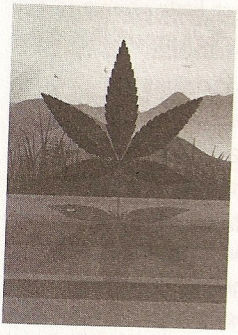
CHAPTER 8

MARIJUANA AND CREATIVITY



Marijuana is associated with many things, ranging from David Chapelle, the munchies, Robert Mitchum, and a way to treat glaucoma. For the senior author, it brings back memories of a classmate in high school who lost a shoe on the roof of a class. He managed to find a ladder and carried it across the quad during lunch, only to stop and eat lunch at one of the tables. An association that more people are likely to have is that marijuana use improves creative performance. Just as athletes (often unethically) use steroid cocktails to improve their performance on the field, so have many artists, musicians, and writers embraced it as a means to improve their creative feats. However, marijuana has also been embraced by people like our neighbors, whose greatest contribution has been lowering the neighborhood's property value with their garbage bag landscaping.

What exactly is the origin of this belief that marijuana use increases creativity? We will provide a historical overview of creativity research, North American drug laws, scientific results from research in the field, and comments on the socially accepted collective feelings about the topic. With this information, the reader will be more informed on the topic and will be able to sort through the controversy.

Early work on creativity often involved more mysticism than science. Divine inspiration reigned, and scholars talked about daemons and muses. The Greeks had quite a sophisticated system worked out with a

specific muse for specific types of creativity. For example, if a poet needed to recite an epic poem such as the *Iliad*, he would call upon the assistance of the muse Calliope. However, the approach of the psychological study of creativity took a somewhat different route centering on the self. Early creativity research resulted mostly as a byproduct from work on heredity, intelligence, genius, and madness. Current work took off around the 1950s, when the President of the American Psychological Association, Joy P. Guilford, used the occasion of his presidential address to hype the need for creativity research.

In psychological research the first step is to figure out exactly what is being discussed. In this case, what exactly *is* creativity? How could you measure it? People use the word "creative" to refer to a genius, an outfit, a child, or a painting. Guilford approached this topic by organizing creativity into a larger framework of intelligence. He organized human cognition along three dimensions; of interest to this chapter is the one he called "operations." Operations can be thought of as the mental gymnastics required for any kind of task. A "free runner" practicing *parkour* and maneuvering through a business district, a four-year-old learning addition, and a rapper spontaneously delivering a freestyle spoken word poem, all use mental operations.

One type of mental operation is divergent thinking. This concept is the ability to come up with many novel answers for an open-ended question. For example, we could ask you to list as many different uses for a bottle as possible. Responses are then translated into a score based on four criteria. The first criterion, *fluency*, is just the number of responses produced. The second, *flexibility*, is how many types or categories of ideas are produced. If a list of responses includes "break the bottle" and "smash the bottle on someone's head," these two scores would fit in the same category and count as one. The third criterion, *originality*, is how unique the ideas are. Using a bottle to entertain party guests by suspending it in a corner is a much more novel idea than using a bottle as a weapon in a bar fight. Finally, *elaboration* is a measure of how developed the ideas are. Using a bottle as a musical instrument for a folk band in the post-zombie apocalypse is a much more developed idea than "hit it to make music." Although most psychologists consider creativity to be much more complicated than merely divergent thinking, the ability to generate many novel ideas is nonetheless integral to creativity.

The psychological study of creativity commonly uses the working definition that creativity involves being both original and appropriate to the task at hand. If we were to ask you to solve the math problem $40 + 2 = x$

and you blurt out "*x* equals pistachio," that would not be creative. While pistachio would certainly be an original response, it would not be appropriate to the task at hand. However, if you were to blurt out "the answer to life, the universe, everything," we would give you a thumbs up for being familiar with *Hitchhiker's Guide to the Galaxy* by Douglas Adams.

The scientific research on marijuana comes with a history of restrictions, due to many countries banning it as an illegal substance (including the US). The history of marijuana's control in the US begins in the 1930s when Harry J. Anslinger became the Commissioner of Narcotics in the Bureau of Narcotics. He personally led a campaign portraying marijuana as a substance capable of destroying the motivation of American youth, thereby creating the era of "Reefer Madness." Decades later, during the "War on Drugs," the Controlled Substances Act (CSA) was codified into law by Congress. The CSA is the Federal drug policy of the US which uses a scientific panel to regulate the manufacture, distribution, and possession of controlled substances. The list of controlled substances is divided into different classes. Marijuana belongs to the Schedule I group which includes drugs like LSD, heroin, PCP, and ecstasy. For a drug to belong to the Schedule I group it must have high potential for abuse, no currently accepted medical use, and a lack of accepted safety for use under medical supervision.

Research on Schedule I drugs requires a great deal of registration and communication with the DEA, along with other groups, and is often very restricted. Given this history of restricted access, it may be unsurprising that there is a particularly small amount of actual research on creativity; highbrow types tend to focus on topics that seem more important. The current research on creativity and marijuana often comes from other countries, such as Holland and Canada, whose laws regarding the research and testing of marijuana are less restrictive.

What exactly does the research say about marijuana's effects? Aside from making people hungry, the amount of research on cognitive effects makes the answer a bit controversial. The existing collection of research typically demonstrates that marijuana reduces the ability to learn.[1] A study on heavy marijuana users among college students demonstrated an inability to focus and sustain attention for as long as 24 hours after their last use of the drug.[2] Another study examined former users of at least five years who had been abstinent for at least two years. These people still showed moderate cognitive impairments. These results have led to the controversial hypothesis that long-term heavy use could result in progressive cognitive deficits.[3] Although an exact relationship between

long-term use and the length of the lingering deficits has not been concluded, users should be aware that it takes long periods of abstinence to return to normal levels of cognition due to the slow rate of THC (the active psychedelic substance) elimination in the body.

In being creative, it certainly helps to be able to focus and have basic human cognitive abilities. However, what does the research on creativity and marijuana have to say?

The effects of marijuana use on creativity through a divergent thinking task were examined under two experimental conditions: "with marijuana" or "with a placebo."[4] The two groups were given biscuits with or without active THC (we wonder how they arrived at that method of administration, which is at least preferable to a suppository). The results of the study led the researchers to conclude that the use of marijuana did not have any effect on creativity (positive or negative). Whereas the scores between THC-loaded biscuit eaters and the placebo group were not comparably different, the placebo group had slightly higher scores. In other words, the group tripping out on oregano biscuits actually did a tiny bit better on the divergent thinking task, but not enough for the numbers to be statistically different.

Another study piggybacks off of the previous experiment with the same two previous conditions (THC biscuit and non-THC biscuit), along with a third that did not receive any biscuits whatsoever. The researchers also used two groups of participants (novice marijuana users and regular users). The results for the novice group (who at least claimed they never used marijuana before) showed that none of the three conditions had any effect on divergent thinking. For the group of regular users, the people in the placebo condition showed increased fluency, whereas those that ingested THC showed *reduced* fluency and flexibility.[5] In other words, the placebo condition group (the ones that thought they were high) came up with more ideas. The marijuana condition group probably discussed other times that they had been high and forgot what they were supposed to be doing. This study shows a strong expected effect of marijuana – if you think you're high, you're more creative. If you actually are high, you are less creative.

A further interesting finding was that the regular users had lower scores on elaboration than did novices – across *all* conditions. We cannot help but be reminded of the song "Tribute" by Tenacious D, which describes playing the best song in the world without specifically explaining what it is.

It would seem that as a society we accept the cost of creativity to include mental disorders, depression, alcoholism, and drug use. If the rewards of creativity are so great (successful harnessing of AC/DC current,

Impressionist paintings, the first transatlantic plane flight by a woman), then certainly it should cost something (eventual bankruptcy, a lost ear, mysterious disappearance). Some researchers argue that we want this relationship of costs and rewards to exist.[6] Creativity becomes more mysterious, and therefore the burden some people may feel to be creative is removed. In addition, they note that the creativity-drug connection may provide a convenient excuse for adolescents to experiment. Indeed, other researchers studied adolescent explanations for using illicit drugs, and one of the five reasons was to enhance creativity (the other four reasons were belonging, coping, pleasure, and aggression).[7] However, other research has found no correlation among college students between creative personality traits and alcohol, tobacco, and marijuana beliefs and use.[8]

However, there are many examples of music groups that function and thrive with drug use, despite the possible negative effects, and still produce creative products. Gronnerod investigated the use of alcohol and cannabis among amateur rock bands in Finland.[9] While this was not a purely "scientific" study with controlled conditions, it examines the attitudes and beliefs of drug use among amateur rock band members. The interviews conducted seem to shine light on the reasons for drug use while being mediated by a complex mutual understanding. Most bands use marijuana or alcohol together to aid the cohesion of the group by chemically setting everyone in a shared mood. Because most amateurs perform outside of their locale, the move, set up, and performance all require cohesion among the group to pull off a successful show. Experience with this pattern of set up, band member influence, and stage conditions can all modulate the appropriate time for drug use to occur. Whereas drug use certainly influences the behavior of the band (perhaps impeding success, given the risk of addiction and/or overdose), the remaining successful bands are able to make it work. It appears that the main reasons for drug use include mood alteration, group cohesion, and a belief that drugs can boost creativity. Regardless of the consistent research finding that marijuana use does not help (and may hinder) creativity, this association persists in the public eye.

Why does the drug-creativity connection persist? Could the reason for drug use be rooted in social expectancy? Researchers interested in this question gave participants either tonic water or tonic water mixed with vodka, and then (randomly) told them that the drinks were either non-alcoholic or alcoholic. They found no pharmacological effects of alcohol on creativity – but they found a strong placebo effect, indicating that the social expectation of alcohol's effect on creativity is more important than the alcohol itself.[10] Other researchers, in a seven-year study of LSD and

artistic creativity, found that artists believed that LSD had improved their perceptions and made a difference in their art – but little aesthetic difference was found in the artwork itself.[11] In addition, it is not uncommon for people who use drugs to use more than one type of drug. This behavior can create unpredictable pharmacological effects. It is hard to conclusively see any relation between a specific drug and creativity outside of a controlled environment.

Even though the existing research mostly points to no effects, the belief of a connection between cannabis and creativity seems to endure. One reason for this association is the idea of the spurious correlation. This idea is that two things may seem to be unrelated, but in fact a third factor causes both things. For example, you may notice that you rarely see attractive people walking around in skimpy clothing during your annual Christmas vacation in Boston. It is possible for you to make the assumption that people do not like being half-naked because Santa may be watching. Much more likely, however, is that people are wearing more clothing because it is freezing cold outside (because it is December, when Christmas occurs). A similar spurious correlation may happen with marijuana and creativity. If you think of people like Cheech and Chong, Jack Black, and Seth Rogan, you may make a connection between marijuana users and people who are creative (and funny). However, a third factor (such as being extroverted, or enjoying partying) may be the underlying cause of both marijuana use and creativity.

In addition, we notice unusual or impressive occurrences. We remember and note well-known pot users Bob Marley and Willie Nelson. They are famous and in the news, and we are more likely to read about them. We are much less likely to hear about Ralph, who takes marijuana every day and keeps writing the same terrible songs. There are no movies celebrating the dancing penguin that wants to dance better and smokes pot – and then dances in the exact same half-assed way. Granted, there are few movies about pot-smoking penguins, period.

Another factor shown by many of the research studies is that people assume drugs such as marijuana will increase their creativity. We would not expect people outside of psychology to diligently read psychological journals each night before going to bed (*we* don't even do that); therefore, most people will not be aware of the actual scientific research. It is unsurprising that this connection persists in most people's minds despite the evidence to the contrary.

Toxicomania is a field that focuses on prevention and intervention by modifying the motivation and beliefs of illicit substance users.

One motivation for using marijuana is the wish to increase creativity. However, it seems reasonable to conclude from the scientific research that any connection between drug use and creativity is largely manufactured in the drug user's mind. The actual creative work is likely not impacted. The spurious correlations and placebo effect will likely continue to support belief in this connection. Our guess is that people will continue assuming that marijuana increases creativity regardless of what the data say – and perhaps it will be this belief (and this belief alone) that may aid their creativity.

NOTES

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