THE MEDICAL HISTORY OF PSYCHEDELIC DRUGS

A dissertation presented

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Contents

1 INTRODUCTION

The aim of this dissertation is to describe the way in which psychedelics have interacted with medicine over the years whilst analysing the historical interplay between science, law and society. It will question how psychedelics came to be used in medicine and the initial role they filled.

By looking at the reception to psychedelic treatments and submitting the literature to historiographic scrutiny, the extent that psychedelics were accepted as legitimate medicines will be considered. The historical context surrounding psychedelic research will be examined and there will be an analysis of their experimental use on humans. There will be particular reference to methodological issues surrounding legitimacy of psychedelic claims as well as the extent of scientific rigour in demonising the drugs both within history of medicine.

This dissertation will include discussion of how psychedelics should be regarded and, by analysing of how their reception changed with time, whether they can be compared to traditional medicine. Particular attention will be paid to a historical account of psychedelics' position in the medical community, the public eye and the law. Because the legal status of psychedelic research progressed from being completely uncontrolled by law to near outright prohibition on an international scale, the evolution of psychedelic legislation will be discussed whilst looking at factors affecting law and researchers' interactions with the legal restrictions.

1.1 DEFINITION OF "PSYCHEDELIC"

Before any discussion can begin, it must be appreciated that there is a significant degree of confusion and controversy surrounding what exactly it means for a drug to be considered a "psychedelic" and which drugs exhibit "psychedelic" effects. Indeed, the psychedelics are almost impossible to define in terms of pharmacology or chemical structure (Grinspoon and Bakalar 1983a: 12; Nichols 2004: 131-181; Brown 1972; Cooper 1988: 2-11).

Even what psychedelics should be called is a contentious issue. A variety of names have been suggested over the years from *illusinogen*, *psychodysleptic* or *entheogen* to *oneirogenic*, *phantasticant* or *psychotaraxic* (Grinspoon and Bakalar 1983a: 12; Cohen 1965: 12-13; Shulgin 1997: 401).

Scientific literature tends to treat *hallucinogen* and *psychotomimetic* as equivalent to *psychedelic*. However, these imperfect synonyms can be misleading because of association with certain preconceptions. *Psychotomimetic*, or "psychosis mimicking", only describes a limited aspect of psychedelic effects (Cohen 1965: 13) amd the notion that psychedelics can induce a model psychosis has long since been discredited and this term has been rejected by the World Health Organisation (WHO) (Doblin 2001: 26). Claiming that the substances cause hallucinations implies a negative experience characterised by horror and anxiety not the euphoria and wonder reported by most users of the drugs. As it is now accepted that these substances do not produce true hallucinations and that the effects resemble psychosis or insanity, terms like this are inappropriate. Even referring to psychedelic chemicals as *drugs* can evoke negative images of "drugged up" socially reprehensible individuals (Aaronson and Osmond 1970: 8; Watts 1964: 3).

The names given to these compounds have questionable connotations and issues regarding whether the drugs produce temporary madness or valuable self-transcendence are merely part of the wider controversy (Cohen 1965: xv). Clean scientific language should only say that these chemicals induce changes in the state of mind. In an interchange with Aldous Huxley the British psychiatrist Humphrey Osmond coined the word *psychedelic* (Osmond 1981: 81-82). It means "mind manifesting" and refers to the perception of new aspects of the mind that characterises such states (Grinspoon and Bakalar 1979). Osmond considered it more neutral than the alternatives and this was the term preferred by Albert Hofmann, the discoverer of lysergic acid diethylamide (LSD) (Lee and Shlain 1985: 55). It is generally considered the best compromise between avoiding loaded language and accurately describing the experience.

In order to be clear about what chemicals are being referred to, only the one term, *psychedelic*, will be used throughout this work. Furthermore, for the purposes of this dissertation, it will only be used to refer to chemicals that display similar psychopharmacological activity to "true" psychedelics such as LSD, psilocybin and mescaline.

1.2 Dissertation structure

1.2.1 The early history of psychedelic drugs in medicine

The historical review will begin by outlining the role of psychedelics before their widespread medical use. It will track the history of how they came to be popularised as a treatment for a number of conditions and will discuss in detail a few areas in which the early studies concentrated. Psychedelic research soon spawned a vast amount of scientific papers and studies and the extent of the research along with early opinions about psychedelics in medicine will be examined. Finally, this section will present a history of some of the claims made by psychedelic researchers. Since LSD is by far the most ubiquitous of all the psychedelics, it will inevitably be mentioned more often than other substances in this section and throughout the dissertation.

1.2.2 The prohibition of psychedelic drugs

This section will outline the historical change of opinion toward psychedelics in light of the dangers associated with the drugs. It will examine the debate over the medical value of psychedelic drugs and look at how this affected laws that were enacted to control psychedelics. It will be shown how the new laws affected research and the history of psychedelic medicine.

1.2.3 Psychedelic revival

In looking at research after the prohibition of psychedelics, further changes to the place of psychedelics in medicine and society will be considered. This will involve an analysis of the recent history of psychedelics in medicine with particular reference to risks, new research and continued legal restrictions. This section will conclude by summarising the risks and benefits of psychedelics as well as the legal situation of medical research.

2 THE EARLY HISTORY OF PSYCHEDELIC DRUGS IN MEDICINE

2.1 INTRODUCTION

The purpose of the first section is to outline the early history of psychedelic substances and summarise the various ways that they have been used. By placing their medical use in this wider historical context, it is hoped that a broader sense of their properties will be appreciated. This section will describe the way in which psychedelics began to be used medically and show how researchers saw psychedelics develop from scientific curiosities to potentially ground-breaking psychiatric treatments. The reasons for psychedelic use in medical research and some of the most influential studies and results from the vast literature will be discussed. The extent of psychedelic use snowballed massively in the 1950s and 1960s and this section will present the claims made by psychedelic researchers as well as opinions of the medical value of psychedelics. It will show that there was a time when psychedelic therapy was reasonably considered to be broadly beneficial and without significant risk.

2.2 PSYCHEDELICS: 3700 BC TO THE 1950S

2.2.1 HISTORY OF PSYCHOACTIVES

Archaeologists have provided fossil evidence that shows humans have used psychoactive plants for 10,000 years during ritual ceremonies. Psychoactives were important in the development of human society and there is historical evidence of cultural use over the past 5,000 years (Merlin 2003). Dr Ronald Siegel (1989) suggests that the human urge to intoxicate is so strong that it is the fourth most primal instinct after hunger, thirst and sex. He argues that people all over the world have historically always used psychoactive substances and that the desire to take mind-altering drugs is inherently programmed into our biology as a natural drive. It has even been claimed that the psychoactive alkaloids must have played a part in the evolution of consciousness (Albert 1993: 230-232).

2.2.2 ANCIENT USE OF PSYCHEDELIC DRUGS

It is also likely that psychedelics have been used in ancient cultures as intoxicants and in magical rites for thousands of years (Grinspoon and Bakalar 1983b: 18). We cannot say for sure how long psilocybin-containing mushrooms have been used because Roman Catholic missionaries destroyed records in Mexico (Aaronson and Osmond 1970: 9). However, it has been shown that Native Americans collected mescaline-containing peyote

buttons that were carbon dated to 3780-3660 BC and this suggests that they valued the psychotropic properties of peyote (El-Seedi et al. 2005).

There is more evidence of ceremonial peyote use in the Americas since 1000 BC and Catholic texts mention peyote use throughout the 16th century. Bernardino de Sahagún, who compiled the Florentine Codex, estimated that psychedelic plants had been used in Mexico and Guatemala since at least 300 BC (Stafford 1992). Before that indigenous cultures made rock paintings of mushrooms around 7000 BC and built temples to mushroom deities while the word for psilocybin-containing mushrooms was *teonanácatl* or "Flesh of God" (Schultes and Hofmann 1992). Furthermore, it has been suggested that the Eleusian ceremonies may have involved a psychedelic brew (Wasson et al. 1978; Grof 1984; Nichols 2004: 133)

2.2.3 Psychedelic rediscovery

Despite the influence of Christianity which painted traditional use of psychedelics as heretical, psychedelics were rediscovered by Western science in the last part of the second millennium. Humphrey Davy introduced Samuel Coleridge and Robert Southey to nitrous oxide (Fujita 1998) and the philosopher William James (1882) extolled the mystical effects of the gas claiming it made him understand Hegel better. He also tried peyote, the effects of which were published in the British Medical Journal in December 1896 (Mitchell). Mescaline was isolated in November of the next year (Holmstedt and Liljestrand 1963: 208-209) and Albert Hoffman published the synthesis of psilocybin in the 1950s (Hofmann and Troxler 1959).

As synthetic chemists manipulated molecules to create new compounds related to natural psychedelics, early researchers provided their friends and private patients with psychedelic drugs. This allowed botanists, anthropologists, writers, artists and amateur scholars to experiment on themselves with psychedelics and be inspired by the changes in their consciousness (Grinspoon and Bakalar 1983b: 20). Aldous Huxley tried mescaline for the first time in May 1953 and, like many intellectuals at the time, put great hope in the valuable visionary experience (Hofmann 1980a). Writing about the experience, he wrote "This is how one ought to see, how things really are" (Huxley 1959).

Psychoactive plants and chemicals began to receive significant scientific attention at the end of the millennium. In 1943, as World War II raged on in the rest of Europe, Albert Hofmann determined the activity of LSD at Sandoz in Basel, Switzerland. LSD was

produced by Sandoz in the hope that it would prove useful in treating a wide range of psychiatric illnesses. In 1947 the US Navy began mescaline studies looking for a truth serum (Lee and Shlain 1985: 5) and in 1952 Dr Humphry Osmond began to look at the molecular similarity between mescaline and the adrenaline.

Most of the interest in psychedelic drugs was related to psychiatry and, by 1951, over 100 articles on LSD had been published in medical journals (Dyck 2005: 383). Psychedelics had caught the interest of a great variety of people from writers and ethnobotanists to doctors and the military. The interest was caused by a broad range of reasons from scientific intrigue and pure intellectual curiosity to artistic inspiration and spirituality. By the time the general public began hearing about psychedelic drugs, there was already an established tradition of literary and medical research into their effects and uses (Grinspoon and Bakalar 1983b: 20).

2.3 Early medical psychedelic research

For about 15 years, psychedelic medical research proceeded with high expectations and psychedelic drugs were freely available to thousands of medical professionals. The majority of work was done with LSD which was unique because of its extreme potency and recent discovery. Sandoz made LSD available for research, suggesting that the drug might be useful "to elicit release of repressed material and provide mental relaxation, particularly in anxiety states and obsessional neuroses" and also for self-experimentation by psychiatrists, "to gain an insight into the world of ideas and sensations of mental patients" (Hofmann 1980c: 23).

Psychedelic medicine was enthusiastically advocated by numerous psychiatrists from diverse cultural backgrounds and socio-political contexts (Snelders and Kaplan 2002: 221) and early on it was funded by governmental bodies (Szara 1994). By the mid 1960s, over 40,000 patients had taken LSD and psychedelic research had produced over 1,000 scientific papers and many books as well as several international conferences. The remainder of this section outlines the initial claims of psychedelic research.

2.3.1 Initial investigations

Dr Werner Stoll who worked at Sandoz was the first person to publish the results of a human investigation into the psychological effects of LSD. He self-administered the drug as well as giving doses to normal and schizophrenic patients in his clinic. He tried a variety of medical applications for LSD and concluded that it produced perceptual

disturbances and acceleration in thinking (Lee and Shlain 1985: 12-13). He used LSD in order to experience the symptoms of mental illness himself and in a therapeutic context to shock his patients (Snelders and Kaplan 2002: 229). No unfavourable after effects were reported (Stoll 1947).

2.3.2 Model psychosis

A German research neuropsychiatrist called Dr Max Rinkel persuaded Sandoz to send him some LSD in 1949. In testing out the effects of the drug Dr Robert Hyde, his partner, was the first person to try LSD in the Western Hemisphere. Rinkel and Hyde wanted to test the hypothesis that LSD induces a model psychosis in the patient and they set up a pioneering LSD study in Boston (Stevens 1978: 44). By 1950 they had given LSD to one hundred volunteers and, in May of that year, Rinkel declared that it caused a "transitory psychotic disturbance" in otherwise normal people (Lee and Shlain 1985: 19-20). He hoped that this "temporary madness" would allow doctors to study mental disorders in a controlled and objective way.

2.3.3 Research at Saskatchewan

Humphrey Osmond and John Smythies studied mescaline in London and concluded that the outward symptoms of mescaline intoxication were similar to those of schizophrenia. In 1952, Osmond pointed out the structural similarity between mescaline and adrenaline and hypothesised that schizophrenia might have a biochemical basis. He also suggested that mescaline might assist doctors and other hospital personnel in understanding their patients by providing a way to see the world as their patients do. (Lee and Shlain 1985: 45).

Osmond moved to Saskatchewan in Canada to continue his investigations and met Abram Hoffer – through their collaboration they realised that psychedelic drugs had great medical potential. After experimenting with LSD they noticed that the drug often provided patients with personal insights and clear self-reflection and, by 1953, they theorised that it could be used to treat chronic alcoholism (Dyck 2005: 384). Osmond and Hoffer reasoned that a single large dose of LSD could create the overwhelming experience of delirium tremens that seemed to help rock bottom alcoholics recover.

Colin Smith (1958) published the results of a twenty-four patient trial at Saskatchewan – after three years of follow up he concluded that LSD and mescaline had a therapeutic effect and that 50% of his patients were "improved"" or "much improved". A controlled two-year study showed that 66% of LSD patients abstained from alcohol compared to

18% in the control group (Jensen 1962). These studies were very encouraging: they achieved a greater proportion of recovered patients than any other treatment for alcoholics.

2.3.4 Alcoholism

Hoffer continued to publish remarkable results using LSD to treat alcoholics. One study involved scouring hospitals for the very worst cases of chronic alcoholism – the twenty four patients chosen had been drinking uncontrollably for an average of twelve years and most had not been helped by Alcoholics Anonymous. Twelve were diagnosed psychopaths, eight had serious character disorders and the rest were borderline or actually psychotic. A single dose of LSD was administered and, after long-term follow-up, a quarter of the subjects had recovered and another quarter had improved. In comparison, a recovery rate of 10% was considered good when using conventional techniques to deal with alcoholism. Hoffer's statistics from thirteen years of LSD therapy with alcoholics suggested that LSD could consistently produce this level of success (Stafford and Golightly 1967: 97-99).

2.3.5 Psychotherapy

Meanwhile, in Worcestershire, England, pioneering LSD research was taking place at Powick Hospital. Ronald Sandison (1954; 1957; 1963) and his research team worked on LSD therapy there between 1953 and 1965 and discovered that LSD could help bring unconscious material to the surface in neurotic patients. One of their early papers found that, of twenty patients with chronic neurotic disabilities who had not responded to other treatment, fourteen recovered and three showed moderate improvement after LSD-assisted therapy. This article also emphasised that it was only useful when administered by experienced psychiatrists as an adjunct to psychotherapy (Sandison et al. 1954).

Further follow-ups two years later reported that, of ninety-four patients, over 60% had recovered or improved even though they had failed to respond to conventional therapy in the past (Sandison and Whitelaw 1957: 335). This confirmed the results of others conducting similar LSD research and the authors concluded that the drug has the “utmost value” in psychotherapy as it helps to produce the psychological changes that assist therapists in curing neurotic patients (Sandison and Whitelaw 1957: 340-342). Writing about LSD therapy nine years after he began working with psychedelic drugs at Powick, Sandison (1963: 32-34) acknowledged that the administration of LSD in a psychotherapeutic environment seems to safely reduce neurotic symptoms.

2.3.6 Neurosis

Later on, Einar Geert-Jorgensen and his colleagues produced similar results with a study of 129 patients. They achieved a remission rate of 55% amongst chronic neurotics who not benefited from years of therapy before being treated with LSD (1964). Hanscarl Leuner reported confirmatory results with 100 chronic neurotics. His treatment involved an average of thirty-eight LSD sessions per subject and produced substantial improvement in 65% of his patients (1963; 1967). Similar results were also produced by van Rhijn who, using LSD, claimed to cure half of his compulsive neurotic patients who had not responded to other forms of psychotherapy (Snelders and Kaplan 2002: 226-227).

2.3.7 Mystical states

On 20 April 1962, Walter Pahnke conducted a double blind study at Harvard to determine whether psychedelics can induce spiritual experiences. He gave ten theological students niacin as an active placebo and another ten 30 mg of psilocybin. They were matched for religious experience and training and psychological makeup and all attended the same two-and-a-half hour Good Friday service. Afterward the subjects were interviewed and assessed on three difference scales used to quantify typology of mystical experiences. According to their reports, the overwhelming majority of the psilocybin group had mystical experiences while the control group had next to none. In a follow-up six months later, many subjects claimed that the experience resulted in an enlivening of their religious lives and an increased involvement with the problems of living and the service of others (Clark 1970: 4). Pahnke's paper made the startling conclusion that psilocybin has the ability to educe mystical states (Pahnke 1963: 234-236).

2.3.8 Pain relief

Psychedelics were also used in pain relief. Eric Kast conducted a study on fifty gravely ill patients in great amounts of pain. The subjects were treated with Demerol, Dilaudid and a 100 µg dose of LSD in order to compare their analgesic action. The results showed that LSD produced more prolonged and effective pain relief than either of the other two analgesics (Kast and Collins 1964: 291). His pioneering work went on inspire other studies using LSD to control extreme pain (Gerard 1990). Kast himself went on to carry out further experiments on patients with malignant terminal diseases. Eighty subjects were administered 100 µg of LSD which allowed them to be more responsible to their environment and their family. It was concluded that LSD helped lessen the patients' physical distress and lifted their mood and outlook (Kast 1970: 380-381).

2.4 Conclusion

There is significant evidence that psychedelics have been used by humans for thousands of years. Many ancient cultures integrated psychedelic experiences into their lives and saw them as valuable learning tools. When psychedelics first attracted scientific attention they were studied with curiosity but soon gained widespread use instead through their application in psychiatry.

Enthusiastic research began and psychedelic drugs were soon in use in a massive variety of studies with potential medical applications. The mood was optimistic as early results suggested that psychedelics could be useful in understanding mental illness, treating addiction and as an adjunct to psychotherapy. At the peak of their popularity, huge volumes of literature were being published on clinical uses of psychedelics – perhaps the most important international conference was in 1961, when the Royal Medico-Psychological Association devoted the whole of its three day meeting to the psychedelic drugs (Crocket et al, 1963).

The research rapidly evolved and psychedelics were applied in disparate fields while the beneficial results were reported with enormous zeal. The initial research did not raise any concerns about the safety of psychedelics and they were administered to thousands of people in order to treat a massive array of conditions.

3 THE PROHIBITION OF PSYCHEDELIC DRUGS

3.1 INTRODUCTION

While the initial research was almost exclusively positive in its conclusions about the medical use of psychedelics, by 1966 possession of LSD was banned in the United States and soon afterward almost all psychedelic research had ceased. This section will outline the historical change of opinion toward psychedelics and discuss issues that might have affected their role in medical science. The methodological criticisms will be analysed in terms of relevant research standards and the use of controls and follow-up studies in psychedelic research will be discussed.

Many studies were published that attributed various dangers to the use of psychedelic drugs and the debate over their risk assessment will be summarised. The history of the medical use of psychedelics will be framed within the context of these perceived flaws and risks as well as political issues. In light of concerning data, medical science had to evaluate the remaining potential of psychedelics and this will be discussed along with the first legal controls of psychedelic drugs. This section will look at changing popular and professional impressions of psychedelics and examine the reasons for new laws. It will conclude with an analysis of the scope of legislation and how the medical history of psychedelics was affected by this legislation and the surrounding social climate.

3.2 METHODOLOGICAL FLAWS AND INCONCLUSIVE DATA

Science has changed dramatically throughout the last century and it is important to contextualise the early research within the generally accepted research methodologies of the period (Abrahart 1998). In the 1950s, new techniques emerged and much of the psychedelic research failed to meet the new standards embodied by strict controls and the elimination of non-medical factors (Dyck 2005: 385). Although there was a massive amount of literature published, much was based on case studies that soon lost their value according to new research standards (Grob, 1994). Almost all the early studies had insufficient controls, and lacked objective measures of change, adequate follow-up and other safeguards (Grinspoon and Bakalar 1981).

As flaws in the initial studies emerged, it soon became apparent that psychedelics would not be the panacea some had initially promised. More carefully conducted studies failed to replicate the early results and, as some of the pioneering work began to be

contradicted, the original glowing proclamations were questioned. Even researchers blinded by optimism were rarely able to demonstrate the potential of psychedelics with any consistency (Sarett et al. 1966). Furthermore, some of the early studies used prisoners at Lexington Hospital and it should be apparent that complete objectivity cannot be expected from an individual in custody who might reasonably wish to please his jailers (Shulgin and Shulgin 1997: 403).

3.2.1 Inadequate follow-up

Many psychedelic studies were harshly criticised for inadequate follow-up as this was seen as one of the most important flaws in early research. It was argued that the promising results enthusiastic researchers claimed to achieve were only temporary and psychedelic therapy did not have continuing benefits. Although the initial results of psychedelic research were impressive and showed helpful insights, this did not ensure the patients' improvement would last.

It was claimed that the drugs produce a transitory period of well-being but that this would be followed by a gradual return to old ways. For very ill patients such as alcoholics who have been drinking uncontrollably for years, there is a difficult and laborious relearning process to go through before they can be said to be truly well again. Psychedelics may create a greater desire to change, but the course to recovery is still long and hard (Cohen 1964: 191). Powerful psychedelic experiences, like other forms of therapy, cannot always prevent backsliding when the same frustrations, limitations and emotional distress have to be faced in everyday life (Grinspoon and Bakalar 1981)

For example, Charles Savage was the first to try to use psychedelics to treat depression. In a study he published in 1952 he used low doses of LSD on fifteen patients. Of those who were treated for the full month of the study, three patients recovered, four improved and four showed no improvement. Despite this, it was concluded that LSD therapy may not be more effective in treating depression than other forms of therapy because of the short follow-up and lack of a control group (Savage 1952: 900). Indeed, many of the more miraculous results reported may only be due to a “honeymoon” effect that follows massive abreaction. Psychiatric learning needs to be followed up: the months following the treatment are most important for assisting the patients' vital retraining (Cohen 1964: 192-193). Too often psychedelic medical studies lacked the long-term follow-up necessary to demonstrate real and lasting changes.

3.2.2 Lack of controls

Another damaging criticism of psychedelic research was that, while many of the trials promised massive benefits, they lacked any control groups for comparison. This methodology falls far short of the rigorous scientific standards expected by current medicine (Dyck 2006: 313). Uncontrolled studies provide no sure way to separate the action of the drug from that of the other arrangements that were part of the treatment (Grinspoon and Bakalar 1981).

Kurland et al. performed a study involving 135 patients. They were split into two groups with half receiving 400 µg of LSD and the other half being a "control group" who received a very low 50 µg dose of LSD. The authors claimed that after a six-month follow-up, a substantial difference was observed between the two groups. However, other researchers asserted that Kurland's data were unscientific as a placebo should have been used in the control group instead of the low LSD dose (Ludwig et al. 1970: 237).

In study conducted in Maryland, seventeen dying patients received LSD after appropriate therapeutic preparation. One-third improved "dramatically", one-third improved "moderately", and one-third were unchanged by the criteria of reduced tension, depression, pain and fear of death. However, this experiment and other similar studies were criticised because their results were misleading without controls (Pahnke 1969).

The 1950s were an awkward junction between different methodologies. Some psychedelic researchers like Osmond felt that the authority contemporary clinical science invested in controlled trials was "pretentious, inaccurate and misleading" (1962: 708). However, it was becoming clear that controlled studies produced much more convincing results and controls would soon be essential for results to have any influence in the medical world.

3.2.3 Negative results

In addition, despite many glowing reports and great enthusiasm about psychedelic therapy, it is by no means true to say that the results were overwhelmingly positive – many researchers' data showed that they had no beneficial effects. These conflicting results suggested that psychedelic therapy was not the wonder treatment its proponents claimed. Indeed, it seemed that psychedelic studies were far from conclusive.

In response to the promising reports published by people like Osmond and Hoffer who used LSD to treat alcoholism in hospitals around Saskatchewan, the Addictions Research Foundation (ARF) in Canada conducted its own trials. They thought that the other experiments had failed to isolate the effects of the drug completely and thus were unable to analyse its effects objectively (Dyck 2006: 325). In an attempt to minimise the influence of all other factors not due to LSD, the ARF blindfolded the patients and used physical restraint to restrict their movement. The trial could not replicate the high success rates of the Saskatchewan studies – there was some improvement but their conclusions suggested the results reported elsewhere had been corrupted by clinical enthusiasm (Smart et al. 1966; Smart et al. 1967).

Arnold Ludwig and some of his colleagues harshly criticised much of the research which promised a psychedelic revolution in psychiatry. They argued that the claims in support of psychedelic therapy were unscientific and were the result of overenthusiastic dogma (Ludwig et al. 1970: 19). In order to back up their counterarguments objectively, they conducted their own four-year experiment involving 176 alcoholics. Four different types of therapy were used but the results showed that LSD produced no change in the effectiveness of the treatment (Ludwig et al. 1970: 131). The authors concluded that, although LSD patients were more motivated following treatment, these advantages did not result in actual therapeutic gains after a twelve month follow-up (Ludwig et al. 1970: 145).

Ludwig also compared his results with other LSD trials that produced similar results. Smart et al. administered ten alcoholic patients 800 μg of LSD, ten ephedrine as a placebo, and provided traditional treatment for the remaining ten. At the end of a six-month follow-up, their data suggest that there were no statistically significant differences between the three groups (Ludwig et al. 1970: 234). A controlled study using LSD at 100 μg and 200 μg showed that the treatment was only beneficial for the first three-months of the follow-up – after six months there were no statistically significant differences. Similar work by Hollister et al. compared the effects of 600 μg of LSD and dextroamphetamine – they found that the benefits of LSD were not lasting. According to Lugwig, this was a common trend and he also cited a study on ninety-five alcoholics in which the patients were split into four groups. They received no assistance at all, sodium amobarbital, LSD, or LSD and therapy. After a twelve month follow-up, no statistically significant difference was observed (Ludwig et al. 1970: 235).

3.2.4 Summary

It is clear that psychedelic medicine is nothing like the wonder cure some of its early proponents made it out to be. It should also be obvious that the spectacular results reported in the literature cannot be merely taken at face value. Many studies involving psychedelics suffered from poor or non-existent controls and inadequate follow-up. Studies that claimed outstanding benefits in glowing terms may have been the result of overzealous researchers reporting what they hoped to see as their objectivity had been clouded by their enthusiasm. In the worst cases, papers extolling the benefits of psychedelic therapy might have been produced by incompetence or even unprofessionalism. Some scientists were extremely critical of the use of psychedelics in medicine and reports that therapists took LSD with their patients to allow a better rapport only strengthened the critics' opinions. This was thought to preclude any therapeutic gains or scientific analysis (Robinson 1984: 29).

By the early 1960s, an increasing number of people believed that many psychedelic drug experiments were conducted in an irresponsible manner. Only a few years earlier, professionals around the world were raving about how psychedelics would change psychotherapy forever, but psychedelic therapists were already being marginalised. Universities sacked researchers for their wilful repudiation of reasonable experimental safeguards (Sigel 1963) and the impressive results reported earlier could not be reproduced when scientific controls were employed. A large amount of the early research was flawed and the positive results and claims were extremely dubious. It was claimed that psychedelic research had been corrupted due to unjustified claims, premature publicity and the lack of proper professional controls (Grinker. 1963: 425). In many ways, bad research is worse than no research – it can initially convey an aura of reliability but it takes much tedious repetition to correct it (Cohen 1964: 224-225).

3.3 Risks

As well as poorly conducted research and flawed methodologies, there were other reasons to doubt that psychedelics deserved a place in medical science. Psychedelics were widely assumed to be "astonishingly safe" (Cohen 1960: 27) and by 1971, five million people were reported to have taken LSD and 40,000 had been administered the drug as part of their psychiatric treatment (Grinspoon and Bakalar 1983b: 22; 1983c: 132). Psychedelic drug use was widespread and, when it emerged that they were linked with chromosomal damage and permanent psychoses, widespread consternation ensued (Dyck 2005: 382).

3.3.1 Chromosomal damage

In the late 1960s, one of the greatest concerns about the safety of LSD was that it might cause chromosomal damage or genetic mutations. The first paper to suggest that this showed that even low concentrations of LSD resulted in a marked increase of chromosomal abnormalities in human white blood cells (Cohen et al. 1967a). With the vast number of people who had taken LSD, this was a great worry, especially to those who had administered the drug as part of their research. Further evidence supporting this hypothesis emerged over the following years in high profile papers from other researchers. Similar figures were reported when comparing illicit LSD users to control subjects (Irwin and Egozcue 1967). These findings were supported by an expanded study (Egozcue et al. 1968) and it was shown that LSD caused a high frequency of genetic abnormalities in mice (Skakkebaek and Beatty 1970). Cohen et al. published a more extensive paper expanding on their earlier results – exposing cells to LSD caused three times as many chromosome breaks than in control cells (1967b).

3.3.2 Carcinogen

From their disturbing results, some researchers speculated that LSD could increase the incidence of leukaemia (Cohen et al. 1967b: 1049). The hypothesis that LSD could be carcinogenic was supported by the Irwin and Egozcue (1967) study in which subjects that had taken illicit LSD had fragmented chromosomes that were associated with chronic granulocytic leukaemia. Grossbard et al. (1968) studied the peripheral leukocytes of a user of LSD and other drugs. They made similar chromosomal observations in all of the leukocytes and the individual later developed acute cancer.

3.3.3 Teratogenesis

It was also claimed that the chromosomal damage caused by LSD may result in congenital disorders. Meiotic chromosome anomalies were reported in male mice injected with a single dose of LSD. Thus, the researchers concluded that this type of damage could result in foetal wastage or reduced fertility (Cohen and Mukherjee 1968). When LSD was administered to rats early in pregnancy, there was a greater chance of stillbirth or stunting (Alexander et al. 1967). These results were supported by a study in which LSD, bromolysergic acid and mescaline were administered to pregnant hamsters. The experimental groups had an increased frequency of runts and dead foetuses (Geber 1967).

Although experimental studies on psychedelics and embryonic development cannot be performed on humans, there is information about LSD's influence on human embryos. A woman took illicit LSD four times during pregnancy including the period when the lower limbs are differentiated and the child was born with a deformed leg (Zellweger et al. 1967). A study conducted on 112 pregnancies in which at least one parent took LSD before or after conception showed that central nervous system defects were sixteen times higher than normal. Seven of the foetuses were spontaneously aborted and of these, four were abnormal. Six of the babies had congenital abnormalities and one died (Berlin and Jacobson 1972). In addition, four children born to mothers who used illicit LSD while they were pregnant showed an increased frequency of chromosome breaks. When LSD was taken earlier in pregnancy, the increased level of breaks was even greater (Cohen et al. 1967b).

3.3.4 Psychotic episodes and suicide

In addition to the physical danger, psychedelic drugs are powerful psychoactives and there is the chance of psychosis. When using substances such as LSD, there is the possibility that the patient will not be able to integrate emergent unconscious material and symptoms can get worse. Another danger attributed to LSD was that it precipitates illness in individuals predisposed to psychoses (Grinspoon and Bakalar 1981).

Most of the literature in this area consists of small case studies which suggest that there might be a link between LSD and prolonged psychosis. Abbruzi (1975) produced many papers detailing how "normal" well-balanced people experienced psychoses after having used LSD. Other studies by different researchers made the same link suggesting that LSD might be a cause (Robbins 1967; Glass and Bowers 1970).

Research into whether LSD can hasten the onset of mental illness focussed on schizophrenics who use LSD and those who did. A comparison of forty schizophrenics showed that the onset of illness was four years earlier in individuals who had used LSD (Breakey et al 1974). Another study concluded that psychiatric inpatients with a history of LSD use had more disordered characters and were generally younger than patients who had not used LSD (Hensala et al. 1967). A large survey also reported that one in every 830 LSD patients attempted suicide and, of these, one in every 2500 were successful (Cohen 1960).

3.3.5 Flashbacks

A negative side-effect of psychedelic use is flashbacks – this is the spontaneous reoccurrence of the drug's effects. These transient phenomena are usually visual and are encountered by individuals who have used psychedelics but have since returned to their normal perceptual state. The experience can embrace all the senses and be perceptual, somatic or emotional in nature (Abrahart 1998).

Stanton and Bardoni (1972) report that about 23% of the normal population of LSD users experience flashbacks. Another study found that 32% of drug-users interviewed claimed to have flashbacks (Horowitz 1969). Abraham (1983) distributed a questionnaire that showed 54% of the respondents who had a history of LSD use had experienced subjective symptoms that they labelled "flashbacks". Another study of LSD users in a psychiatric hospital reported that as many as 77% experienced flashbacks (Holsten 1976). Furthermore, it has been claimed that the figures could be higher as only LSD users who are anxious about their flashbacks would make themselves known by seeking medical attention (Shick and Smith 1970).

3.4 Medical promise

Despite the vastly differing standards and fundamental flaws in much of the promising psychedelic research, it was argued that some positive results cannot be ignored. Most studies were blighted by conscious and unconscious biases but, in retrospect, it seems that enough was shown to merit further investigation (Grob 1998: 15). After all, psychedelics played a role in dragging psychiatry into the modern world (Dyck 2005: 382) and the possibility that they could alleviate mental suffering remained an alluring hope (Grob 1998: 15). A substantial majority of therapists believed that LSD therapy was worth the risks (Malleson 1971).

Strikingly, all alcoholism experiments using psychedelics, controlled or not, helped 50% of patients. This figure is far greater than that claimed by any other treatment (Hoffer 1970: 361). When psychedelics offer the chance to help other untreatable conditions, there appears to be an argument for their use. In addition, psychedelic experiences are said to help doctors sympathise with the unfamiliar world of the mentally ill (Wilson 1964: xi). Psychedelics have also shown potential for treating neurosis or anxiety (Sherwood 1962; Mogar and Savage 1964) and in enhancing group therapy and creativity (Abramson 1956: 199; Harman et al. 1966).

A recent critical review of LSD in medicine concluded that follow-up research is highly recommended (Abrahart 1998) and a great deal of evidence pointed that psychedelics could be important investigational tools in neurological research and in psychiatry (Cerletti 1965). Savage and Stolaroff (1965) wrote that the risks could be minimised and claimed that "there is substantial evidence that many avenues may be opened up by research with the psychedelics, both in developing new treatment methods and improving the understanding of the human mind".

3.5 THE POSITION OF PSYCHEDELICS

3.5.1 POLITICAL CLIMATE

The 1960s were characterised by profound cultural shifts strongly associated with illicit use of psychedelics and the social and political environment undoubtedly had a massive influence on the future of psychedelic research. Various counterculture movements claimed to draw inspiration from psychedelic drugs and were broadly seen as promoting anti-government views or questioning accepted values and precepts of mainstream society. This psychedelic culture coincided with mass protest movements and opposition to middle class establishment values by the younger generations (Abrahart 1998). The media attention surrounding LSD's association with social disobedience and anti-authoritarian attitudes served further to erode support for its clinical use (Dyck 2006). Psychedelics were no longer wonder drugs – they were increasingly presented as drugs of abuse (Grof 1984).

Politicians began depicting psychedelics as a threat to society (The Royal Society for the encouragement of Arts, Manufactures & Commerce. 2007; Horton 2006: 1214) and, in his 1968 State of the Union address, President Lyndon Johnson warned that psychedelics "threaten our nation's health, vitality and self-respect" (Doblin 2001: 46). A 1971 editorial in *The Journal of the American Medical Association* warned that repeated ingestion of psychedelics causes "personality deterioration" (Horgan 2005). A prominent researcher said that it seemed society deemed psychedelics a threat to its continued existence (Snelders 1998). Although possible risks were becoming apparent, Nichols (2004) argues that broadly speaking, psychedelics were feared due to a complex sociological and political agenda rather than scientifically established dangers.

3.5.2 POPULAR IMPRESSION

At the same time as the moral tide turned against psychedelics, the popular media frequently began to carry reports of the dangers of psychedelics. These were often

exaggerated and backed by dubious evidence or misunderstandings (Stevens 1987) and it was claimed that "sensationalist" stories caused widespread misconceptions (Cerletti 1965).

Although the risks associated with drugs like LSD received extensive coverage, a Home Office document published in 1970 claimed that the presentation was one-sided because only the reports claiming that psychedelics are dangerous received publicity. A story about a man arrested for a violent matricide who claimed to be on LSD was highly publicised but when it emerged that he was actually a schizophrenic who had consumed large quantities of alcohol and barbiturates, these facts were hardly reported (*New York Times*, 10 October 1967; *New York Times*, 18 October 1967; Stafford 1992: 62; Grinspoon and Bakalar 1979: 173).

3.6 Legal control of psychedelics

In light of the associated dangers and the ubiquitous news stories about related accidents, the legal status of psychedelic drugs was soon a highly debated topic. Proponents claimed that a "hyperconservative medical establishment" (Caldwell 1967) had exaggerated the dangers and feared an upheaval of psychotherapy itself (Novak 1998) while others warned of miscarriages, madness and the disintegration of society. Despite repeated protests from professionals, psychedelics were soon criminalised by governments across the world (Kennedy 1966: 63; Szara 1994: 1517; Pollard 1966: 844).

3.6.1 The early history of psychedelic legislation

When psychedelic research began in earnest it was easy for professionals to conduct psychedelic research in humans (Doblin 2001: 24). In fact, an expert review published by the World Health Organisation (WHO) had concluded that psychedelic research ought to be carried out (Monteiro 1996).

However, by the early 1960s, there was support for increasing regulation of drugs and, in America, the Food and Drug Administration (FDA) was granted new powers and authority. The direct distribution of psychedelics to physicians was no longer allowed (Doblin 2001: 33-35). The passage of the Drug Abuse Control Amendments (1965) in the United States further restricted the medical use of psychedelic drugs. Licences were required to manufacture chemicals needed for research and the FDA required that most LSD psychedelic researchers ceased their work (Grinspoon and Bakalar 1979: 309). Many projects could no longer acquire psychedelics such as LSD and dozens had to shut down.

At the height of popular anti-psychedelic sentiments, laws increasing the penalties for LSD possession were even passed before the hearings had been conducted (Brecher 1972). By 1967, The National Institute of Mental Health (NIDA) had ended all its psychedelic research (Lee and Schlain 1985: 93).

LSD research was still allowed in the United Kingdom, but a modification to the Drugs (Prevention of Misuse) Act made the unlawful possession of LSD an offence in 1966 (Police Foundation 1997: Appendix 5). Despite the increasing regulation of psychedelics, illicit LSD use continued to rise in the United States and, in October 1968, LSD was made illegal (LSD and other Depressant and Stimulant Drugs, Possession Restriction. 1968). The United Nations Economic and Social Council (1968) passed a resolution claiming that psychedelics presented "an increasingly serious problem that could have very dangerous consequences" and recommending further limitations on their use. In 1965, the FDA revoked all research permits for psychedelics and research was stopped.

In the United States, the Controlled Substances Act of 1970 was passed over the objections of dozens of high-level psychiatric researchers. This put psychedelics in the most restrictive Schedule along with heroin and above cocaine (Strassman 1991: 99). This category is almost entirely made up of psychedelic drugs and means that they are considered to have "high abuse potential", "no currently accepted medical use" and that there is a "lack of accepted safety for users under medical supervision" (§202 (b) (1) (A); §202 (b) (1) (B); §202 (b) (1) (C)). The Act also meant that researchers were required to be approved by the Bureau of Narcotic and Dangerous Drugs which was a predecessor of the Drug Enforcement Administration (DEA). The United Kingdom also vastly expanded its drug controls with the Misuse of Drugs Act. Psychedelics such as LSD, mescaline and psilocybin were considered to be among the most dangerous substances and were made Class A drugs.

In August 1976, the United Nations Convention on Psychotropic Substances came into force. This was a complex regulatory framework that covered almost all known psychoactive drugs. LSD and other psychedelics were placed in the most restrictive Schedule as they were claimed to be dangerous and to have no therapeutic value. In order to comply this with treaty, the Psychotropic Substances Act (1978) was passed in America in 1978 in which psychedelics were specifically mentioned as being likely to have high abuse potential.

3.7 Effect on psychedelic research

Although several journal articles had been published bemoaning the way negative media coverage made psychedelic research more difficult (Dahlberg et al. 1968; Cohen 1968), the introduction of legislation throughout the 20th Century also had a particularly severe effect on psychedelic research (Snelders and Kaplan 2002: 222). While most of the new regulations specifically allowed controlled substances to be used in medical research, it proved increasingly difficult to gain permission to conduct human research with psychedelics due to legal issues and the availability of funding.

In America, the Drug Abuse Control Amendments of 1965 stopped the vast majority of psychedelic research and, by 1975, only three active projects were still authorised to use LSD in human studies. In the United States, the last study on LSD in humans was published in 1973 (Savage and McCabe) and the last paper involving giving administering psilocybin to humans was published in 1977 (Parashos).

Although psychedelic research was not completely banned, it was virtually impossible for researchers to gain permission to work with psychedelics on humans and, due to the controversy of non-medical use, there was no funding for studies. The political and academic climate meant that pursuing psychedelic research was often detrimental to one's career regardless of the results, and few researchers were willing to have their departments involved in such a controversial area of science (Kurtzweil 1995).

Furthermore, even when psychedelic research was approved, it was often prevented from going ahead immediately due to difficulties obtaining the drugs. Legislation meant that the price of psychedelics for research increased by 700,000% in some cases (Shulgin and Shulgin 1997: 441). In addition, Albert Hofmann has attested that the combination of legislation and the negative publicity surrounding psychedelics meant that his company prevented him from continuing research on psychedelic plants (Grof 1984).

3.8 Conclusion

Psychedelics followed a typical pattern of new types of therapy – spectacular success to start with and a conviction that they will be useful in treating a wide variety of psychiatric problems. This was followed by emerging shortcomings and concerns about insufficient follow-up, absence of controls and inadequate methods of measuring change. This section adequately shows that psychedelics have the potential to be highly dangerous and great care must be taken with regard to their administration to humans.

Because of the growing evidence that the benefits were more limited than first assumed and stories highlighting the risks of psychedelic research, popular opinion turned against psychedelic drugs. However, even though there was still scope for further investigation, extramural abuse and sensational media coverage served fuel scepticism toward the claims of psychedelic therapists. Twenty years after its introduction, LSD was banned by law. A combination of draconian research restrictions and a social atmosphere hostile to psychedelics meant that all research was effectively ceased (Grinspoon and Bakalar 1981). By the end of the 1960s, the consensus was that the risks of psychedelic drugs outweighed the potential benefits.

4 PSYCHEDELIC REVIVAL

4.1 INTRODUCTION

Legislation, risks and the political climate all conspired to end psychedelic research at the end of the 1960s. Chemicals that were once expected to revolutionise aspects of medical science became scientific pariahs with no medical use. This section will look again at the prohibition of human research. The dangers of psychedelics drugs will be analysed again from a different perspective and the historical evolution of scientific evidence regarding the risks of psychedelic research will be discussed with a view to learning how this affected their standing and research potential. In addition, some unique aspects of the way psychedelics work will be discussed. This section will go on to examine the most recent psychedelic experimentation and a final summary of the status of psychedelics in medicine will be made. It will refer to recent judgements of the potential benefits and the extent to which conclusive medical value can be shown. Current psychedelic legislation will be discussed and possibilities for future psychedelic research will briefly be explored.

4.2 REANALYSIS OF RISKS

By the 1970s, many of the concerning reports regarding psychedelics were shown to be false or misleading and scientific evidence began to emerge supporting the notion that psychedelics could be used safely (Hofmann 1980b: 34; Cohen 1965: 221). Retrospective studies are risky ways of framing hypotheses (Weil 1972: 44) and, in most cases, it appears that the risks can just as easily be attributed to a number of influences unrelated to the administration of psychedelic drugs:

The studies implying that psychedelics are dangerous were fraught with methodological shortcomings and, overall, the evidence is far from conclusive. Despite this, the psychedelic movement seemed to be on the wane (Bugliosi and Gentry 1994). Problems with determining causation also apply as any direct link to the action of psychedelic drugs is tenuous at best as there are no convincing data. While it must be understood that any drug or therapy is not without danger, in the end psychedelics were shown to be no more risky than other forms of treatment (Cohen 1964: 221; Meijering 1962).

4.2.1 CHROMOSOME DAMAGE

Examining nearly a hundred papers, Dishotsky et al. (1971) found that LSD was does not cause chromosome damage in human beings at normal doses. Only one study showed that it caused no more chromosome breaks in Laboratory-cultured cells than aspirin

(Grinspoon and Bakalar 1983d: 129). In fact, there was a great deal of conflicting information regarding psychedelics and chromosomal damage. Many well-designed studies did not show that LSD can cause damage at all. A synoptic review claimed that only six patients examined before and after exposure to LSD showed an increase in chromosomal breakages. In half of these cases, the breakage rate in could simply be attributed to the fact that LSD was administered intravenously and another individual had suffered from a viral infection. Furthermore, in all but one case, the incidence of chromosomal breakages returned to the initial level after treatment (Dishotsky et al. 1971)

Additional reports failed to show an increase in chromosomal damage following the medical administration of LSD (Sparkes et al. 1968; Bender and Siva Sankar; Tjio et al. 1969). Several animal studies also concluded that LSD does not cause breakages. In a controlled study on mice and Rhesus monkeys the results were negative in both animals (Egozcue and Irwin 1969).

A major criticism of the research that suggested LSD might cause damage was that the doses used were unrealistically high. The concentrations of LSD and durations of exposure used in these studies were usually far in excess of typical human doses. In fact, most studies used dosages of LSD 100 to 1000 times greater than those common in clinical work with LSD (Abrahart 1998). Of the *in vitro* studies that demonstrated increased chromosomal breakages following the administration LSD all but one involved concentrations of LSD far greater than common human doses. In addition, there was no direction implication that LSD was the cause as similar findings have been reported with common substances such as artificial sweeteners, caffeine and antibiotics (Grof 1980).

It has also pointed out that the ability of subjects to recall the frequency and type of previous drug exposures is often dubious. Investigators cannot expect the recall of illicit drug users to have the necessary reliability for constructing dependable scientific conclusions. In all of the cases studying illicit LSD use, the subjects used a massive variety of psychoactive substances and street drugs in addition to LSD. Many papers were published citing LSD as a cause for various side-effects when, in actuality, the individuals being studied were polydrug users who took many chemicals of unknown composition and purity (Abrahart 1998). Dishotsky et al. (1971) attributed the increased chromosome breakage found by a few studies to the general effects of drugs abuse, and not LSD use in particular.

To briefly summarise, the laboratory reports regarding chromosomal damage have serious methodological shortcomings and are more or less inadequate. A number of investigations did not demonstrate increased chromosome breakage in LSD users and overall the evidence is inconclusive at best (Abrahart 1998).

4.2.2 Carcinogen

There are no clinical or experimental data demonstrating that LSD has carcinogenic properties and no increase in the incidence of tumours among LSD users has ever been detected. In fact, LSD users with leukaemia are very rare and in the three existing case reports of such individuals, no causal relationship has been demonstrated. It seems that any association is merely coincidental (Grof 1980).

The only two studies that showed that LSD affects chromosomal breakages found that the changes were only temporary. Also, the damaged chromosomes that some researchers believed suggested carcinogenic activity were only found in peripheral blood cells which is not relevant to the question of chronic granulocytic leukaemia (Nowell and Hungerford 1961). Studies performed on the banana fly, *Drosophila melanogaster*, showed that even with doses 2,000 times greater than typical human doses, LSD did not cause chromosomal breaks to be observed in premeiotic, meiotic or postmeiotic sperm (Grace, Carlson and Goodman 1968). According to Grof (1980), there is no convincing experimental or clinical evidence to show that the commonly used dosages of pure LSD produce genetic mutations, congenital malformations or malignant growths.

4.2.3 Teratogenesis

Despite many baseless hypotheses, there was no convincing evidence of a raised rate of birth defects in children of LSD users in the 1960s (Dishotsky et al. 1971) and later studies have allayed persisting doubts. Speculation about foetal deformities was premature and unsubstantiated – the experimental data fail to provide a link between psychedelic drugs use during pregnancy and birth defects (Grinspoon and Bakalar 1983d: 129). The reasoning that relates chromosomal abnormalities to genetic hazards has serious gaps and relies on fallacious logic. It is far from clear whether or not the structural changes in the chromosomes of the white blood cells have any functional significance and there are many substances that cause chromosomal breaks but have no adverse effects on genetic mutation or foetal development (Abrahart 1998).

Many studies completely failed to show any foetal mortality or reduction of the mean weight of the babies. Roux et al (1970) administered LSD in massive daily doses to mice, rats and hamsters and showed no significant increase in the incidence of external malformations. Other studies on Wistar rats showed no teratogenic effects from LSD (Warkany and Takacz 1968).

A study of the children of 4,815 LSD patients in Europe found that only two showed minor congenital anomalies and claimed that these pathologies were common and could not be attributed to LSD (Grof 1980). Aase, Laestadius and Smith (1970) also observed a group of ten pregnant women who delivered ten healthy children. The babies were exposed to LSD *in utero* and there was no evidence of teratogenic effects or chromosomal damage in any of them.

The original reports of teratogenic effects in hamsters, rats and mice have not been confirmed by later studies and it is unclear whether the results of such investigations can be extrapolated to the situation in humans anyway. In any case, rodents are much more sensitive than humans to the teratogenic potential of any given substance. Overall, there is no sound scientific evidence for a causal relation between the ingestion of pure LSD and teratogenesis in humans (Grof 1980).

4.2.4 Psychotic episodes

One of the mostly consistently cited dangers of psychedelic therapy is the possibility that severe psychotic episodes can be induced. However, any other form of deep-probing psychotherapy carries the same risks as with and all available surveys suggest that therapeutic use of psychedelic drugs is not particularly dangerous (Grinspoon and Bakalar 1981: 137).

The literature contains numerous contradictory case studies and hence it is difficult to establish causation with the necessary experimental rigour. It has been suggested that psychoses attributed to the drugs may have occurred anyway and psychedelics only have a coincidental role (Warner et al. 1994). This idea is also supported by those who argue that the use of LSD may simply accompany pre-existing problems (Stone 1973; Henderson and Glass 1994).

In addition, many large studies using LSD and other psychedelics did not produce any prolonged psychoses at all (McGlothlin et al. 1967). Roy (1981) tried to show that the

onset of schizophrenia in those predisposed to the disorder is earlier in LSD users but found no difference between two groups of schizophrenics. Cohen (1960) conducted a survey of 25,000 psychedelic sessions and showed that 0.18% of patients experienced a prolonged psychosis. This has been confirmed by other researchers (Malleson 1971; Denson 1969: 55). These figures are not significantly higher than the incidence of psychosis in the general population (Warner et al. 1994) and there is little firm evidence to relate LSD and prolonged psychoses.

Poole and Brabbins (1996) argue that the literature as a whole is marked by methodological flaws and an unsupported inference of a causal relationship. Despite the contradictory evidence and severe shortcomings of the studies that claim LSD and other psychedelics can cause psychoses, it is interesting to see how this notion has gained widespread acceptance not only among the general public but in professional circles too. Curiously, some modern literature reviews cite this as an adverse affect of LSD without mentioning the lack of replication and contradictory studies (Boutros and Bowers 1996).

While case studies now report that LSD and other psychedelics can cause psychoses, this has not been confirmed quantitatively. There is substantial evidence suggesting psychedelics make no difference to the onset of schizophrenia and no prospective studies reported any prolonged psychotic reactions. All of the research suggesting psychoses are related to psychedelic use is not convincing enough to rule out coincidences and the research is dubious due to it flawed controls, statistics and methodology (Abrahart 1998).

4.2.5 Suicide

The most serious danger of psychedelic therapy is suicide (Savage 1959; Geert-Jorgensen 1964). However, many researchers have claimed that psychedelic drugs are more likely to prevent suicide than to cause it – the suicide rate in LSD patients is lower than in psychiatric patients as a whole (Grinspoon and Bakalar 1983c: 136-137). Indeed, a questionnaire given to 2,532 professionals received 617 replies and found only one suicide in individuals treated with psychedelics while twenty-five respondents believed that psychedelics had helped them prevent suicides (Clark and Funkhouser 1970). The suicide rate fell during the psychedelic boom (Leary 1983: 37) and even when LSD users did attempt suicide, there was no direct relationship. Cohen's survey (1964: 213) showed that the dangers of psychedelics can be minimized and their use as research tools should be continued. Another survey covered nearly all patients who had been administered LSD in Britain until 1969 and found that there were only two suicides, both

of which were unrelated to the drug. The author concluded that with adequate psychiatric supervision and appropriate conditions the incidence of adverse reactions is low (Malleson 1971).

4.2.6 Flashbacks

Harmful flashbacks resulting from LSD use are taken to be an established fact in the medical literature since they were first reported. They are now recognised as a DSM-IV-TR diagnosis (American Psychiatric Association 2000). However, there is still major doubt that flashbacks are due to psychedelics as the link between the phenomena and the chemicals is tenuous at best. Since flashbacks were first reported, they have not always been described in negative terms. Eisner and Cohen's inpatients (1958) thought they were relaxing and beneficial, while Abrahart's literature review (1998) showed that fewer than 10% of LSD users report unpleasant flashbacks. Nearly all the research shows that only a minority of psychedelic users experience flashbacks and this low incidence needs to be accounted for if it is claimed that psychedelics play some causal role (Abrahart 1998). Furthermore, many studies were performed before the publication of operational diagnostic criteria and the term "flashback" was defined in so many different ways that it is essentially valueless (Halpern and Pope 2003: 109). Abraham actually points out that self-reports are notoriously unreliable (1983). Also, symptoms attributed to psychedelics and termed “flashbacks” may have been completely different phenomena especially as other medical or psychiatric conditions can cause flashbacks (Halpern and Pope 2003: 115).

The notion that LSD causes flashbacks is purely hypothetical and in the large majority of cases, there seems to be nothing more than the association of two events bearing certain similarities (McGlothlin and Arnold 1971: 46). Many of the studies suggesting LSD use might be related to flashbacks had severe methodological shortcomings and were based on anecdotal cases (Halpern 2003: 115). Others had their results confounded because there was no causal chain between psychedelics and the flashback or other drugs and impurities could have confounded the results (Horowitz 1969).

It has been suggested that flashbacks are a self-fulfilling prophecy as the negative publicity surrounding LSD causes an expectation of bad reactions (Wesson and Smith 1976). It is claimed that if an individual notices something during a psychedelic experience, any later manifestation of those sensations is interpreted as a reoccurrence of the psychedelic state. If this is perceived as being negative, this “flashback” may generate

fear and anxiety, leading to a circular process escalating the fear to panic (Abrahart 1998). This hypothesis is supported by Heaton (1975) who showed that, of two identical groups of sixteen, those instructed to expect flashbacks did so regardless of whether they had experienced them before. A conclusive review of the literature regarding flashbacks concluded that information about risk factors must be interpreted cautiously (Halpern and Pope 2003).

4.2.7 Other risks

Unlike other drugs of abuse, psychedelics have no addiction potential and it has been repeatedly shown they are not physiologically habit-forming (Watts 1964: 2; Cohen 1964: 212). It has also been claimed that LSD might be dangerous in individuals with liver damage (Robinson 1985: 19), but no physical complications have been reported from thousands of users of psychedelic drugs even in those with very poor general health and severely impaired liver functions (Cohen 1964: 209). Assertions that LSD can cause brain damage have been thoroughly debunked by controlled tests matched for age, sex, education and IQ (Wright and Hogan 1972).

Furthermore, a death directly due to LSD has not yet been reported in the literature (Cohen 1967: 35). This was confirmed by Jaffe (1985) and remains true today. Psychedelics do not cause life-threatening changes in cardiovascular, renal, or hepatic functions (Nichols 2004: 134) and do not engender drug dependence or addiction (O'Brien, 2001).

4.2.8 Impurity

Many of the risks attributed to LSD and other psychedelics were based on data taken from individuals who had taken illicit drugs of unknown purity and composition (Cohen 1964: 220-221). Even in methodologically sound experiments, the content of pure LSD in the illicit LSD samples is almost always questionable, and a chemical analysis showed that the average purity of street LSD was 80.3% - contaminants could have caused many of the adverse reactions (Abrahart 1998). Chemicals such as amphetamines, mescaline, phencyclidine and benactyzine were commonly misrepresented and, in the 1960s, less than half of the illicitly sold "acid" was actually LSD (Dyck 2007). Furthermore, the variation of street doses and uncertainty of contents and duration increased the likelihood of bad reactions. There is reason to question studies that showed taking psychedelic drugs may be dangerous because it has been shown that illicit drug users often skewed the results even though they had only alleged to have been exposed to LSD (Dishotsky et al. 1971).

4.2.9 Summary

Many of the concerning reports about the risks of psychedelic drugs have been disproven. Warnings about the dangers of psychedelics have not been shown to be supported by the literature and the general consensus is that, administered under the right conditions by trained professionals, they are reasonably safe (Advisory Committee on Drug Dependence 1970: 36). Numerous recent studies have produced no cause for concern when using psychedelics on human subjects (Leuner 1983: 183; Krupitsky and Grinenko 1997; Hasler et al. 2004). Furthermore, an FDA meeting claimed that psychedelic drugs have an acceptable risk-benefit ratio and that they are no more dangerous than other drugs routinely used in human research (Drug Abuse Advisory Committee 1992: 31). Reviews of published reports of adverse reactions and negative long-term effects due to psychedelics concluded that the evidence was controversial and, if any negative effects do exist, they are ‘‘subtle or nonsignificant” (Strassman 1984; and Halpern and Pope 1999).

4.3 Misunderstood nature

In addition, some of the criticisms of psychedelic methodology underlie a complete unfamiliarity with the way psychedelics work and the erroneous inferences of unfounded relationships between the drugs and dangers are the result of fundamental misunderstandings (Poole and Brabbins 1996). Psychedelics are not like other drugs and they cannot be evaluated in the same way as substances like aspirin as they do not bring guaranteed relief for any simply defined problem (Grinspoon and Bakalar 1983e: 254). This means that some researchers would never have been able to report positive results as they were unfamiliar with how to screen unsuitable individuals, the nature of psychedelic therapy and limitations intrinsic to the way psychedelics manifest their effects.

Some people are unsuitable for psychedelic experiences or obviously would not benefit from psychedelic-assisted therapy. The patient should be carefully screened and extensively prepared for the experience and qualified professionals must be on hand. Many negative consequences of psychedelic use are due to illicit misuse where this preparation has been absent (Roberts 1983: 249). Furthermore, a good screening process will eliminate the possibility of psychopathologies being confused with the consequences of LSD use (Abrahart 1998).

Cohen (1964: 84) describes how researchers who found that all their subjects had gratifying and enjoyable experiences were bemused when colleagues who used exactly

the same dose of the same chemical found that it was impossible to induce a transcendent experience and that some individuals suffered from uncomfortable, borderline-psychotic episodes. It is now well established that psychedelics depend greatly on "set and setting". This refers to the way the experience is overwhelmingly coloured by the individual's mindset during the effects of the drug as well as the surroundings and atmosphere (Hoffer 1970: 360).

In some studies, researchers found that psychedelics were no more effective than other psychoactives (Smart et al. 1966), yet others involving similar groups of subjects and using the same dose of the same drug reported revolutionary benefits. The difference in results was due to the divergent expectations and intent of the investigators. If psychedelics are administered to anxious or depressed subjects in unfamiliar laboratory conditions while impersonal assistants wander around in lab coats, the strong effects may cause them to believe that they are temporarily mad. Conversely, if the situation is more relaxed and researchers are sympathetic and understanding, the subjects will have an enjoyable and constructive session (Cohen 1964: 85).

The importance of set and setting was also missed by some researchers who criticised early positive LSD studies for lacking controls. In investigators' zeal to eliminate outside influences, patients were sometimes physically restrained or put in frightening environments and not reassured if they became anxious (Dyck 2006: 325). Clearly this was not compatible with the comfortable and positive set and setting required for meaningful and useful outcomes. Many studies were criticised for the way their controls facilitated bad reactions in patients by reducing the comfort level and raising apprehensions about the trial. Furthermore, some psychedelic research was decried for not adhering to the new standard of double-blind methodology even though the unmistakable nature of the psychedelic experience made this impossible as the difference compared to even active placebos was readily apparent (Pahnke 1969; Doblin 2001: 190).

4.4 Recent psychedelic medical research

Despite legal restrictions that make human research nearly impossible and the assertion that they have no medical value, many prominent scientists believe that psychedelic research is worthwhile and should be continued (Claridge 1994; Snelders and Kaplan 2002: 221; Halpern 2003). Some researchers claim that psychedelics are fundamentally valuable and have been overlooked as potential medicines (Horgan 2005). A recent editorial in the British Journal of Psychiatry said that

psychedelics are important tools for further academic study and they can help determine a neurobiological link between mental and physical states (Sessa 2005: 458). In America, NIDA convened a Technical Review of psychedelic drugs and determined that psychedelic research in humans should be permitted. Scientists claimed that human research had great medical promise and heuristic value (Doblin 2001: 78-81).

Most of the safety concerns that had contributed to the end of psychedelic research in man had been shown to be unfounded of fallacious and, despite the methodological flaws, some of the early results still showed great potential. Psychedelics may also be important in understanding the neurochemistry of the brain (Randerson 2006) and it appears entirely possible that utility may still emerge for their use in treating alcoholism, substance abuse, and certain psychiatric disorders (Nichols 2004). It has been argued that it would be reasonable to investigate further the role psychedelics could have in treating the widespread problem of addiction since harmful drugs such a methadone have long been accepted (Halpern 1996).

In addition, more recent research has suggested that psychedelics may be useful in a wide range of treatments and further investigation seems to be warranted. Renowned scientists have bemoaned the social taboos that prevent them providing the best care for patients (Randerson 2006). These taboos mean that conducting psychedelic research is fraught with difficulties. Despite this, researchers believe that the potential benefits are so great they are wiling to jump through the bureaucratic hoops and stake their careers on clinical trials (Philipkoski 2004: 1). People would not continue under difficult conditions unless they believed they were accomplishing something worthwhile (Grinspoon and Bakalar 1981: 283).

4.4.1 Post-prohibition research

Dr Bastiaans treated about 300 patients with psychedelics including many concentration camp survivors suffering from alexithymia (Snelders and Kaplan 2002: 230). In one of his earlier studies, he reported a success rate of 67% (Bastiaans 1983: 144). He claimed to help most of his patients and a small follow-up study showed that all his contactable LSD patients were still satisfied with his treatment (Maalste 1998: 3).

Research has been conducted using newer psychedelics such as dipropyltryptamine (DPT). Therapists using DPT have the advantage of a shorter duration than LSD as well as the fact that it has not been the object of sensationalistic publicity (Soskin 1975). DPT-

assisted therapy was shown to be superior to placebo therapy on both therapist and patient ratings and it increased the depth of self-exploration, and helped towards a better psychodynamic resolution (Soskin et al. 1973).

Professor Shulgin is a highly respected chemist and psychopharmacologist who strongly believes that only human testing illustrates how psychedelics affect sensory perception. Many of his human experiments have corrected data from animal models (Doblin 2001: 80). Through his professional work Shulgin was granted a scheduled drug license and was able to create and test new psychedelics drugs. He was the first to synthesise many newer psychedelics which have been shown to be useful as adjuncts to therapy (Shulgin and Shulgin 1997: 238-245).

Shulgin's inventions have also shown considerable promise in enhancing human functioning in a number of important areas. In a preliminary study, no contraindications were observed and it was concluded that additional investigations ought to be conducted (Stolaroff and Wells 1993). Shulgin reports that discoveries are being made continuously with novel psychedelic compounds (personal communication).

4.4.2 Psychedelic renaissance

Limited psychedelic research in humans has been permitted in recent years and there appears to be greater potential than ever for meaningful results. Organisations such as the Multidisciplinary Association for Psychedelic Studies are sourcing funding and are working around legislation to continue psychedelic research.

A follow-up of Bastiaans's work using LSD with alcoholics found that his treatment was effective and recommended a more expansive study (Ossebaard and Maalste 1999). It has also been shown that the ancient psychedelic brew, ayahuasca, can be taken, on a regular schedule, for months or even years without producing any adverse effect. Grob et al. (1996) produced a study that suggested that that ayahuasca users were less likely to engage in crime and were, on average, physiologically and psychologically healthier than members of a control group.

LSD and psilocybin have been linked with relief of cluster headaches which are said to be more painful than giving birth without anaesthetics (Horgan 2005). There are about 6,000 chronic sufferers in Britain alone and painful attacks can occur daily. Conventional treatments are largely ineffective and have severe side effects (Honigsbaum 2005).

Natural substances similar to LSD are commonly prescribed for migraines and psychedelics appear to be an effective treatment. 52% of sufferers self-medicating with psilocybin reported cluster period termination and 95% claimed that the remission period was extended. With LSD, 88% reported cluster period termination and 80% had an extended remission period (Sewell et al. 2006).

Psilocybin has also been safely used in subjects with obsessive-compulsive disorder (OCD) and was associated with acute reductions in core OCD symptoms in several subjects (Moreno et al. 2006). There are an estimated six million OCD sufferers in the US and effective treatment is limited. A quarter do not respond to conventional therapies at all and, even when medication is effective, a 30%-50% reduction in symptoms is the best that can be achieved (Frood 2006). Dr Moreno claims that if any drug could help people with OCD we should explore it (Brown 2006).

In a double blind study on subjects that had failed to respond to standard antidepressants, psychedelics have been shown to produce quick improvements (Berman et al. 2006). These results were repeated in a study that show 71% of patients felt better the day after treatment. In addition 35% still felt better a week later and none improved when dosed with a placebo (Zarate et al. 2006).

Other recent studies have shown that psychedelics can increase the sense of personal well being or life satisfaction in 79% of volunteers (Griffiths et al. 2006) and they have shown further potential in treating addictions (Mash et al. 1998; 2000; Mabit 2002; Krupitsky et al. 2007). The research data currently available seem to indicate that responsible use of psychedelics by experienced professionals should continue (Grof 1980; Horton 2006: 1214.). Furthermore, given many drugs of abuse are used routinely in medicine, it seems that we have an ethical responsibility to pursue psychedelic research if there is a chance they might have a unique therapeutic value for certain conditions we cannot currently treat effectively (Lewis 2004).

4.5 OBSTACLES TO RESEARCH

4.5.1 PARADIGMS AND THE LEGACY OF POLITICS

Modern science prides itself on being receptive to new ideas backed by sufficient evidence. However, Thomas Kuhn (1962) has shown that established scientific paradigms affect not only the interpretation of results but also the integration of data with current theories. Some advocates of psychedelics proposed provocative models of mind

which challenged existing conceptions of consciousness (Read 2005). This caused mainstream suspicion of positive claims for psychedelics and the very concept of altered states of consciousness was met with objections from a generation of psychiatrists who were profoundly biochemically orientated and had been conditioned to consider such work as "mysticism" (Grob 2004). To an extent, this conflict with existing medical paradigms only served to increase the lasting social and political pressures against psychedelics (Sessa 2005: 458).

Even though in the late 20th Century psychedelics were no longer widely abused or considered dangerous, public opinion and the mindsets of medical professionals had been greatly influenced. Two factors that were particularly significant in the history of psychedelics are the role of the media in creating the lay and professional mindsets regarding the drugs, and the influence of international drug policy-making on national policy opportunities (Snelders and Kaplan 2002: 238).

Many studies still come under enormous political pressure and have been shut down because of this – in one case, a group of LSD researchers had their projects ended because of a death from a psychedelic compound. It is a testament to the political sensitivity of psychedelic research that the death was due to a completely different compound that had been illegally and irresponsible administered (Doblin 2001: 95). Furthermore, researchers find that, although psychedelics have acceptable risk factors, obtaining ethical approval for research is impossible (personal communication, Amanda Feilding; personal communication, Celia Morgan).

4.5.2 Obtaining controlled drugs

Dr Rick Strassman encountered a litany of issues when navigating the labyrinthine regulations governing psychedelic research on humans. He first submitted his research proposal in 1988, but it took dozens of phone calls and letters and was not until November 1990 before the FDA concluded that the project could be conducted safely. For the drug to be approved by the FDA, it had to meet twenty-two requirements and to obtain this from NIDA would cost $50,000 which was far beyond any available funding. Alternative chemical suppliers claimed that the FDA made unreasonable requests At one stage the DEA only allowed Strassman to obtain the chemical once the FDA had approved the protocol, but the FDA could not grant permission until the drug had was in his possession and tested for safety. Eventually, the study was fully approved and a source was found that could provide the chemical for a much lower price but it took a further

year for the official institutions to cooperate and give permission to proceed with the work (Strassman: 89-118).

4.5.3 Funding

Even when permission to conduct human research is granted, many projects involving psychedelics were put on hold indefinitely due to lack of funding (Doblin 2001: 103). The Alcohol, Drug Abuse and Mental Health Administration refused all funding of LSD studies on humans on the basis that the research was not safe or effective even though this view had been conclusively debunked (Asher 1975). Most research is funded by government grants and, since there is great competition for the money, it is important to word applications for fund carefully so they will be looked at favourably by the grant reviewers. In is unsurprising that since governments are heavily invested in the notion that psychedelics are harmful research that may contradict this is unlikely to benefit from grants (Shulgin and Shulgin 1997: 380). Furthermore, there is a possible conflict of interests when law enforcement is granted permission to make laws controlling drugs and medical research (Shulgin and Shulgin 1997: 352). Similarly, pharmaceutical companies may be disinclined to invest in research on new psychedelic drugs not only because of political disapproval and scientific doubts but because it could be economically unsound to produce a drug that may be effective with only a few doses instead of medicines that need to be prescribed indefinitely.

4.6 Law

4.6.1 More legislation

In 1985, the WHO recommended that several new psychedelics be put in Schedule I of the International Convention on Psychotropic Substances (World Health Organization Expert Committee on Drug Dependence 1985). The following year, the Controlled Substances Analogue Enforcement Act provided the DEA with powers that allowed it to criminalise new substances that were chemically "substantially similar" and had an effect that was "similar to or greater than" existing controlled substances (U S Code 2002: §802 (32); §813). This has been criticised for being purposely vague as the wording means that thousands of harmless compounds could be covered as Schedule I drugs. The law avoided publicity as it was passed during elections and it has been accused of presenting a "shameful barrier" to scientific research (Shulgin and Shulgin 1997: 349-352).

In Britain, a 2001 amendment to the Misuse of Drugs Act outlawed hundreds of psychedelic substances with imprecise catch-all clauses and made them Class A

substances (Misuse of Drugs Regulations 2001). It also covers hundreds of chemicals with no pharmacological effects in humans and no abuse potential. It appears that the DEA is likely to follow suit by controlling at least 125 psychedelic substances in the United States (Department of Justice. 2006a; Department of Justice. 2006b).

4.6.2 Pressure for change

There is growing evidence that psychedelics do no satisfy the criteria for the strictest controls and that, by preventing legitimate research, the law is unfit for its purpose (House of Commons Science and Technology Committee 2006: 3). In the UK, drug laws have been criticised for being inflexible and addressing problems that no longer exist (The Royal Society for the encouragement of Arts, Manufactures & Commerce 2007: 14) while the Home Secretary acknowledged that law is based in large part on historical and cultural precedents. (HM Government. 2006: 24). Various independent reports have repeated calls for a complete review of the system for classifying and controlling drugs (Advisory Committee on the Misuse of Drugs. 2006: 18; Police Foundation 1997).

Many people have pointed out that psychedelics do not seem to meet the three criteria for being put in the strictest schedule and in the UK, the Chairman of the Advisory Council on the Misuse of Drugs claimed that he had “no idea” why psilocybin should be in Class A (House of Commons Science and Technology Committee 2006: 26). Certainly, there is little evidence that psychedelics deserve to be in the category of the most harmful substances. Psychedelic drug abuse is no longer as extensive as it was and research is being undertaken to establish how they can be used in medicine. Most clearly, there are methods for minimising risks so that they are within acceptable levels and it is generally agreed that psychedelics are not addictive and the potential for harm is strictly limited (The Royal Society for the encouragement of Arts, Manufactures & Commerce 2007: 287). Despite frequent calls for a reassessment of drug laws and regulation of research, it is a curious but significant fact that no government in the past hundred years has dared to commission a wide-ranging inquiry into drugs and drug policy (The Royal Society for the encouragement of Arts, Manufactures & Commerce 2007: 327) or reassess the position of psychedelics within the law. As a result, regardless of renewed interest, modern methodologically sound psychedelic research is strictly limited by law and approval processes.

4.7 Conclusion

This section looks at further changes in approach and opinion in the history of psychedelics with particular reference to risks, new research and continued legal restrictions. In light of new evidence and methodological concerns, a critical re-examination of the dangers of psychedelics results in the conclusion that some risks were overstated or lacked proof. This section has shown that some of the hazards attributed to psychedelic drugs can be better explained by impurities or incompetence. A review of the literature suggests that, when used by trained professionals in well-managed sympathetic conditions, the risks associated with psychedelics are negligible. If psychedelics are subjected to an impartial analysis, their use is shown to have a favourable risk/benefit ratio.

While the usefulness of psychedelics is by no means certain, given their potential medical benefits, it would be worth continuing research. This is shown historically by the committed professionals who devoted their careers to working around legislation in order to conduct psychedelic research. Although many scientists were put off by social aversion from their peers and restrictions surrounding investigative work, it seems that individuals managed to conduct research. However, a persisting stigma surrounding psychedelic drugs means that most research is effectively blocked by funding difficulties and other problems. Legal restrictions are time consuming to work within and make sources for pure drugs hard to locate while ethical approval is rarely given to psychedelic studies. The history of legislation relevant to psychedelics has shown that the laws have stayed fairly restrictive despite liberal social upheavals since their enactment. Even though there is growing pressure for a reassessment of drug law, legislation still puts psychedelics in the strictest categories and there is little precedent for a loosening of restrictions to make research easier.

5 Conclusion

The purpose of this study is to examine the history of psychedelic drugs in medicine. These substances have taken a complex path from the enthusiastic explosion of research in the late 1950s to a complete legal lock down and medical abandonment a few years later. Never before has any type of drug or treatment shown such promise only to end with such restrictive barriers to research.

Medical uses of psychedelics were highly regarded in scientific circles long before they gained a reputation for recreational abuse and a huge amount of research was produced describing the benefits of psychedelic drugs in glowing terms. Even if scientists were not convinced that psychedelics could be beneficial, most were unconcerned by the risks they presented. However, the lack of scientific rigor in the early research tempered the praise and it was inevitable that psychedelics could not have an overwhelmingly positive impact in all the areas that their application was attempted. Overenthusiasm and methodological shortcomings damaged the medical reputation of psychedelic drugs as did untrained individuals using powerful psychological tools irresponsibly. Although they were generally considered to be safe, soon the consensus was that almost all of the benefits prescribed to these chemicals were unfounded and premature.

Many years later, there is nothing to remind us that psychedelics were once established as legitimate treatments. Only very limited studies can be carried out and, even then, gaining permission requires great effort and substantial fundraising. As it stands, prohibition has ended mainstream psychedelic research along with the possibility of discovering any clinical use for almost forty years. Furthermore, it has ensured that, officially, psychedelics are regarded as having a high potential for abuse and no medical value.

However, in order to explore the role of psychedelic drugs in medicine fully, it is necessary to consider various other factors that are inherent to the story. The historical context has always been tightly interwoven with the influence of scientific, legal and social issues. By the mid-1960s, highly publicised risks together with political opposition and extramural abuse had made psychedelic medicine extremely unpopular. Funding for research was controlled by the state causing an increasing number of studies to present their results in a way that would have been appreciated by their benefactors. As a result,

lay and professional opinions soon turned further against psychedelics and prohibition soon caused research to cease.

Although there are very few reliable data suggesting that psychedelics may have a beneficial role in medicine, further scrutiny suggests they merit further investigation. With the benefit of a dispassionate perspective and a better understanding of how to minimise the dangers, this dissertation shows that the potential benefits outweigh the risks of continuing psychedelic research. In addition, the nature of psychedelic effects and some of the potential treatments mean that animal models are wholly inadequate for exploring their usefulness.

It appears that the barriers preventing psychedelic research are not justified by the dangers and potential for abuse. It has been shown that most of the hazards encountered when working with psychedelics were exaggerated or are avoidable. There is certainly real clinical potential as evidenced by the cornucopia of research that has been produced. Historically, well managed psychedelic therapy is at least as beneficial as regular analysis. When the benefits are potentially so great, an ethical imperative implores scientists to explore possible alternative treatments using psychedelic drugs. Even if psychedelics are finally proven to be inadequate for clinical use, the only way to achieve a conclusive judgement is through carefully controlled safety-conscious research.

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