CHAPTER FOURTEEN

Psychostimulants and Artistic, Musical, and Literary Creativity

Iain Smith[1]
The Kershaw Unit, Gartnavel Royal Hospital, Glasgow, Scotland, United Kingdom
[1]Corresponding author: e-mail address: Iain.Smith@ggc.scot.nhs.uk

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Abstract

This chapter explores links between psychostimulants and creativity in the arts. These links are set in the context of an overview of the association between mind-altering drugs in general and specific branches of the arts, particularly literature. The economic impact of the psychostimulants both historically and in today's world has been substantial and this is mirrored in the culture of the countries involved with the trade in these special commodities. As with other families of addictive drugs, the psychostimulants are sought out more frequently than is the norm by creative individuals who then may represent the drugs in their art or associate the drugs with their creativity. The creative process is outlined and it is noted that if a drug helps at all with creativity then the specific properties of the drug may link it to a particular stage of the creative process. Stimulants are particularly associated with the evaluation and elaboration stage of the creative process and in particular nicotine and caffeine have been used in this way by writers when putting words on paper. The ability of psychostimulants to boost

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convergent thinking is the main mechanism at work but this is at a cost as divergent thinking is diminished. The other findings of note in this review are that particular venues based around the consumption of a psychostimulants can act as a creative hub-café culture in Paris and Vienna and early modern Europe—and that particular drugs can come to define an artistic grouping as with the Beats and the group around Warhol who had a preference for amphetamine.

1. INTRODUCTION

I'd hate to advocate drugs, alcohol or insanity to anyone, but they've always worked for me

Hunter S. Thompson

If we take as our starting point the broad classification of mind-acting drugs into sedatives, psychostimulants, opiates, hallucinogens, and drugs with mixed actions (Edwards, 2005), then the two main groups of drugs that one would logically turn to first to examine the claim that drugs enhance creativity are undoubtedly the psychostimulants and the hallucinogens. (There are, of course, some drugs such as MDMA—which we will consider here under psychostimulants—which blur the boundaries of these broad categories in our classification of mind-altering drugs e.g., drugs with mixed actions that combine psychostimulant and hallucinogenic properties.) Drugs with sedative properties, such as alcohol and benzodiazepines, and the opiates such as morphine which also sedate and slow cognition, are at first sight less likely candidates for enhancing creativity. Perhaps, an easier way to think of mind-altering drugs is as "Uppers, Downers and All Arounders" (Inaba & Cohen, 2011).

All mind-altering drugs have been examined to some degree in relation to creativity in controlled settings and all in addition have their links to artistic endeavor through visual, musical, and literary forms. In looking at psychostimulants in relation to creativity, we need to first consider some aspects of the psychology of creativity before looking at specific research on drugs in general in relation to creativity. We can then focus on the main psychostimulants in relation to cultural history and creativity. We will examine these in order of historical importance. This is, perhaps unsurprisingly, an order reflective of current levels of global usage. We will look, therefore, at caffeine, nicotine, cocaine, amphetamine, methamphetamine, MDMA/Ecstasy, and other psychostimulants including methylphenidate in turn.

It is worth noting here the general contribution of literary and historical studies to the field of addiction and to our understanding of mind-altering substances. Such studies can:

(a) Act as an adjunct to medical education.

(b) Foster an awareness of possible explanatory stories about drug use and drug effects.

(c) Produce lessons from history for policymakers. Addiction and drug taking are often portrayed as new phenomena and the past is suppressed.

(d) Show that the concerns of novels and biographies, including "biographies" of drugs themselves, can act as a mirror of the times. In this regard, there are many recent examples of this genre involving psychostimulants including recovery stories and "scare" stories. Books presenting "biographies," i.e., histories, of psychostimulants are also in vogue, as outlined below.

One interesting historical finding is that the use of the word "stimulant" was used more loosely in the past such that one can find literary and technical references to alcohol and opiates as "stimulants" (Historical Thesaurus: Home: Welcome, 2012). The initial disinhibition and mood enhancement produced by such drugs can produce the illusion of cognitive enhancement and stimulation while objectively the person is slowed and less reactive to stimuli. The review here confines itself to the drugs we would currently recognize under the rubric of stimulant/psychostimulant.

2. CREATIVITY RESEARCH

A simple definition of creativity is that it is the process of producing something new and worthwhile and that it involves an act of imagination.

Creativity is not confined to the Arts, but it is in the relationship with the Arts that the claimed association between creativity and drug use and the psychostimulants in particular comes to the fore.

There are many theories of creativity and it is an academic area that has brought together many disciplines from archeology through to zoology. The field is well reviewed in *The Encyclopedia of Creativity* (Runco & Pritzker, 2011). Modern neuroscience holds out the prospect of a neurobiological understanding of the creative process (Abraham et al., 2012) and this in turn opens up the prospect of a better understanding of how drugs might influence it (see various entries on cognitive enhancement in Nutt, Robbins, Stimson, Ince, and Jackson, (2007)).

As with most complex human psychological traits, there is an interplay between endogenous and exogenous factors in producing creativity in individuals. Of interest here are the propositions that:

(1) There is linkage between mental illness and creativity.

and

(2) There can be an influence of social groups on creativity with the group coalescing around a particular meeting place (e.g., a coffee house) or a particular drug (e.g., the Beats and the amphetamines).

The fact that individuals who are acknowledged to be particularly creative are more likely than controls to have other creative individuals in their family and also more likely to share particular forms of mental illness suggests a common genetic origin for creativity, psychosis, and affective disorder and possibly substance misuse. One hypothesis is that psychotic thinking, which is overinclusive and makes connections between ideas, which, to others, seem irrational, is an extreme example of creative thinking. Creativity is by definition the bringing together of elements that have not previously been connected in that particular way whether in a painting, song, or novel. (See Mednick, 1962, on the associative basis of creativity.)

The link between affective disorders and creativity is part of the explanation as to why alcohol and drug misuse and dependence are overrepresented in creative individuals and in their relatives, given the recognized comorbidity between the two types of disorder. The Bipolar II form of bipolar affective disorder, for example, has a particular association with substance use disorders.

As an illustration of this link, the American Psychiatrist Arnold Ludwig studied reviews of biographies in the New York Review of Books. Using reviews published between 1960 and 1990, he compared the lives of scientists with those of artists, writers, composers, and musicians. He found that the subjects who worked in the Arts were more likely than scientists to have suffered mental illness and to have used mind-altering substances (Ludwig, 1992).

Additionally, Ludwig showed differences within the creative arts. Unfortunately, he does not give us the fine detail of the drugs involved usually with alcohol misuse and mental illness clustering in the same individual, but given the European and American bias to the reviews undoubtedly amphetamines and cocaine will have featured alongside the opiates and to a lesser extent hallucinogens. Earlier the North American psychiatrist Andreasen (1987) had shown the link between creativity and mental illness. The British psychiatrist Felix Post in two widely cited papers further confirmed this association (Post, 1994, 1996).

3. STAGES OF THE CREATIVE PROCESS

Psychologists have identified that the creative process involves different stages and one common way to portray this is in a five-stage model as follows:

The Five Stages of Creativity

1. Preparation
2. Incubation
3. Insight
4. Evaluation
5. Elaboration

From Wallas, 1926 as cited in Runco and Pritzker (2011).

This idea of stages of creativity opens up the possibility that different types of drugs are more likely to be useful and, therefore, used at different stages of the creative process. This relates also to the concepts of Convergent Thinking and Divergent Thinking (Baird et al., 2012) and the differential effects of mind-acting drugs on these two forms of thought processes. Thus, hallucinogens, opiates, and sedatives are more likely to lead to divergent thinking and to be linked to the incubation and insight, and perhaps also the preparation stages of creativity.

This idea is well captured by this quote from Rimbaud:

> *The Poet makes himself a seer by a…. derangement of all the senses.*

The idea is often, also, illustrated in books linking drugs to creativity by quoting William Blake:

> *"If the doors of perception were cleansed, everything would appear to man as infinite*
> *For man has closed himself up, till he sees all things thro' narrow chinks of his cavern"*

And, also from Blake:

> *"The road of excess leads to the palace of wisdom"*

The titles of Aldous Huxley's "The Doors of Perception" (Huxley, Harper, & Brothers, 1954) describing his mescaline experiences and Marcus Boon's "The Road of Excess: A History of Writers on Drugs" (Boon, 2002) are both referencing Blake, the visionary poet and artist.

Psychostimulants are more likely to assist in the evaluation and elaboration stages of creativity and also with certain aspects of the preparation stage. They are recognized to bolster convergent and decrease divergent thinking.

Think of a writer who works in the morning fuelled by coffee and cigarettes and then socializes in the evening over copious amounts of alcohol. One can find many examples of famous authors who fit this pattern. Hemingway and Fitzgerald are good examples and the link between alcoholism and literary achievement among American writers has been discussed fully by Dardis (1989) in his book "The Thirsty Muse."

However, most laboratory-based studies suggest little or no benefit to creativity of using substances particularly those with depressant properties.

One study, for example, showed that when intoxicated individuals were asked to perform creative tasks they believed their work to be superior when in fact it showed a decrease in divergent thinking (Kowal et al., 2015).

There are many confounders in researching the effects of mind-altering drugs on creativity. One is that in a regular user of a drug, say caffeine or nicotine, an apparent improvement may be more down to a suppression of a withdrawal state rather than a direct effect of the drug. For some of the science behind this, see Iversen's Speed, Ecstasy, Ritalin (2006) and his chapter on the pharmacology of nicotine in Smoke (Gilman & Zhou, 2004). The evidence in relation to the ambiguous relation between caffeine and creativity is well reviewed also by Konnikova (2013). Another confounder is that all mind-altering drugs affect sleep and the stimulants in particular lessen sleep, which may be particularly bad for creativity, which has a link to REM/dream sleep (Killgore et al., 2008). Amphetamine research suggests a trade-off between cognitive enhancement and creativity in keeping with the convergent–divergent thinking model (Farah, Haimm, Sankoorikal, Smith, & Chatterjee, 2009).

4. DRUGS, CREATIVITY, AND CULTURAL HISTORY

The history of Western colonialism and Empire building is inextricably linked with the "discovery" and marketing of valued commodities. This trade produced great wealth and had major cultural and artistic resonance. Tea, coffee, cocoa, tobacco, sugar, opium, cannabis (Hemp), and Coca commerce, and the contemporaneous discovery of alcohol distillation were major forces in European and world history from the sixteenth through to the nineteenth century (see Devine (1975) for Tobacco; Mills (2003) for Cannabis; Porter and Teich (1995), Schivelbusch (1992), and Courtwright (2001) for all of the other addictive commodities).

Psychostimulants are well represented in this list of lucrative merchandise: caffeine (tea and coffee and cocoa/chocolate), nicotine (tobacco), and cocaine (coca) sit alongside theobromine (cocoa/chocolate). The

wealth produced by this trade in mind-altering substances would support artistic endeavor through patronage and the creation of a culture with disposable income that valued art as commodity in all its forms. The merchants who with their families would be painted and represented by the artists they sponsored and commissioned would become the new aristocracy of the early modern world.

The first three drugs in our list of psychostimulants are all eventually extracted from plants: caffeine from tea and coffee, nicotine from tobacco, and cocaine from the coca plant. These plants were all nonnative to the Old World of European civilization. All continue to have major economic import today either legitimately (caffeine and nicotine) or illicitly in the case of cocaine.

Although no longer viewed in a technical sense as a "stimulant" any broad discussion on drugs and creativity needs to give a special place to alcohol. Alcohol is as old as human history and is well referenced in early Greco-Roman and Judeo-Christian written records.

The Bible famously treats wine with ambivalence. The prophet Isaiah warns, for example:

> *"Woe to those who rise early in the morning to run after their drinks, who stay up late at night till they are inflamed with wine. They have harps and lyres at their banquets, tambourines and flutes and wine, but they have no regard for the deeds of the Lord, no respect for the work of his hands."*
>
> ***Isaiah, Chapter 5, Verse 11.***

However, alcohol is also celebrated in other passages—e.g., the miracle at the wedding at Cana—and for Christians, it becomes part of the Eucharist. Overall though the scriptures warn against alcohol in excess and in Western culture beyond the Romans the pursuit of intoxication is condemned both socially and legally. This changes in the modern era where greater variation is seen in how alcohol is viewed by society. Consumption veers between extremes of prohibition and varying degrees of control within a liberal, free market.

It is with the Arts and modern bohemian writers that we get the idea of alcohol as an agent of mystical transport. Baudelaire instructs the writer to "Be drunk always." Absinthe drinking was particularly associated with a culture of creativity in Paris and Europe in the late nineteenth and early twentieth century, Celebrated imbibers included Emile Zola, Vincent van Gogh, Henri de Toulouse-Lautrec, James Joyce, and Ernest Hemingway. Hemingway is one of a group of American writers who combined alcoholism with high literary achievement. Dardis in The Thirsty Muse (1989) points to the fact that five of the eight Americans awarded the Nobel Prize for literature

up to that date were alcoholics. He looks at three of the five in depth: Hemingway, Faulkner, O'Neill alongside F. Scott Fitzgerald who though not a Nobel prize winner is the paradigmatic writer of the Jazz age. (He leaves out John Steinbeck and Sinclair Lewis, the other two native born and alcoholic U.S. writers who were Nobel laureates.) For a short general review of alcohol and creativity, see Beveridge and Yorston (1999).

There is an even stronger association between opiates—again, today, no longer viewed as "stimulants"—and the creative arts through the association with the Romantics. The list includes the poets Coleridge, Keats, the composer Berlioz, and later the writers Marcel Proust and Edgar Allan Poe. Most notable and influential was the initially serialized then fully published account by Thomas De Quincey (De Quincey, 2013) of his addiction to opium. De Quincey declared boldly that:

> *"…upon all that has been hitherto written on the subject of opium…I have but one emphatic criticism to pronounce - Lies! Lies! Lies!"*
>
> ***Confessions of an English Opium-Eater (1822).***

Morrison (2009) in his biography emphasizes the extent of De Quincey's influence in both the British Isles and abroad. For example, a French translation of De Quincey influenced Berlioz in writing the *Symphonie Fantastique (1830)* and over a century later William Seward Burroughs, author of *Junky* (1977) and *The Naked Lunch* (1986), stated that "De Quincey wrote the first, and still the best, book about drug addiction."

For De Quincey, opium was a technique for parting the veils "between our present consciousness and the secret inscriptions on the mind." This statement is very similar to those made by the advocates of mescaline and LSD in the mid-twentieth century. (See Huxley (1954) on mescaline and Stevens (1988) and Lattin (2010) on LSD and American culture.)

De Quincey's account of the detail of his drug use—both good and bad—seems to have little resonance with the phenomenology of the experience of our current opiate-addicted patients. Few modern opiate addicts talk of wild dreams or visionary experience. Certainly, the emphasis by De Quincey as to the addictive nature of opium does accord with modern experience with heroin and the difficulties faced by addicts in giving up their habit.

This is, interestingly, challenged in "Romancing Opiates: Pharmacological Lies and the Addiction Bureaucracy" by Dalrymple (2006). Dalrymple asks if we have bought into a concept of heroin dependence that was produced by a literary tradition that has influenced public opinion and in turn the medical response to it. Undoubtedly, it can be hard to fully separate the effects of a drug from one's socially determined expectations of that drug's

effect and experiments abound that use drug expectancy to show a response in particular contexts where no active drug is consumed (Dawkins, Shahzad, Ahmed, & Edmonds, 2011).

Despite attempts by some novelists and artists with alcohol or drug problems to mythologize and to claim that they created great works, while intoxicated most have been more honest in admitting, it was in the periods between intoxication that they were productive albeit drawing on their experiences around alcohol or drugs. There is good scholarship debunking some of the cases where authors or artists claimed to create under the influence of drugs—see John Sutherland—"Turns Unstoned," Times literary supplement, 30/10/98 (1998) and his "Last Drink to L.A."(2001).

There still exists an active prodrugs literature often reminding us of the long history of drug taking for creative and spiritual purposes—e.g., Pharmakon-Drugs and the Imagination by Vayne (2006)—with most of the drugs referenced having hallucinogenic properties. Arguably such drug use goes back into the depths of our evolutionary history (Hill & Newlin, 2002; Samorini, 2002) and our cultural history (Bancroft, 2009; Berridge, 2013; Davenport-Hines, 2002; Hillman, 2008; Jay & Wellcome, 2010; Walton, 2001b) and the persistence of such tribal traditions can be a challenge in our world of the global economy. The stimulant khat is one example of this (Anderson, 2007).

It is also important to realize that different types of narrative exist in memoirs and novels in terms of explanation of addiction and drug use and also of recovery from addiction (see "Narratives of Recovery from Addictive Behaviour," Hanninen & Koski-Jannes, 1999; Hurwitz, Tapping, & Vickers, 2007). The worldwide success of the AA and NA movement and other 12-Step programs has provided the predominant narrative for addiction and recovery. Thus, Cocaine Anonymous, for example, will portray cocaine addiction as a downward spiral to either death or an eventual realization from a personal "gutter" that total abstinence and spiritual renewal is the only answer in the knowledge that the next relapse might be the one that proves fatal.

5. DRUG DISCOVERY AND SYNTHESIS

Mike Jay who has written extensively on issues of drugs, culture, and creativity (Jay, 1999, 2011; Jay & Wellcome, 2010) makes an interesting observation in his Emperors of Dreams (2000). This is that the history of mind-altering drugs often follows the Frankenstein narrative:

Act one: the drug is discovered and its novelties and benefits celebrated.
Act two: the drug escapes from the laboratory and makes its journey in the world.
Act three: the powers that be unite in their attempt to extinguish it.

This narrative seems particularly pertinent to the psychostimulants and particularly those, which are more potent and have abuse potential and those, which have been rendered illegal. Cocaine, caffeine, and nicotine are all extracted from plant sources whereas the amphetamines and MDMA were synthesized in the laboratory. Cocaine, the amphetamines, and MDMA are the drugs, which most closely follow the narrative outlined by Jay. Also nicotine in the form of tobacco is belatedly subject to an Act three. It remains to be seen as to whether nicotine in its most recent incarnation of e-cigarettes, apparently untethered from the carcinogens in tobacco smoke, will suffer a similar fate or become as socially acceptable as caffeine.

Given that doctors—medical men, in particular, in the nineteenth century—were central to drug discovery and exploration they were also at greater risk of being seduced and subverted by drugs with addictive potential given their privileged access. Even the more recent history of medicine and in particular psychiatry has examples of this continuing dilemma particularly in relation to LSD (Dyck, 2008; Sandison, Spencer, & Whitelaw, 1954). The counter culture of the 1960s based around LSD again found voices from within the medical profession arguing against the prohibition of the drug and advocating its use (Lattin, 2010; Stevens, 1988). Doctors remain interested in the possibility that illicit mind-altering drugs may have therapeutic benefit, e.g., LSD, MDMA, and Ketamine, but remain constrained by restrictions on their use (Nutt et al., 2007; Sessa, 2012).

Literature on the sick doctor is also of interest in teaching and self-awareness for doctors. It reflects the predominance of alcohol and drug problems as the main cause of impairment in "impaired physicians" alongside mental illness. For a modern example of this read, "The Tennis Partner" (Verghese, 1998), a tragic account of a cocaine-addicted doctor written by an older mentor.

6. PSYCHOSTIMULANTS AND CREATIVITY

Two recent popular films—Limitless (2011) and Lucy (2014)—illustrate an interest in the possibility that drugs might be used for cognitive enhancement and to increase creativity and "brainpower." Both use fictional drugs but these appear to be stimulant as well as nootropic in nature

(Wijdicks, 2015, see pp. 246–247 for a discussion of Limitless). Generally psychostimulants increase convergent thinking and attention—at optimal doses—and decrease divergent thinking; however, in the worlds of these two science fiction films, the drugs seem to achieve the improbable feat of increasing divergent and convergent thinking simultaneously.

We will now look at the psychostimulants individually in relation to literature including drama and film followed by visual art and popular music. Inevitably, this is selective in nature given limitations of space.

7. PSYCHOSTIMULANTS, LITERATURE, AND LITERARY SCENES

There are now a large number of anthologies of drug "literature" with both historical and original, sometimes specially commissioned, pieces many of which are stimulant related. Worthwhile examples of the genre can be found with the following editors: Davidson (1998), Haining (1998), Jay (1999), Melechi (1997, 1998), Miller and Koral (1995), Rudgley (2001), Shannonhouse (2003), and Strausbaugh and Blaise (1991). The psychostimulants are referenced in around 20% of the stories and historical excerpts that are included in these selections albeit with some repetition of seminal sources such as Freud on cocaine. The broader field has been well analyzed in two books of literary criticism (Boon, 2002; Plant, 1999) and also more briefly in the review by Day and Smith in relation to medical education (2003).

7.1 Caffeine

Caffeine is the most ubiquitous of the psychostimulants. So much so that we tend to forget its status as a legal drug that is beyond regulation, other than those that pertain to food and nonalcoholic drinks. Caffeine is obtainable in many different formulations from coffee to tea to caffeinated soft drinks and over the counter tonics. The main formulation of interest in relation to culture and creativity is that of coffee. Historically coffee was viewed as a potentially dangerous substance in contrast to today's more benign viewpoint. This is illustrated here:

> *"[Coffee causes] an excessive state of brain-excitation which becomes manifest by a remarkable loquaciousness sometimes accompanied by accelerated association of ideas. It may also be observed in coffee house politicians who drink cup after cup … and by this abuse are inspired to profound wisdom on all earthly events."*
>
> *Quoted in Lewin (1931): Phantastica: Narcotic and Stimulating Drugs*

Figure 1 Coffeehouse Scenes. (A) Lordprice Collection/Alamy. (B) Public Domain-Tom King's Coffeehouse by William Hogarth, http://commons.wikimedia.org.

In early modern Europe, coffeehouses (Fig. 1) were viewed with some suspicion by the authorities of the day. They became important social hubs for commerce and creativity and a place to learn the latest news from home and abroad. In the great artistic and literary cities of Paris in the nineteenth and twentieth centuries and in fin-de-siècle Vienna, the café was of central importance for the creative individuals who gathered there.

An example is the French writer Balzac. He ingested what may have been 2–3 g of caffeine in a day in the form of ground coffee beans into an empty stomach. Balzac described this as "horrible, rather brutal," and only for men of "excessive vigor." He wrote of the consequences in relation to his writing in his 1839 essay "Traité des Excitants Modernes" ("Treatise on Modern Stimulants") thus:

> *"Sparks shoot all the way up to the brain" while "ideas quick-march into motion like battalions of a grand army to its legendary fighting ground, and the battle rages.*

Our modern expectation would be that such an overdose of caffeine would hinder rather than help writing. All hinges on the optimal dose of caffeine in keeping with the Yerkes–Dodson law. For more on how caffeine can "Cramp Creativity," see the article by Konnikova (2013) cited below.

The Jim Jarmusch film Coffee and Cigarettes (2003) gives us a series of fictional encounters between individuals, smoking and drinking coffee, in social and creative interaction. Thus, Iggy Pop meets Tom Waits and so on through a number of vignettes. The recent widespread banning of smoking in enclosed public places is breaking this connection with coffee

to a degree, but it has been historically important in relation to literary and artistic communities and the social interchange that allowed such groups to come to prominence in particular locations at particular times.

There are two excellent "biographies" of coffee available (Pendergrast, 1999; Weinberg & Bealer, 2001). The coffeehouse remains widely visible in our modern society and most will still provide newspapers and on occasions promote works of fiction.

7.2 Nicotine

Nicotine was eventually purified and identified as the main psychoactive drug in tobacco in 1893. The name was given to the drug so identified in tobacco in honor of Jean Nicot de Villemain, who in 1560 introduced the plant (*Nicotiana tabacum*) to the court in Paris via Portugal where he was French ambassador. The seeds and tobacco had arrived from Brazil.

Nicotine like cocaine is viewed as one of the most potent and addictive of all drugs, and this potency has led to mass use of tobacco in all its forms with powerful cultural and creative associations being forged with smoking. This is well documented in The Faber Book of Smoking (Walton, 2001a), and the wonderfully illustrated Smoke (Gilman & Zhou, 2004).

The strength of the association for addicted writers is well illustrated in this Dennis Potter quote taken from The Faber Book of Smoking:

> *Nobody has yet been able to demonstrate to me how I can join words into whole sentences on a blank page without a cigarette burning away between my lips.*

This strong identification of creativity with smoking can be found with a number of famous writers. J.M. Barrie and his My Lady Nicotine is an example of a writer in love with tobacco and describe Barrie's difficulty in giving up pipe smoking at the behest of his wife-to-be. It is typical of a literature that was common between the 1880s and 1910s, which Umberger (Gilman & Zhou, 2004) describes as a "fumophile literature" (Fig. 2). These books were for pipe and cigar smoking men, usually bachelors, and associated pipe smoking in particular with hours of quiet contemplation, relaxation, and male bonding.

The playwright Simon Gray in his The Smoking Diaries confesses in his 66th year to a 65 cigarettes per day habit, but this use of cigarettes is a backdrop to a brutally honest literary diary which is both comedic and tragic in turn.

Richard Klein states in the Introduction to Cigarettes are Sublime, a more recent example of fumophile literature that "(his) aim in this book is to praise cigarettes, but certainly not to encourage smoking…." The book

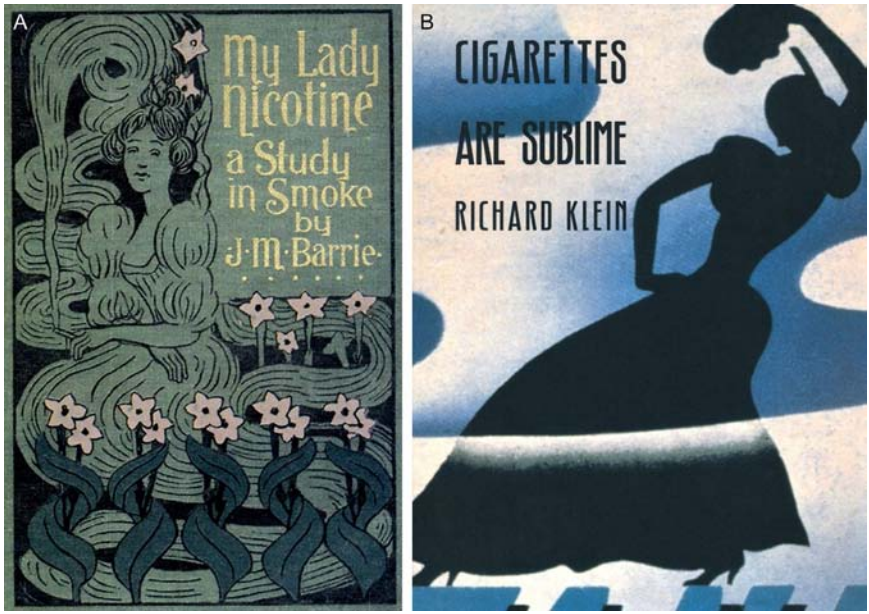

Figure 2 Examples of Fumophile Literature. (A) Public Domain, http://commons.wikimedia.org. (B) Republished by the permission of copyright holder www.dukeupress.edu.

then goes on to celebrate the use of the cigarette and the culture which "surrounds cigarettes and to which they gave rise" in what another author has branded "The Cigarette Century" (Brandt, 2007).

X20 (A Novel of Not Smoking) by Beard (1997) explores the difficulties of giving up cigarettes through the device of an author who has to write in a notebook every time he craves a cigarette in order to avoid succumbing to the urge to smoke. The novel is cleverly structured with a countdown over 20 days of the number of times the notebook is reached for, from 20 down to 1. It contains interesting subplots on the quest for a safe cigarette and the business of selling an addictive and lethal product. Each of the notebook entries is smoking related.

The novel Thank You For Smoking by Buckley (1994) is a black comedy centered on, Nick Naylor, a tobacco lobbyist in Washington. Along with lobbyists for alcohol and firearms he is part of the "M.O.D. Squad" with M.O.D. standing for the Merchants of Death. A moment of irony in the book is when Naylor is taken hostage and there is an attempt to kill him by covering him in nicotine patches, which he survives. However, he is rendered hypersensitive to nicotine and intolerant of smoking. The novel and the film based on it (2005) are superb at illustrating the doublethink

of an industry trying to deny what had become obvious: the fact it is selling a poisonous and lethal product. The attempt of Naylor to deny that people continue to smoke because of choice rather than addiction has also fully unraveled over the last 20 years.

Based on an unpublished novel, another satirical film worth viewing in relation to Big Tobacco is Cold Turkey (1971). A small mid-American town attempts to win a huge financial prize offered by a tobacco company—in an ill thought out quest for publicity—for a town or city to become smoke free for 30 days. The mass nicotine withdrawal of the heavy smoking town and the prospect of excessive riches coming to the inhabitants have comedic expected and unexpected effects.

Tobacco also has its biographies. As well as Smoke and The Cigarette Century above there are works such as Gately's Tobacco (2001): A Cultural History of How an Exotic Plant Seduced Civilisation.

7.3 Cocaine

Boon (2002) comments, "the history of cocaine has been reviewed many times, a surprisingly large number of times in fact." Recent examples of such cocaine "biographies" include those by Constable (2002), Durlacher (2000), Karch (1998), Madge (2001), Naish and Scott (2013), Streatfield (2001), and Strongman (1997). If we add these to those that Boon is referring to from 1901 onward, the list is "surprisingly" large indeed. Perhaps, addictive drugs are surveyed more than other types of commodity in this way.

The most famous example of an eminent creative genius and medical man becoming enchanted with a psychostimulant drug and then later disillusioned with it is that of Sigmund Freud's dalliance with cocaine (Markel, 2011). Freud himself published a scientific monograph on the subject in Über Coca (On Cocaine) (Freud, 1884). He became personally enamored with the drug but eventually realized his daily use was a form of addiction that he had to break free from as he observed its destructive ability in others.

From fiction, the obvious example of a cocaine-using genius is Sherlock Holmes. Here, Conan Doyle's narrator Dr. Watson describes the great detective thus:

> *…. Holmes, who loathed every form of society with his whole Bohemian soul, remained in our lodgings in Baker Street, buried among his old books, and alternating from week to week between cocaine and ambition, the drowsiness of the drug, and the fierce energy of his own keen nature.*
>
> ***(Scandal 1.2).***

The attribution of drowsiness to cocaine seems to show a surprising confusion with opium, which Holmes used only occasionally. Holmes also introduces the modern innovation of injecting the cocaine (a 7% solution) using a needle and syringe that he keeps in a Morocco leather case.

The fact that Watson later helps Holmes overcome his addiction in the Conan Doyle stories is used as a starting point for the novel and film The Seven-Per-Cent Solution written by Meyer (1974). In this novel, the imaginary meets the real in that through an introduction by Dr. Watson Holmes meets Freud who uses hypnosis to cure the cocaine addiction and a delusional state induced by the cocaine.

Also in fiction while we are left guessing as to what type of substance will turn a Dr. Jekyll into a Mr. Hyde, it is well documented that Stevenson produced a first draft of the story (1886) under the influence of cocaine, which his wife tore up. In a less intoxicated state, he reproduced the story that has become emblematic of character change brought about by the ingestion of a drug.

The fictionalized autobiography Iced (Shell, 1993) is one of the most striking accounts of a descent into a personal hell due to crack cocaine addiction. Again, the stream of consciousness style is used in the narrative to reflect the mindset of the protagonist.

7.4 Amphetamine and Methamphetamine

Nicolas Rasmussen's "On Speed—The Many Lives of Amphetamine" (2008) is an excellent history of the drug first synthesized and discovered in California by Gordon Alles. If any drug was going to fit with the American psyche in relation to entrepreneurship and hard work then these new "pep pills" seemed an ideal candidate. Marketed originally in the 1930s as antidepressants here we have another drug, amphetamine, which with its many derivatives again gives us an example of Jay's Frankenstein narrative.

Amphetamines also became significant in World War Two with troops and airmen issued with the drugs to be used as a way to sustain attention during periods of prolonged combat or during a long-range bombing mission. Rasmussen shows us, however, that the evidence for the combat enhancing effects of amphetamine remained ambiguous despite trials on U.S. troops at the time. The Germans abandoned methamphetamine due to unpredictable effects including "friendly fire" incidents (Ulrich, 2005).

When Jack Kerouac sat down to write the first draft of On The Road (1957) in April, 1951 fuelled by caffeine, nicotine, and Benzedrine

Figure 3 The key Beats as young men—Kerouac, Ginsberg, and Burroughs Sr. (L–R) with Hal Chase (far left). © *Allen Ginsberg/CORBIS*.

(dl-amphetamine) (and pea soup from his wife), it seems fitting that the first draft was produced in 3 weeks on a continuous 120 feet roll of paper called by Kerouac "The Scroll." This text produced without paragraphs or margins in a stream of consciousness fashion is typical of the genre of amphetamine-related literature that was to follow.

The literary and musical grouping that became known as the Beats (aka Beatniks) included William Burroughs and Allan Ginsberg (Fig. 3). Ginsberg's long poem Howl, written in a specific coffeehouse, refers to Benzedrine as a way to seek:

"the ancient heavenly connection to the starry dynamo in the machinery of night"

Amphetamine use also features in Junky by William Burroughs though heroin is the main drug being sought by William Lee, Burroughs' alter ego in the novel. The Beats experimented with many drugs but arguably the stimulants were the central drugs in this creative grouping.

William Burroughs Junior followed in his father's footsteps in producing drug-related autobiographical novels. Unlike his father, his life was cut short by his drug use at the tragically young age of 33 years. His two completed novels were Speed (1970) and Kentucky Ham (1973). The first recounts the progression of his methamphetamine addiction and the second starts with his admission to the Federal Narcotic Farm in Lexington, Kentucky.

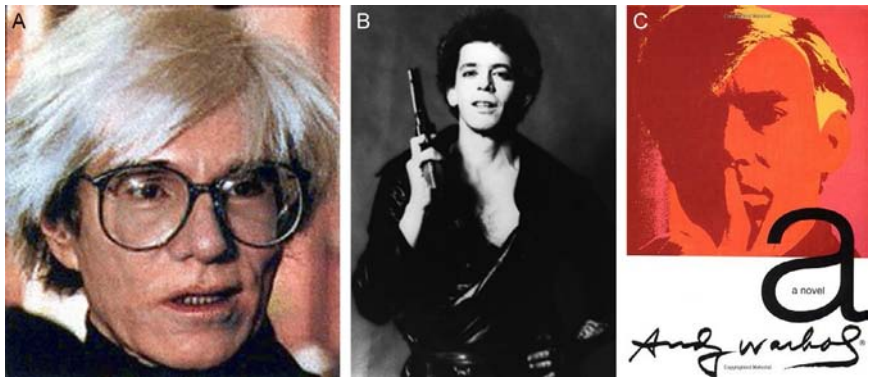

Figure 4 (A) Andy Warhol (Drella) and (B) Lou Reed (Lou) both feature in (C) a-A NOVEL. (A) wpclipart.com and (B) http://commons.wikimedia.org—both Public Domain; (C) © 2015 The Andy Warhol Foundation for the Visual Arts, Inc./Artists Rights Society (ARS), New York.

The association of the amphetamines with the arts in the United States was carried on into the 1960s with the various circles that formed around Andy Warhol in New York. The Factory was a center for the conjunction of popular music, visual, and cinematic art, and literature and amphetamine use. In Warhol's "a-A NOVEL," the "a" does indeed refer to amphetamine, and the book was initially conceived as a 24-h period in the life of Ondine, an actor, amphetamine addict and a Warhol Superstar captured on audiotape in a transcript also featuring Warhol, and 17 others including Lou Reed (Fig. 4). Four women including the drummer of the Velvet Underground later transcribed the tapes.

It is also speculated that Bob Dylan was referring to Edie Sedgwick, a Warhol associate, featured in the novel in these lines from "Just Like a Woman":

"Nobody has to guess
That Baby can't be blessed
Till she sees finally that she's like all the rest
With her fog, her amphetamine and her pearls"

Another novel based around the disaffected of New York is Hubert Selby Junior's Requiem for a Dream (1979), this novel, from the author of Last Exit to Brooklyn (1987), and also later a film, as well as showing the degradation brought about by heroin addiction shows us the danger of amphetamines as a legally prescribed diet aid when the mother of one of the protagonists becomes addicted and then suffers an amphetamine psychosis which leads to hospitalization.

Today, some of the best writing on drug-related topics is to be found in TV drama from the United States. The Wire, for example, showing the manifestations of the War on Drugs in Baltimore and, in particular, in Breaking Bad a series often approached through the medium of the "boxset." The main drug in Breaking Bad is methamphetamine in the form of crystal meth with the dying chemistry teacher anti-hero aiming to give his family financial security through his use of his synthetic skills to "cook" and sell the lucrative illicit product. The program is remarkably well informed on the chemistry of the amphetamines.

8. OTHER STIMULANT DRUGS

In our brave new world of "Legal Highs" or Novel Psychoactive Substances, it is very difficult to keep up with the proliferation of mind-altering drugs and many of the new drugs are stimulants or drugs of mixed action with some stimulant properties. The worlds of literature, music, and visual art has still to catch up with this exponential growth though the literature of the "Chemical Generation" or "Generation X" certainly took on board the earlier phases of this change with a particular interest in MDMA or Ecstasy. Generation X: Tales for an Accelerated Culture, a novel by Douglas Coupland (1991), and most of the work of Irvine Welsh, e.g., see "The Undefeated" in Ecstasy—Three Tales of Chemical Romance, in are reflective of the drug experimenting culture that has taken hold with a distrust of materialistic values and a scorn for authority. The Ecstasy Club (Rushkoff, 1997) is a novel that links the drug to other ways of questing for spiritual enlightenment.

MDMA has been most extensively studied given the prevalence of its recreational use (a minority seems to become dependent). Reference is made to some users experiencing enhanced creativity in the book, Pursuit of Ecstasy—The MDMA Experience (Beck & Rosenbaum, 1994, pp. 77–78) but again it is difficult to separate such subjective feelings from the objective reality of any drug effect on creativity. As always there is a price to pay and this is reviewed by Burgess, O'Donohoe, and Gill (2000) for MDMA.

Also in the 1990s, two books were published by Alexander and Ann Shulgin which along with the development of the Internet and social media became major catalysts to this change, PiHKAL—A Chemical Love Story (1991) and TIKHAL—The Continuation (1997). PIKHAL is short for

Phenethylamines I Have Known and Loved and TiKHAL for Tryptamines I Have Known and Loved. Again, we are in the territory of Breaking Bad in relation to the how to of drug synthesis, albeit with totally different motivation, and it is said that the police often finds the Shulgins' books in illegal drug laboratories. The Shulgins synthesized and tried most of the many compounds they list, "bioassaying," and in PiKHAL they list 10 "essential" amphetamines. The first section of PiKHAL is a fictionalized autobiography of the couple. Again, we are seeing here advocacy for stimulant and hallucinogenic drugs for mind expansion and life enhancement.

Methylphenidate in the form of Ritalin is the amphetamine that has expanded most in its usage in the past two decades with increased diagnosis and treatment of Attention Deficit (Hyperactivity) Disorder (ADHD). Again though the drug has escaped its intended usage with a thriving black market for the drug including a usage by students to sustain attention and prolong wakefulness in relation to course work and exam preparation. It is also being used recreationally for pleasure. This epidemic is starting to be mirrored in fiction: see for example, The Ritalin Orgy by Dexter (2013). The plot follows a male teacher in an American prep school in charge of the welfare of boys in a particular dorm. He comes to realize that the use of stimulant drugs is prevalent along with cannabis and alcohol and psychedelic mushrooms.

9. THE VISUAL ARTS

Less has been written about the relationship between the visual arts and artists and the use of drugs, and in particular the psychostimulants as compared to the relationship with writing and with popular music. Certainly, many depictions exist of smokers and coffee and tea drinkers over the centuries of modern Europe in paintings and drawings providing a social history of the progress of tobacco and coffee and tea and the café culture in Europe, the latter mirrors the concentration of artists in urban centers. Scholarship is beginning to look to these sources in more depth.

Take for example, the Ph.D. by Skelly (2010) later published in a shortened form as a monograph (2014). While mostly looking at alcohol and opiates it does have a chapter on cigarettes and cocaine and visual culture. The author presents the thesis that within visual culture artists seek to present outward signs of drug use as "legible on the body" but this can never be fully realized in such visual art as drug use is not always readable from a person's appearance. Sometimes, the art seems to get it wrong from our modern

Figure 5 Cocaine by Alfred Priest, 1919 Alfred Priest, *Cocaine*, 1919, oil on canvas, location unknown. *Photo:* Graphic*, 10 May 1919. © British Library Board. All rights reserved. LON MLD19 NPL.*

perspective. See for example Alfred Priest's Cocaine (1919) (Fig. 5) where again, as in Conan Doyle above, the effects of cocaine are presented as soporific rather than stimulant.

Another recent publication of interest is the book Addiction and Art (Santora, Dowell, & Henningfield, 2010), which picked the best of submissions of a U.S. wide competition to represent various forms of addiction visually in a way that accurately represented scientific knowledge of the specific drugs. There are striking images and explanations focused on tobacco and methamphetamine addiction among portraits touching on the whole gamut of addictive disorders and illustrating the fact that individuals are often multiply addicted.

10. PSYCHOSTIMULANTS AND POPULAR MUSIC

Harry Shapiro has provided two magisterial books on the links between drugs and the cinema (Shooting Stars, Shapiro, 2003a) and the links between drugs and the popular music industry (Waiting for the Man, Shapiro, 2003b). Drug history and popular music are inextricably linked and this goes back to Blues and Jazz music. Cocaine and cannabis are the main drugs associated. Many famous musicians were to spend time in the

Narcotic Farm in Lexington, Kentucky, with the concerts held there softening the time spent in this hospital penitentiary for drug rehabilitation.

Moving on to the last 60 years, we again find the association strengthening with the amphetamines, cocaine, and cigarettes featuring in the lyrics of many songs as well as in the habits of the musicians along with alcohol, cannabis, and opiates. The use of psychedelics also became a major influence in the 1960s on popular music and remains today albeit to a less obvious extent as at the peak of hippie culture. Also, the phenomenon of dance culture and "raves" in the 1980s and 1990s which linked the use of MDMA to rhythmic music and large gatherings for all night dancing has subsided but remains on a smaller scale as one of many subcultures in today's more varied and fragmented music scene (Collin, 2009).

The phrase "Sex, Drugs and Rock'n' Roll" has been used as a title for the recent publication (Cormier, 2014) that explores the scientifically researched connections and similarities between the effects music, drugs including stimulants and sexual activity have on the brains and biology of man and animals. It does seem that humans are "hardwired" to seek pleasure in the conjunction of the three activities.

11. CONCLUSION

Despite much research, the enhancement of creativity by stimulants remains to be established, but there is no doubt there is a strong association between their use and the creative arts. In exploring the links in the real world, we will have to look more carefully as to how different stages of the creative process are affected in different ways by particular families of drugs and specific drugs within a family such as the psychostimulants. The brief review above is by its nature impressionistic and reflective of my own reading and research in this area during a 25-year career working in an addiction clinic. Certainly, I would advocate that such supplementary reading away from the technical aspects of the field is a necessary corrective to a restrictive biomedical view of the addictive disorders.

The current explosion in new psychoactive substances through the Internet and clandestine laboratories, many with stimulant action, suggests a new chapter is opening in the story of the link among drugs, culture, and creativity. Undoubtedly, new literatures, new musical genres, and new visual cultures will result though given the numbers of drugs concerned these may be harder than in the past to discern.

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