

Neurological effects of marijuana

Literature, Russian Literature



The recreational use of marijuana has become an almost mainstream part of our society today, so mainstream in fact that 16.8% of Canadians older than 15 use it. In government, the debate to legalize marijuana has long gone back and forth yet never coming to a conclusion. But in this debate is the government really examining the psychological effects of the drug, or are they just concerned with the money aspect.

In one study of the neuropsychological effects of marijuana it was concluded that "The low dose produced generalized impairment of all mental processes (concept formation, memory, tactile form discrimination and motor function)." The research question of this essay is "Are the short and long term neuropsychological effects of marijuana severe enough to leave lasting impressions on our society?" Purpose The thesis of this essay is "the neuropsychological effects of marijuana are very apparent through experimental research and the deficits caused by marijuana could become visible in our society and create problems down the road."

The essay will proceed in the order of first examining a case of neuropsychological effects on heavy marijuana users, then we will examine some of these effects and the way they impact teenage marijuana users. It will also be examined how marijuana may be seen as a cause of psychotic disorders, and also the way marijuana affects aggression. Argument

The use of marijuana affects the brain and our neuropsychological functions such as memory. But how memory is affected; is it long term or short term memory and is this a lasting effect or not. In a study performed by Kanayama, Rogowska, Pope, Gruber, and Yurgelun-Todd (2003), 12 heavy

cannabis smokers, and a control group of 10 others were to completed a spatial working memory paradigm that included two tasks: a perception task and a short-delay working memory task while undergoing functional magnetic resonance imaging.

The results showed that the recent cannabis users displayed greater and more widespread brain activation than normal subjects when attempting to perform the aforementioned task. This suggests that the recent cannabis users may experience some neuropsychological deficits and they compensate for these deficits by calling upon different regions of the brain to help out in completing the task. This study shows that for a heavy cannabis user, simple tasks require extra effort from different regions of the brain in order to accomplish said task.

This experimental study was well conducted and provided significant findings regarding the neuropsychological functions of a heavy cannabis user. These findings show that the heavy cannabis users had to work harder to accomplish the task at hand, and even though they still managed to accomplish the task, the neurological deficits shown through this study could leave them crippled or handicapped later in life with continued use of the drug. The debate continues in that people are unsure whether neurological deficits associated with cannabis last only as long as the drug does or if they continue afterwards and are more permanent.

For example, Fried (2005; cited in Murray, Morrison, Henquet, Di Forti 2007) et al. found no evidence of cognitive deficits in cannabis users after three months of abstinence⁶⁶, whereas Bolla (2005; cited in Murray, Morrison,

Henquet, Di Forti 2007) et al. found persisting deficits in decision-making and brain activity among heavy cannabis users who had been abstinent for 25 days. This inconsistency could be due to the age of participants or any number of other variables, which is why this sort of experiments can be unclear and inconclusive at times.

One aspect of the age variable is that most experiments of this type are performed on adult participants and so does not show how the neurological effects of cannabis might affect the growing mind of a teenager. In a study performed by Harvey, Sellman, Porter, and Frampton (2007), 70 adolescents aged 13-18 were recruited, and after a 12 hour abstinence from marijuana performed several test. These tests included a demographics questionnaire, a Timeline Follow-Back (TLFB) questionnaire for drug use in the past 28 days.

Intelligence was measured using the Wechsler Abbreviated Scale of Intelligence. The Cambridge Neuropsychological Test Automated Battery was used and the tests administered were: Motor screening (visual and movement problems), Rapid visual information processing (attention and memory), Spatial working memory (memory and strategy), Intradimensional extradimensional shift (attention), and Paired Associates learning (visuo-spatial and spatial p). The pen and paper cognitive tests used were Rey Auditory-Verbal Learning Test, and Symbol Digit Modalities Test.

Psychiatric functioning measures used were: Visual Analogue Scale for Mood (present mood), Beck Depression Inventory II, Hamilton Depression Rating Scale, Conduct Disorder and Attention Deficit Hyperactivity Disorder (ADHD). The Timeline Follow-Back showed that 68.5% of participants had used

marijuana in the last 28 days. The results found from this well conducted study show that adolescents who were regular cannabis users showed a significantly worse performance on four measures of cognitive functions; attention, spatial working, memory, and learning.

These results suggest that the young mind could be more susceptible to the neuropsychological deficits experienced through frequent use of marijuana. This is very negative considering 68.5% of participants use marijuana frequently and thus has neurological deficits when it comes to attention, spatial working, memory and learning. If this sample is a close representation of the teenage population then our society could have problems down the road.

If these teenagers continue to consume cannabis regularly through to adulthood then we could see these neurological deficits getting worse and worse as these teens earn more responsibility as they progress through life. Another possibility of problems that could come from this is the possibility that cannabis use could lead to psychosis or schizophrenia. It is unclear whether this is true or not but, but in some cases cannabis has been deemed a causal risk factor for schizophrenia. Richard Reading (2004) examined the evidence behind these claims and identified five studies that included a well-defined sample drawn from population-based registers or cohorts and used prospective measures of cannabis use and adult psychosis.

After examining these cases thoroughly he concluded that cannabis is a component cause to psychosis. It is part of a complex mix of different factors which lead to psychosis down the road. Through these findings Reading

deemed that cases of psychotic disorder could be minimized by discouraging cannabis use to vulnerable youth. Considering how 16.8% of Canadians use marijuana on a regular basis, this is a very negative finding.

Even if marijuana is only one little factor which contributes with many other factors to the chance of a psychotic disorder, then having this many people partaking could increase the number of psychotic disorders in Canada by quite a bit. We also know that a very large part of teenagers use cannabis as a social activity, and when used frequently for long periods of time these teenagers could develop psychotic disorders early on in life, making it difficult for them to contribute to our society to their full potential. On the other hand however marijuana could possibly give some positive to our society as well.

In an earlier study conducted by Myerscough and Taylor (1985), the aggression levels of thirty male college students were examined while under the influence of either a light, medium, or heavy dose of marijuana. Since the U. S. government released "Reefer Madness" in 1936, it has been in question whether marijuana really does drive people crazy and amps up their aggression. The subjects were given either a low, medium, or high dose of marijuana then were sat in booth which corresponded with the booth of another participant.

They were told that by pressing on one of eleven buttons they could choose the intensity of an electric shock that would be administered to their corresponding subject and vice versa. The person who completed this task faster would not be administered the shock but would find out what level of

shock the other had picked for him. When the participants would see the aggressiveness of the other's choices and receive shocks they would perhaps become more aggressive themselves. In concluding the data they had gathered showed that people in the low dose group tended to respond more aggressively than those in the mid to high level groups.

Those participants in the high dose group were for the most part non-aggressive throughout the entire experiment. These findings indicate that when people are on marijuana they tend to be more calm and relaxed, and less easily aggravated. This could benefit many people by helping to ease stress. It could also help to lessen the aggravation behind many acts of crime, and violence in our society. Unfortunately we could not really use these findings to our advantage because we are unable to control who does what, and when. This does help shed some light on the benefits marijuana could have for our society.

Conclusion The mainstream use of marijuana as a "party drug" or social tool in our society has started to get out of hand. Adults and teenagers alike take part in this illegal habit, but what are the consequences. As we see throughout this paper marijuana causes deficits in the neurological processes of adults by making the brain work harder to accomplish certain tasks. Also in teenagers the mental processes of memory, spatial working, attention, and learning were slowed by the frequent use of marijuana and showed deficits that could be worsened with time.

It has also been shown here that marijuana could be a causal factor in the development of psychotic disorders. Though all of these experiments and

research show how marijuana negatively influences people in our society there are many discrepancies in the research done on marijuana, and some do show no negativities whatsoever. Though the limited and controversial data we have on marijuana's effect on psychological processes is incomplete, it is hard to say if it will have a lasting negative impression, however we know that marijuana is not having any useful positive effects on our society.