

Neuroscientific issues

Misconceptions about drugs and their effects on the brain

Brain damage and other neuroscientific issues and misconceptions

The more a drug alters your mind, the more damage it must do to your brain

The extent to which a drug can alter the mind is not linked in any way with the likelihood that the drug will cause physical damage. In fact, there is almost an inverse relationship between physical harm and psychoactive effect amongst the pleasure drugs.

Cigarettes, which have only weak mental effects, are amongst the most physically harmful (they damage the brain by dramatically increasing the risk of stroke in the long term) while LSD and ketamine, which produce profoundly altered states of being, have perhaps the least lasting effects upon the human brain.

Altered states of being do not necessarily imply physical harm. The dreams we have every night can be profoundly altered states of being which are essential to health. If we consider death rates rather than brain damage, LSD directly kills about one person per year in the UK (at the very most) versus 115,000 deaths per year for smoking. The most dangerous drug of abuse in terms of death rates per number of persons taking the drug is not heroin but rather sniffing solvents such as glue.

Psychiatric problems after using drugs means there must be underlying brain damage

This myth is particularly common amongst persons who develop psychiatric difficulties after taking Ecstasy, probably because of the amount of publicity given to predictions of a 'neurological time bomb' arising from serotonergic terminal change.

Our knowledge of the long-term consequences of taking Ecstasy is still basic but Ecstasy has already been linked with a wide range of unpleasant mental effects. The list includes: anxiety, panic attacks, flashbacks, post-traumatic stress disorder, persistent perceptual changes, mania, depression, suicide, insomnia, nightmares, night terrors, an unpleasant feeling of being unreal or that the world is unreal, paranoia and other false beliefs which overvalue one's role in the scheme of things (grandiose delusions) and persistent hallucinations.

The interesting thing to note about this list is that it is very similar to some of the after-effects reported following the use of ketamine, a completely different drug. This is partly because of a shared psychology of adverse drug effects, which has more to do with the mind of the sufferer than with the actual physical effects of that drug upon the brain. When widespread use of a drug results in such a huge 'mental' problem list covering a large section of adult psychiatry, as happened with LSD and MDMA, we may just be seeing the illness which usually exists in the population rather than specific drug effects.

The user is casting about for an understandable cause for their problem, and mind-altering drugs are a popular choice. Sometimes people suffering from psychosis, who have never taken drugs in their lives, insist that their drinks were spiked, rather than accept the possibility that something unexplainable, and possibly uncontrollable, suddenly went wrong inside of them. This is also a way of avoiding the stigma still attached to some forms of psychiatric disorder.

It is also true that some real problems will be shared between MDMA and ketamine on the basis of actual, shared physical effects such as a raised dopamine level. For example, this is thought to be involved in paranoia. However, this shared effect is not enough to explain either the extent of the overlap in the reports, or their all-embracing variety. It is to the mind of the user, as well as to the drug and brain, that we must sometimes look. "It is important to recognize that, among the large group of drug users within the general population, a proportion will become mentally ill regardless of any supposed psychotomimetic properties of drugs." (Poole and Brabbins, *The British Journal of Psychiatry*, 1996)

Ecstasy makes your spinal fluid drain out

This myth derives from a study by Ricuarte et al., in which levels of serotonin breakdown products were measured in spinal fluid. The experimental method involves putting a needle into the spine and removing some of the cerebrospinal fluid. This has somehow become distorted in the popular imagination into a myth that the drug itself depletes spinal fluid.

The drug that causes the most brain damage is ecstasy

This myth grew from the widespread publicity given to some brain scans showing a loss of serotonin transporter sites in the

brains of some persons who had taken Ecstasy. It is established beyond any doubt that the most serious damage to the brain results from the excessive consumption of alcohol. Alcohol can cause degeneration of the brain that is visible to the naked eye - no special scans required. Drinkers with Korsakoff's syndrome have such severe, permanent memory loss that some require long-term institutional care.

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