

Drug taking – for better or for worse?

Andy Parrott looks at the paradox of psychosocial drug taking – self-medication that can make you feel worse

Psychosocial and recreational drugs are generally taken in order to feel better, yet their regular use often leads to increased distress. For instance, MDMA (Ecstasy) is a very powerful euphoriant, but its positive effects last for only a few hours, and they are followed by a more prolonged recovery period, when negative moods predominate. Regular Ecstasy/MDMA use also leads to various forms of psychobiological distress.

This same general pattern holds for amphetamine, nicotine, alcohol, cannabis and the other psychosocial drugs. They can all generate positive feelings for a period, yet their regular use tends to have detrimental rather than beneficial consequences.

This article looks at the psychobiological reasons why all these psychosocial drugs tend to increase distress.

question

Is it possible to understand psychosocial drug effects – without knowing how they affect core psychobiological functions, such as mood and cognition?

resources

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Many drug users report that they self-medicate with drugs – they take them to tackle their everyday problems. Cigarette smokers often believe that tobacco helps them to cope with stresses. The alcohol industry suggests that ‘sensible’ drinking has beneficial social effects, and that problematic drinking is a characteristic of aberrant subgroups. Several of the illegal psychoactive drugs have also been suggested to display beneficial and even psychotherapeutic properties.

All the recreational social drugs can indeed have positive immediate effects. For a brief period of time the world seems a better place, and everyday troubles appear more trivial. But does the psychopharmacological strategy really work? This article looks at the effects of various recreational drugs, and how this research information might impact on the individual’s cost–benefit analysis.

MDMA (Ecstasy) and recreational stimulants

If any drug could make the world a better place, a drug labelled ‘Ecstasy’ should be a strong candidate. MDMA, or Ecstasy, (3,4-methylenedioxymethamphetamine) is an amphetamine derivative, with stimulant and euphoriant properties. When MDMA was first used during the late 1970s, the clientele were mid-career Californians in search of enlightenment and spiritual therapy, who generally took the drug in restful surroundings (Greer & Tolbert, 1986). In the mid-1980s MDMA was categorised as illegal, and since then its use has mainly been at dance clubs

and raves. The mood changes can be very positive and euphoric: ‘Primarily an intense warmth and security about myself and other people’... ‘I felt very much in love with everyone around’. These positive moods and cognitions can endure afterwards: ‘I am able to perceive, receive, and respond to love in a much more open way than I did a few weeks ago.’ However not every reaction to MDMA is beneficial: ‘I had a bad experience. I felt like I was surrounded by water and drowning. It must have been panic’... ‘Too much energy. Out of control’ (Cohen, 1998; Parrott, 2007b; Rodgers et al., 2006).

Since MDMA is a powerful central nervous system (CNS) stimulant, it can intensify (or in psychotherapeutic terms ‘release’) a wide range of psychological material. In placebo-controlled laboratory trials with human volunteers, many mood states are intensified – both positive and negative (Dumont & Verkes, 2006; Parrott, 2006a). Self-rated levels of emotional excitement, sensitivity and facilitated imagination are all significantly boosted, but so too are apprehensiveness/anxiety, manic-like feelings, and fear of loss of thought control (Liechti et al., 2001). Setting and expectancy can be important, and recreational Ecstasy users note the importance of being in the right frame of mind beforehand (Cohen, 1998; Parrott, 2001). The prosocial environment of dance clubs may also influence these mood changes, with non-Ecstasy using dance clubbers also reporting very positive mood profiles (Parrott & Lasky, 1998). In weekend users the positive feelings generally predominate, although negative reactions can occur even in experienced Ecstasy users (Davison & Parrott, 1997).

Therapists have suggested that the release of both positive and negative material by MDMA may allow individuals to ‘Get in touch with painful emotions as well as happy ones’, but the emergence of problematic material is potentially troublesome, and may lead to increased distress (Parrott, 2007b). One volunteer from an early Californian psychotherapy study felt in danger of being overwhelmed

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by unwanted emotions while under MDMA, and complained of post-session anxiety for a period afterwards. Another volunteer developed appetite and eating problems, so these psychotherapists warn against giving MDMA to vulnerable individuals: 'There is an indication that MDMA may predispose people to a recurrence of previous psychological disabilities' (Greer & Tolbert, 1986).

A general problem with all psychoactive drugs is the rebound afterwards. With MDMA this period is particularly prolonged, since it causes acute metabolic distress in the neuronal axon terminal, and the neurotransmitter system can take several days to recover. Recreational Ecstasy users call this the 'midweek blues', when the rebound feelings of depression can reach clinical levels. Other recovery problems include tiredness, lethargy, reduced sociability, poor appetite, disturbed sleep and increased aggressiveness (Curran et al., 2004; Parrott, 2006a; Parrott & Lasky, 1998). Also reported are problems at work, relationship difficulties and financial distress (Topp et al., 1999). These are related to the many lifestyle factors that surround drug use, such as inadequate nutrition and irregular sleep. These physical stressors are potentially damaging in non-drug users, but they are often exacerbated by the stress of psychoactive drug usage (Parrott, in press).

MDMA has a comparatively low potential for physical addiction (Shewan & Dalgarno, 2005), probably because of its prolonged withdrawal syndrome. Most other CNS stimulants have a rapid withdrawal, which can be reversed by more self-dosing, and this increases their addictiveness. The very rapid 'hit' with

crack cocaine, and the similarly rapid withdrawal syndrome, explains why it is even more addictive than snorted cocaine (Parrott et al., 2004).

Rebound phenomena also occur with milder herbal stimulants, such as caffeine and Khat. Caffeine withdrawal symptoms include headache, sleepiness and reduced cognitive performance, and their reversal may underlie the regular use of caffeine in tea and coffee (James & Rogers, 2005). Khat leaves contain cathinone, a comparatively weak CNS stimulant. Regular users report similar psychobiological problems to other stimulant drug users – mood fluctuation, sleep disturbance, difficulty waking, academic performance deficits, psychiatric distress and financial hardship (Hassan et al., 2002; Parrott, 2007a).

Indeed, one of the general problems with all psychosocial drugs is that their regular use tends to impair psychological well-being. This pattern is clearly illustrated with MDMA. Novice users who have taken it just a few times report few problems, whereas regular users can report a range of deficits. These may include poor

memory, frontal-executive information processing deficits – such as impaired problem solving and reduced social intelligence, sleep disturbances, sexual dysfunctions, reduced appetite, reduced immunocompetence, and other functional difficulties (Fisk et al., 2005; Halpern et al., 2004; Morgan, 2000; Parrott, 2006a; Reay et al., 2006). Around 70 per cent of experienced users report memory problems which they attribute to MDMA, while other Ecstasy-

attributed problems included mood fluctuation (80 per cent), poor

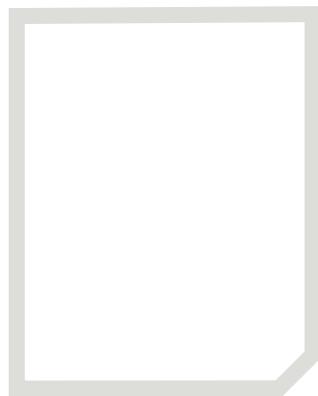
concentration (70 per cent), depression (65 per cent), poor sleep (52 per cent) and weight loss (48 per cent: Parrott et al., 2002). These psychobiological complaints can be intensified by prolonged periods of on-drug dancing, possibly because the effects of MDMA are heightened by co-factors which increase energetic distress (Parrott, 2004, 2006a; Parrott et al., 2006). Prospective studies have shown that indices of immunocompetence, and performance measures of neurocognitive ability, significantly worsen over 1–2 years of continued Ecstasy/MDMA use (Pacifci et al., 2002; Zakzanis & Campbell, 2006).

Many recreational Ecstasy/MDMA users take other drugs, including alcohol, cannabis and other illicit stimulants. Regular cannabis users often display worse memory scores than non-drug users, whereas combined Ecstasy/cannabis users display even worse profiles (Gouzoulis-Mayfrank et al., 2000; Rodgers, 2000). The adverse cognitive effects of each drug are broadly additive and typically reflect the amount of each drug taken, so that heavy users of both drugs will often be the most impaired (Parrott, 2006a). Prospective memory, such as remembering to turn up for an appointment, is generally impaired by Ecstasy/MDMA, whereas cannabis is more strongly associated with everyday memory lapses (Rendell et al., 2007; Rodgers et al., 2003).

Users themselves recognise this additional layer of drug-related difficulties: regular Australian Ecstasy users reported an average of eight physical problems and four psychological problems which they attributed to Ecstasy (Topp et al., 1999). To summarise, MDMA may make the world seem a wonderful place for a few hours, but in the days afterwards and in the longer term, its regular use can paradoxically lead to greater distress.

Nicotine

When smokers are asked why they use cigarettes, typical responses include 'to help concentration' or to feel 'relaxed and contented'. This suggests that nicotine



When using MDMA, many mood states – both positive and negative – are intensified

to other drugs. *Drug & Alcohol Dependence*, 75, 135–147.

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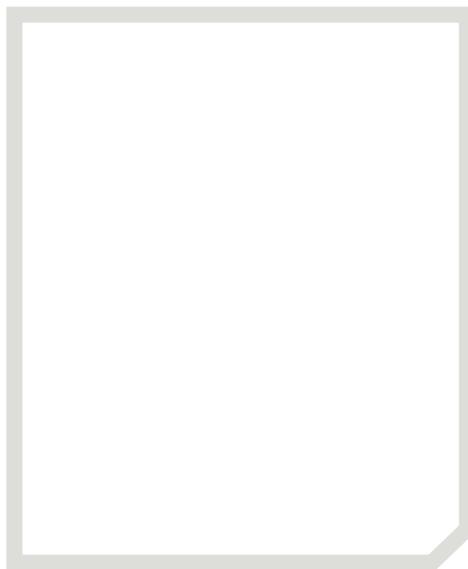
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should provide various psychological benefits for tobacco users. Yet when smokers are empirically compared with non-smokers, they fail to show benefits in any of these areas. Furthermore, they often report significantly higher levels of daily stress and depression, along with other problems such as low self-efficacy. In order to investigate this paradox, it is important to go beyond the immediate effects of nicotine, and look at the daily profiles of smokers, especially at psychobiological functioning during nicotine withdrawal. Prospective studies are also important, since by controlling for individual difference factors, they can reveal the consequences of taking up and quitting smoking.

One of the most common reasons given for tobacco smoking is to control 'stress', yet prospective studies show that tobacco smoking actually leads to higher levels of daily stress. Prospective studies with children and adolescents show that individuals who take up smoking, report increased daily stress in later years; cross-sectional surveys with adult smokers find that they report significantly higher levels of daily stress than non-smokers; and prospective studies show that quitting smoking leads to significantly reduced feelings of stress (Cohen & Lichtenstein, 1990; Johnson et al., 2000; Parrott, 2003, 2006b). Furthermore, the mood gains of cessation endure over time – former smokers report similar levels of daily stress as 'never smokers', despite having reported significantly higher levels of stress when they were smokers (Chassin et al., 2002).

So why is nicotine dependency associated with greater stress? One important factor is that nicotine dependency can cause mood lability. In between each cigarette, most smokers develop feelings of irritability and tension. Their next cigarette delivers a bolus of nicotine to the brain in 10 seconds and relieves these unpleasant moods – hence the immediate feelings of satisfaction and contentment. However, these positive feelings last only for a limited period of time, and are soon replaced by negative



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The acute effects of alcohol can be mixed and unpredictable

moods as nicotine levels fall (Parrott, 1994). Hence the repeated experience of negative moods in between each cigarette may cause many smokers to suffer from increased levels of daily stress.

However, around 15 per cent of smokers do not report abstinence symptoms, or mood changes on reinstatement: this may help to explain why they can remain as intermittent non-dependent smokers (Parrott, 1999). In moderate smokers these mood fluctuations can also be quite subtle and variable. But heavy smokers often report strong abstinence symptoms, followed by equally strong feelings of 'relief' with each cigarette; hence they tend to display the strongest overall nicotine dependency (Parrott, 1994, 2003).

The average smoker inhales cigarette smoke 70,000 times a year; so given their immediate feelings of relief after inhaling, their belief that smoking generates real mood gains is not surprising. The adverse effects of nicotine withdrawal are comparatively slow to develop, and most smokers do not realise that cigarettes actually heighten feelings of tension and irritability. Instead, many believe that these mood fluctuations indicate they have a nervous disposition, and that cigarettes

help them to control their negative moods. Yet when the nicotine stress induction model was outlined in an explanatory leaflet, recognition of the role of nicotine dependency for increasing stress improved significantly (Murphy & Parrott, 2006). This type of information leaflet could be used in smoking cessation clinics, since smokers would then realise that their stresses should be relieved by quitting.

The same dependency model can also explain why cognitive skills and attentional abilities fluctuate. In relation to memory, tobacco smokers are attempting to store and retrieve information under constantly varying nicotine levels (Parrott, 2006b), and this may help to explain why smokers report worse memories than non-smokers (Heffernan et al., 2005).

Many other mood and cognitive states may also be adversely affected by nicotine dependency. In psychiatric terms, smoking may be an exacerbatory factor for both clinical and subclinical depression and panic attacks (debated in Parrott, 1999, 2003, 2006b). In ethological terms, smoking comprises a displacement activity when faced with social stressors, while in behavioural models cigarettes provide an avoidance strategy. For example, Lloyd and Lucas (1997) found that when young schoolgirl smokers were faced with difficulties they often lit up a cigarette in order to feel better, so allowing them to avoid dealing with the real problem. Indeed all forms of drug-taking provide very effective displacement activities. However, by avoiding the actual problems, self-efficacy tends to be low and the real life issues often remain unresolved.

Alcohol and cannabis

Given its ready availability, physical and psychological dependency on alcohol are widespread, with alcohol being a major scourge for all societies worldwide. It has been estimated that there are four million problem drinkers in the UK, with millions more indirectly affected, and

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these figures are likely to rise if current trends continue (Parrott et al., 2004). The same broad psychopharmacological principles can help to explain why alcohol drinking is often associated with greater personal and psychosocial distress.

As with many other drugs, the acute effects of alcohol can be mixed and unpredictable. The alcohol drinker may focus on feelings of relaxation, and greater ease of social interaction, so that even their worst jokes may seem hilarious. In light occasional drinkers, these benefits are generally not accompanied by severe drawbacks. However with moderate and heavy drinkers, the alcohol-induced behavioural disinhibition may have more negative consequences. Alcohol drinking leads to increases in verbal disputes, antisocial behaviours, domestic accidents, road deaths and violent crimes. The recovery period can also be problematic, with hangovers following heavy drinking sessions, or milder symptoms of lethargy and forgetfulness after moderate drinking.

Cannabis is broadly similar to alcohol in the extent of damage it can cause, although the profile of deficits is very different. In psychological terms, cannabis is a sedative and relaxant, with users typically feeling calm and mellow. Frequency of use is again the most crucial factor in terms of psychological deficits, although smoking cannabis can be physically damaging in light occasional users. The memory problems of regular cannabis users are well documented (see earlier), but other psychological problems include low motivation, and increased psychiatric disorders. Some regular users smoke several times every day, with interests narrowly focused around cannabis, blunted affect, and often a comparative isolation from the wider community. Andreasson et al. (1987) investigated the psychiatric health of 50,000 Swedish conscripts, and found that the cannabis users were more likely to report symptoms of schizophrenia. In recent decades recreational drug usage has become an important contributory factor

for many forms of psychiatric breakdown. Young polydrug users display comparatively high scores on psychiatric symptom questionnaires, with those who develop clinical disorders often demonstrating prior susceptibility factors.

This type of evidence fits the interactive diathesis–stress model, where genetic or other biological predisposition factors increase the risk of clinical disorders in susceptible individuals. This interactive model has been tentatively suggested for nicotine (Parrott, 2003). For instance, cigarette smokers with a prior susceptibility to depression may develop the worst nicotine abstinence symptoms, and therefore the greatest mood relief on smoke inhalation. They would suffer from

“cigarettes actually heighten feelings of tension and irritability”

particularly strong nicotine dependency, and find quitting particularly difficult, despite cigarettes making their overall feelings of depression worse. The

interactive diathesis–stress model has also been debated for MDMA (Parrott, 2006a), and it may also be applicable to other psychosocial drugs.

Overview

Psychosocial drugs can make the world seem a better place for a brief period, so many are used for acute mood enhancement or other aspects of self-medication. In some novice drug users, or occasional users who take it sparingly, the adverse costs associated with these gains will be comparatively light, so that the overall cost–benefit ratio will often be neutral. Light social alcohol drinkers might fit this pattern, as would users of weaker forms of cannabis, and even some light opiate users (Shewan & Dalgarno, 2005). But in general terms the psychosocial drugs tend to cause more problems than they solve. Furthermore, the more they are used, the worse the

overall cost–benefit profiles become (Parrott et al., 2004).

There are several psychobiological reasons for why drug-taking is not effective in improving personal well-being.

- | The acute drug effects can be mixed and unpredictable.
- | Well-being always tends to be impaired during the post-drug recovery period.
- | Psychosocial drugs lead to mood fluctuation, linked to their regularity of use and addiction potential.
- | Many other psychobiological problems are increased by regular drug usage, and most drugs also cause physical/medical damage to the body.
- | The level of drug-related distress is often greatest in those with the most problems beforehand – possibly because they develop the strongest psychobiological/mood vacillation under drugs.

No views about drugs make any real sense without a basic psychobiological understanding about the consequences of drug action. Politicians mostly see drugs in relation to crime costs. They do not realise that, for example, the enormous economic cost of increased anxiety, stress and depression caused by cigarette smoking.

Many observers see drug use as an inescapable part of modern society. Yet illicit drug use is actually quite unusual. The most problematic drug is alcohol, because of its widespread use and ready availability. Yet many drinkers are trying to cut down, and there has been a general trend recently towards healthier foods without additives, and drinking waters free from impurities. Perhaps we need a similar movement for natural pleasures free from drugs or artificial chemicals?



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