

Throughout history, no other drug has attracted more heat or inspired more heated rhetoric than marijuana.

That's as true today as it's ever been.

And while we still haven't mastered all the mysteries of marijuana, we're closer to understanding it than we've been before.

We know it's a complex drug that triggers complex changes in the body and brain.

We also know it can cause a range of reactions — from pleasure to panic to possible longer-lasting changes, depending on how much you smoke — and how often.

And we know that pot poses potentially-serious risks to children, pregnant women, and those with underlying emotional problems.

And while we still don't know all we'd like about the effects of occasional use, we do know that people who smoke a lot of pot *can* have a lot of problems.

Don't be one of them.

Because problems — whether they're caused by pot or not — can be a lot easier to prevent than they are to predict. ■



potshots



# potpourri

## ► Pot & Personality: Memory, Motivation & Behavior

■ a do it now foundation publication by jim parker

Marijuana has been on people's minds for a long time — about as long as it's been *in* people's minds.

Think about it:

■ More than 4,700 years ago, Chinese emperor Shen-Nung listed it in the first guide to herbal medicine, declaring it a useful treatment for everything from “female weakness... [to] absent-mindedness.”

■ A thousand years ago, a legendary Middle-Eastern cult that specialized in political murder was paid in a form of the drug called hashish. Their name, *hashish-iyya*, still echoes in the English word “assassin.”

■ In 19th Century France, a group of artists and poets turned on to pot and tuned into their experiences as a source of imagery and ideas. Their monthly gatherings were chronicled in the book, *The Club of the Hashishins*.

But if marijuana made a splash in centuries past, it was only a drop in a bucket compared to the tidal wave of controversy it's kicked up lately.

Today, marijuana is the most widely-used illegal drug in the United States — and in much of the rest of the world. In fact, according to a recent survey, more than 106 million Americans have tried pot, and about 16.7 million are regular users.

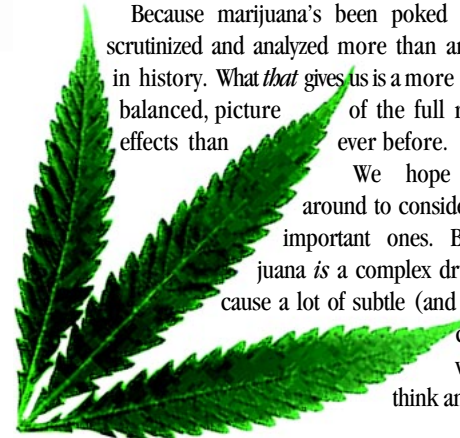
That's why we've put together this pamphlet.

Because marijuana's been poked and prodded, scrutinized and analyzed more than any other drug in history. What *that* gives us is a more complete, and balanced, picture of the full range of pot's effects than ever before.

We hope you'll stick around to consider some of the important ones. Because marijuana *is* a complex drug, and it *can* cause a lot of subtle (and not-so-subtle) changes in the way people think and feel.



Reefer returns. Pot may be hot, but the controversy it generates is anything but new.



potpourri

Trying to track all the ways that pot might affect personality is like trying to push toothpaste back into a tube: tricky, at best.



And those changes are certainly worth thinking about if you're thinking about marijuana.

### ■ How does pot affect personality?

In a lot of ways. But fully understanding all the ways it affects personality is like getting toothpaste back into the tube: tricky, at best.

One reason pot is hard to pin down is that it causes so many changes. In fact, researchers now think of the marijuana high as a *group* of overlapping effects involving different reactions in different body systems.

Still, what all the systems react *to* is a chemical called *tetrahydrocannabinol*, or THC, which triggers most of the mood and mind changes associated with pot.

Much of our understanding of how marijuana works is still sketchy, but it took a huge leap forward with the 1992 discovery of receptors for THC in the brain, docking sites for body chemicals much like THC.

Still, THC isn't the *only* chemical that swings into action when pot does its stuff. That's because marijuana isn't a single molecule (like alcohol or cocaine), but at least 400 *different* compounds — 85 of which, known as *cannabinoids*, exist nowhere else in nature.



Ground zero. THC targets receptors in the brain called anandamides.

What THC and the other cannabinoids do is temporarily tilt the balance of chemicals in the brain involved in thought, feeling, and memory.

Most effects — from changes in perception to feelings of relaxation and euphoria — usually peak within an hour and disappear altogether in 3-4 hours. Other effects may last longer.

This is one in a series of publications on drugs, behavior, and health published by Do It Now Foundation. Please call or write for a list of current titles, or visit our web site at [www.doitnow.org](http://www.doitnow.org).



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## ■ What other effects are there?

Lots. But the most important involve several key systems:

■ **Coordination.** Even low doses can slow responses, making some tasks difficult, and others — driving, for example — potentially dangerous.

■ **Perception.** Pot subtly alters sensory perception. Effects can include feelings of heightened sensitivity and a distorted sense of the passage of time.

■ **Mental Changes.** Marijuana can impair judgment and reasoning skills, particularly those involved in counting and the ability to follow complex instructions. It also temporarily disrupts short-term memory.

## ■ Does that mean pot smokers develop amnesia or something?

Not in the sense of forgetting their names, although they might have a problem with yours, if you just met.

That's because THC *loves* to tinker with short-term memory. Even occasional use can cause problems, although it's more noticeable in heavy users.

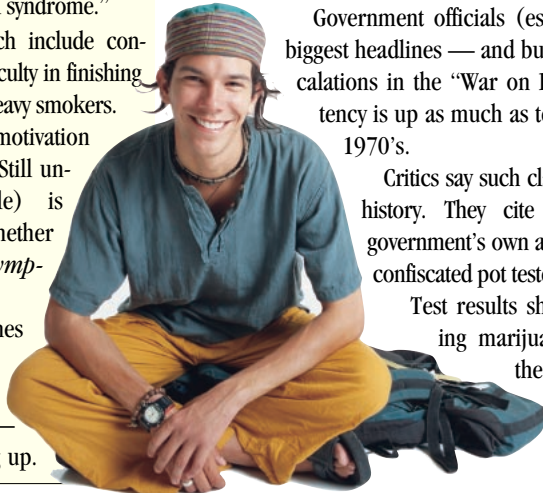
## ▶ Pot & Performance

**O**f all the charges leveled against marijuana over the years, one that's stuck longest — and has been most difficult to prove scientifically — is its supposed link to “amotivational syndrome.”

Symptoms of amotivation — which include confusion, declining performance, and difficulty in finishing tasks — are common enough among heavy smokers.

For now, though, marijuana and amotivation remains a chicken-and-egg question. Still unknown (and perhaps unknowable) is whether pot *causes* amotivation, or whether disaffected people smoke pot as a *symptom* of their alienation.

Similarly, changes that are sometimes blamed on pot use by young people — including changes in appearance and an increased desire for privacy — are often only “symptoms” of growing up.



Memory impairment shows up often in tasks requiring sustained concentration, but it turns up elsewhere, too. Communication is affected: speech slows, phrases get shorter, and users can forget what they're talking about — even in the middle of a sentence.

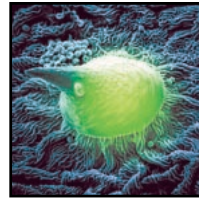
And even though performance and memory problems usually disappear as drug effects fade, long-term learning problems still haven't been ruled out.

## ■ Are there other long-term risks?

Maybe. Because not all of pot's effects necessarily disappear when the high subsides. Subtle changes may continue.

In fact, one recent study showed that pilots' flying skills were still impaired 24 hours after smoking, even though the pilots themselves felt they were completely back to normal.

And since THC breakdown products, or *metabolites*, can linger in the body for days or weeks after use, this could be risky — particularly for those involved in hazardous activities or occupations.



*Small world.* Close-up view of the THC-producing structures in marijuana.

## ■ Is pot stronger now than it used to be?

Yes and no. And maybe, definitely.

Government officials (especially those who get the biggest headlines — and budgetary bumps — from escalations in the “War on Drugs”) claim that pot potency is up as much as ten times above levels of the 1970's.

Critics say such claims are based on hype, not history. They cite figures from the federal government's own analysis of 20,000 samples of confiscated pot tested over the past 20 years.

Test results show little evidence of surging marijuana potency — except in the popular imagination and the media. In fact, tests reveal average pot potency in the United States



to be fairly flat over the entire 20-year period, averaging 2.9 percent THC.

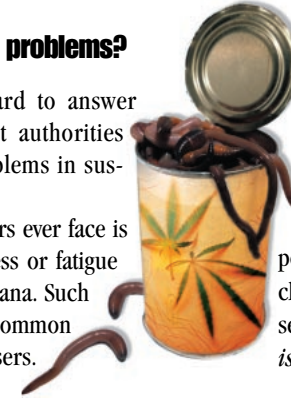
Still, even if people occasionally bend the truth, that doesn't mean the world *isn't* curved.

There *is* plenty of high-potency pot out there — and it causes plenty of problems for some users.

## ■ Does pot cause psychological problems?

That's another question that's hard to answer conclusively — or quickly. But most authorities agree that pot *can* contribute to problems in susceptible people.

The most serious risk that most users ever face is anxiety, which can be triggered by stress or fatigue and by higher-potency strains of marijuana. Such reactions also tend to be more common among infrequent and inexperienced users.



Pot-related panic typically lasts about an hour, and generally requires little more than time to run its course, along with a little reassurance and TLC (*not to be confused with THC*) from friends or helpers.

Longer-term problems are more complicated and less-easily shrugged off. Particularly troubling is a 2011 study, suggesting a link between cannabis use and the onset of schizophrenia.

In analyzing data from 83 separate studies involving more than 22,000 participants from around the world, researchers found that cannabis smokers who develop psychotic disorders typically do so 2.7 years earlier than non-smokers.

Cause and effect? Not for most people, since few pot smokers become psychotic. Still, the study's conclusion — that pot use plays a “causal role” in the onset of psychotic symptoms in at least some patients — *is* worth thinking about and worth additional study.

## SMOKE SIGNALS

**I**n most ways, marijuana ranks pretty low on the drug-problem totem pole. One reason: Pot's low toxicity. People don't overdose or lose their lives from smoking pot — or at least not so anyone notices all at once. Still, that doesn't mean that people don't have problems with marijuana. They do.

But unlike other types of drug problems, signs of pot-related trouble may take a while to show up. And even when they *do* appear, pot problems can look more like good things that *didn't* happen in our lives than bad things that did.

How do you keep problems from happening to you? Here are a couple of sure-fire winners:

▶ **Don't smoke pot.** That's the *easiest* way to avoid the issue. There's never been a documented case of anything *disastrous* happening to anyone suffering from acute (or even chronic) “chronic” deficiency.

▶ **If you smoke a lot, cut down.** People who smoke a lot are more likely to suffer serious problems than occasional smokers.

And if *not* smoking for a day or two makes you feel tense, tired, anxious, or depressed, you might want to reconsider how much of your life you're devoting to the garden of grass inside your mind.

Chances are you'll want to cultivate some new habits. Or weed out some old ones. ■



*Hidden costs.* Good things that don't happen in life can cost as much as bad things that do.