of marijuana and cigarette smoking are at significantly greater risk for involvement with drugs.

Recommendation 4: The State of Maryland should launch an information campaign to teach citizens how to use the nine warning signs to identify and intervene with youth at high risk for problems with alcohol and other drugs.

Study Limitations

The MAS, like other school surveys, re-lies on the students to honestly report their illegal drug using behaviors. While the MAS is completely anonymous, it is possible that both drug use and other so-cially undesirable behaviors were under-reported. Furthermore, we could only analyze questions that were asked in the MAS. There are, undoubtedly, other im-portant warning signs for early marijuana

use that were not included in this survey. It is likely that both the warning signs and marijuana use may result from other pre-disposing factors. In addition, we could not tell whether some warning signs oc-curred before or after the onset of mari-juana use. Nevertheless, the warning signs help to discern which students are at high risk for problems with alcohol and other drugs, regardless of whether marijuana use has already begun.

Study Methods

The Maryland Adolescent Survey (MAS) is conducted by the Maryland State Depart-ment of Education (MSDE) with support from the Maryland Alcohol and Drug Abuse Administration and the Maryland State High-way Safety Office. The MAS is administered in alternating school years to public school students in the 6th, 8th, 10th, and 12th grades. In 2002, completed surveys were obtained from 7,997 12th graders, 8,317 10th graders, and 8,687 8th graders. Further details on the sampling design are available in the 2002 MAS report.[2, 3]

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[1] Kandel, D. B. (Ed.). (2002). *Stages and pathways of drug involvement: Examining the gateway hypothesis.* Cambridge, UK: Cambridge University Press.
[2] Maryland State Department of Education. (August 2003.) *2002 Maryland Adolescent Survey.* Baltimore, MD: Author.
[3] Note: The number of students in our data set differed slightly from those given in the 2002 MAS report.