

The University of Edinburgh
School of Philosophy, Psychology and Language Sciences

Feminism and Psychedelic Therapy

*How scientific values can help or hinder potentially fruitful avenues of
research.*



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Abstract

This dissertation is an investigation into how scientific values may influence the kinds of theories which are investigated, and in turn which theories become ‘mainstream’. I have focussed on psychedelic therapy as a family of theories, and I identified three main reasons as to why psychedelic therapy is somewhat incompatible with the current psychiatric paradigm: (1) the inability to conduct double-blind trials, (2) The inability to isolate one explanatory variable, and (3) The mystical and spiritual dimensions of the mechanisms of action of psychedelic drugs. Because double-blind randomised controlled trials, isolating one explanatory variable, and neurobiological-style explanations of mechanisms of action are seen as an integral part of good psychiatric research, this means that psychedelic therapy is inherently disadvantaged as a research avenue in the current paradigm. These three things also arguably embody scientific values proposed by Kuhn (1977), such as accuracy, simplicity, and consistency. Helen Longino (1995) argues that Kuhn’s values do not simply increase the likelihood of a theory being true, but in some instances serve to perpetuate discriminatory ideologies. She proposes her own list of values as a route to a more equitable science, and by extension, a more equitable society. Interestingly, psychedelic therapy as a theory embodies many, if not all of the values proposed by Longino. This led me to my conclusion that if the psychiatric paradigm were more feminist according to Longino’s criteria, then psychedelic therapy would be considered a “better” theory. It would therefore be easier to conduct research in this area, and psychedelic therapy would have a better chance at becoming a mainstream treatment.

The scientific method is a way of investigating the truth of scientific theories by testing hypotheses through mathematics, experimentation, and observation (“Scientific Method”, 2020). Because the scientific method is the cornerstone of our contemporary knowledge-generating enterprises, the idea that the scientific method and its outcomes could be influenced by scientists and socio-political factors is unsettling to say the least. Feminist philosophers of science such as Longino (1990; 1995) and Kourany (2003) lament that all too often, science and its methods play a role in the subjugation of marginalised groups, and that the methodology and values upon which science is based can serve to further perpetuate inequality. I wish to say that the ways in which the values of contemporary science contribute to the exacerbation of such inequalities *also* serve to limit the kinds of theories which are acceptable to us. This in turn hinders the exploration of potentially fruitful avenues of research. I argue that by promoting theories which embody feminist values, as proposed by Longino (1995), we would also create a framework in which alternative solutions are given parity. The ‘alternative solutions’ which I will focus on in this paper will be the use of psychedelic drugs to treat mental illness.

I am aware that the topic of psychedelic drugs is controversial, not least because of their illegal status. However this dissertation is not meant to be a persuasive essay on why we should conduct research into psychedelic therapy, or whether it is safe or ethical. Texts such as “The Therapeutic Potential of Psychedelic Drugs: Past, present, and future” (Carhart-Harris & Goodwin, 2017), “Psychedelics not linked to mental health problems or suicidal behavior: A population study” (Johansen & Krebs, 2015), “Taking Psychedelics Seriously” (Byock, 2018), and “How to Change Your Mind: The new science of psychedelics” (Pollan, 2018) outline the promising findings and risk levels associated with psychedelic therapy, a full discussion of which is beyond the scope of this essay. This dissertation is not an endorsement of the recreational use of psychedelic drugs, and I do not wish to argue that psychedelic therapy *should* be mainstream, rather I wish to highlight the

ways in which experimental exploration of this avenue is hindered by current paradigmatic scientific values.

Psychedelic therapy is a promising area of psychiatric research (e.g. Carhart-Harris & Goodwin, 2017; Schenberg, 2018; Tupper, Wood, Yensen, & Johnson, 2015...). Clinical trials investigating lysergic acid diethylamide (LSD), psilocybin (the active ingredient in ‘magic’ mushrooms), and dimethyltryptamine (DMT) have produced significant results which suggest them to be effective in treating many psychological disorders with relatively few associated risks (Bogenschutz et al., 2015; Carhart-Harris et al., 2016a,b; Gasser et al., 2014; Griffiths et al., 2016; Grob et al., 2011; Ross et al., 2016). Although ‘psychedelic therapy’ is not in itself a theory, it can be thought of broadly as a family of theories which centrally involve the idea that psychedelic drugs (concurrent with “set”, “setting”, and psychotherapy) can be used to treat mental illness and improve well-being. For simplicity’s sake, I will use the term ‘psychedelic therapy’ to refer to this family of theories.

Despite these promising initial findings, it seems as if our current psychiatric paradigm and its methodologies make it unduly difficult to conduct psychedelic therapy research in several ways. In this paper I will discuss how the restrictive aspects of experimental psychiatry somewhat reflect the scientific values proposed by Kuhn (1977). The crux of my argument is based on Longino’s (1995) response to Kuhn, in which she argues that his values contribute to the perpetuation of a sexist society. In turn she proposes a set of alternative feminist scientific values. My thesis is that although Longino has proposed these values as a route to a more equitable science and society, prioritising theories which embody these values would also make it easier to investigate psychedelic therapy, and therefore make it easier for it to become a mainstream treatment.

Paradigms, Values, and Theory Choice

Paradigms

Kuhn (1962) argues that all scientific activities take place within a paradigm. Kuhn's use of the term 'paradigm' varies throughout his writing (Masterman, 1970), however in this dissertation the term 'paradigm' can be thought of in the following way: a conceptual framework which facilitate 'normal' science, consisting of a set of theoretical beliefs, rules, values, instruments, measuring techniques, and metaphysics (among other things), which are characterised by an exemplar theory (Holcomb, 1989; Wray, 2011). An exemplar is a widely agreed upon solution to a concrete problem which acts as a guide in solving other related problems, e.g. Kepler's mathematical model which describes the orbit of Mars. Kepler was the first astronomer to describe planetary orbits as ellipses rather than circles (Koot, 2014). This theory is an exemplar since it provides a guide for solving related problems; it provides certain constraints which make it easier to construct these models, had the solution not been available as a guide (Wray, 2011).

A scientific paradigm not only dictates how we go about solving scientific 'puzzles' (or problems), but also which *kinds* of puzzles we should be investigating . During 'normal science', scientists do not attempt to disprove or confirm the bases of the paradigm, and data which is anomalous with the paradigm is ignored or simply explained away. A build-up of anomalous data can result in a scientific "crisis", where the most fundamental presuppositions of the paradigm are called into question. Such a crisis could motivate a paradigm shift, which is, according to Kuhn, characteristic of a scientific revolution (Kuhn, 1962). In this paper, I will discuss certain things which I take to be paradigmatic of contemporary experimental psychiatry: double-blind randomised-controlled trials (DB-RCTs), isolating a single explanatory variable, and reductive neurobiological-style explanations of mechanisms of drug action. I argue that these things are

paradigmatic since they are largely unquestioned, taken as standard, and they provide the basis for psychiatric drug-testing methodologies. Scientists in this field are jointly committed to both their use and validity to such an extent that they dictate the kind of puzzles which are amenable to being investigated by experimental psychiatry.

Values

As pointed out in the above section, values form *part* of a paradigm. Hendy (2018) notes that scientific practice is not a value-free, or politically neutral territory. Rather, scientific activities are an important site of negotiations over both values and politics. It seems that it is possible to draw a *de jure/de facto* distinction, whereby the prescribed methodology dictates how science ought to go in an ideal world where no scientist is influenced by values or context, and scientific practice is how things actually go, given the idiosyncrasies of scientists and contexts in which science takes place. Even if the methodologies of science are based on theoretically objective principles, the actual workings of science are never value-free or without political contestation.

Thomas Kuhn (1977) proposed a list of values which, he believes, in their varying combinations form the basis of good scientific theories. These criteria should guide choices between two competing theories. He points out that there is no objective combination of his values which will help us to pick the right theory every time, in fact some of the values contradict each other. Scientists must choose to prioritise certain values based on the nature of the research, their own personal ideas, biology, personality, or life experience. Longino (1995) argues that Kuhn's values guise themselves as purely epistemic values which increase the likelihood of the theory being true. She argues, however, that they also serve social or political interests. Longino believes that it is not so simple to clearly separate epistemic values from cultural and socio-political values, and endorses what she calls 'contextual empiricism'; the view that while experiment and observation is the most legitimate way of validating knowledge, the relevance of certain aspects of this method to

hypotheses is mediated by “background assumptions which operate on many levels” (Longino, 1995, p.384). It is not clear that epistemic and contextual factors are mutually exclusive, it seems reasonable to conclude that a value could be concerned with rational justification and the probability of truth, while at the same time being influenced by socio-political factors. What Longino argues is that we should be wary of any value which advertises itself as purely epistemic, since the influence of culture, politics, and society is so deeply rooted and often hard to detect.

The Role of Values in What Constitutes a “Good” Scientific Theory

In this coming section, I will introduce Kuhn’s (1977) values. I will then discuss Longino’s (1995) objection to these values, and then introduce Longino’s proposed alternative value. Longino does not have an objection to every value proposed by Kuhn, and some of them contrast each other more obviously than others, however for simplicity, I have chosen to present them in this way:

- 1) Kuhn claims that a theory should be accurate in that the consequences that one might deduce from a theory should agree with experimental data and observations. Longino argues that even this value has socio-political consequences, since it involves a judgement of which data your theory should be in agreement with. Instead, she proposes empirical adequacy. The claims of theories which are empirically adequate will agree with past, present, retrospective and predictive data.
- 2) Kuhn says a theory should be consistent, such that it does not contradict itself or other well-established theories. Longino responds that by valuing consistency we serve to perpetuate standard values and practice. She proposes that we should instead value novelty. In order for equality to emerge in a society in which discrimination is at play, it is necessary to develop theories which differ from those which have helped to create or exacerbate such inequalities e.g. in the early 19th century, race began to be conceptualised in biological terms; head size and shape was considered to be linked to intelligence and civility, and differences in head sizes

between white and black people was used as a 'scientific' basis for racial discrimination (Anderson & Perrin, 2009). The development of a (more) egalitarian society relied on theories which were not consistent with such established 'scientific' theories. Only a theory which challenged head-measuring theories would be able to elicit social change, and dictating that 'good' theories are the ones which are consistent with head measuring theories only serves to strengthen racist ideologies.

- 3) Kuhn argues that a theory should have a broad scope in that the consequences of the theory extend far beyond what it was designed to explain. Longino roughly contrasts this to her value of complexity of interaction (which may also be contrasted to Kuhn's value of 'simplicity'). Longino points out that there may not always be one 'main' factor, and mechanisms of action may be such that all the factors influence one another. Complexity of interaction prioritises theories which treat interactions between entities as mutual and dynamic, rather than as unidirectional processes. Longino critiques the experimental practice of 'context stripping' - a term borrowed from Ruth Hubbard (1988) - arguing that if we detach some factor from the context in which it occurs in the natural world, then we will fail to see how the factors in that context affect its operation. Complexity of interaction is characteristically feminist, because in models and theories where there is one 'main' factor, this makes all other factors in the theory passive objects rather than active agents. Longino refers to an example of accounts of the role of the female gamete in fertilisation. In such accounts, the egg is seen as passive, and dormant. The sperm makes a perilous journey to the egg where, by the strength of the tail, he burrows into the egg and causes fertilisation. In such an account, the role of the egg is described as delicately 'feminine', and the sperm as bravely 'masculine' (Martin, 1991), even though research has shown that the sperm and the egg are mutually active partners in the fertilisation process (Schatten & Schatten, 1983). Longino claims that such asymmetry of agency in accounts of physiological processes manifests itself as asymmetry in social processes, and by

prioritising complex models of social interaction, this in turn reveals the role of women in the structure of social institutions.

- 4) Kuhn argues that a theory should be simple, meaning that it unifies or makes sense of a set of phenomena that were previously isolated, or confused. Longino points out that simplicity helps to perpetuate inequalities, since such theories are supported partially by the intolerance of differences. Simple theories would dictate that different types are ranked, one type chosen as standard, and all others would be viewed as failed or incomplete versions. This erasure of differences can have serious implications for the interpretation of data. Longino uses an example from economics, where the 'head of the household' is seen as the main economic actor, where the interests of all of the other members of the household are indistinguishable from those of the head. By ignoring the agency of the other family members, such economic theories scaffold and support an oppressive family structure where one person makes the decisions. To treat simplicity as a theoretical virtue incorporates its socio-political implications into the justificatory process of science. Longino says we should instead value ontological heterogeneity. According to this value, a theory should grant parity to other entities, where different kinds of entities can be causally efficacious, or a paradigmatic member of that domain, without attempts to reduce the entities to one basic kind. Such a value is feminist in that it would give parity to the role of women in explanatory models.
- 5) According to Kuhn, a theory should be fruitful in that it enlightens us to new phenomena, or to previously unnoted relationships between known phenomena. Longino argues that this value is conservative, since it focuses on the theory, and not the applicability of the theory. Longino puts forward two new values which roughly contrast the value of fruitfulness. The first is 'applicability to current human needs' - priority should be given to theories which generate knowledge to improve the human condition, or at least to alleviate some of its suffering. The second is 'diffusion of power', which gives preference to theories which do not require

expensive equipment, or needlessly complex levels of expertise, or other things which act as non-essential barriers to participation.

Longino argues that Kuhn's values are mainstream precisely because they reinforce the contemporary socio-political context of science. Since values are a part of the scientific paradigm, and partially dictate which kinds of phenomena are investigated, and how they are investigated, the roles of values in science is undeniably important. Because science is so intertwined with context, Longino argues that changes in science will result in changes of context. Kuhn's values reinforce a discriminatory socio-political context, and therefore a departure from the prioritisation of these values is necessary for equality to emerge. Crucially for my thesis, Longino also notes that the values that she proposes do not have fixed socio-political meanings, and that they may be relevant to projects other than feminism.

Psychedelic Therapy

Plant-based psychedelic drugs such as psilocybin and ayahuasca have a long history of indigenous medicinal use (Carhart-Harris & Goodwin, 2017; Sloshower, 2018). They are drugs which essentially perturb processes which normally constrain the neural systems central to perception, cognition, emotion, and sense of self (Swanson, 2018). Psychedelic 'trips' are characterised by experiencing colour, texture, contours, light and sound intensity, and timbre variation more intensely. The external world seems rendered in high definition, and is accompanied by a sense of 'clarity', 'freshness', and 'connectedness' with the environment, and a sense of being refreshed or renewed (ibid). The psychedelic experience is notoriously difficult to put into words (Pollan, 2018). In terms of a more neuroscientific description, psychedelics are "compounds with appreciable serotonin 2A receptor agonist properties that can alter consciousness in a marked and novel way" (Carhart-Harris & Goodwin, 2017, p.2105), where LSD is a 'prototypical' psychedelic.

After LSD was discovered in 1943 (Hoffman & Ott, 1980), there was a relatively brief amount of time where the therapeutic potential of these drugs was investigated experimentally (Dyck, 2005). By 1965 there had been over a thousand research papers written on the uses of psychedelic drugs, and the experiences they occasioned their user, with over forty thousand research subjects having been involved (Grinspoon, 1981). From the mid-1960s it became increasingly difficult to do scientific research due to government restrictions on psychedelic drugs, and changes in experimental standards (Oram, 2014). However as the general population embraced the use of psychedelics ‘recreationally’, they became a huge source of societal influence (Carhart-Harris & Goodwin, 2017; Grinspoon & Bakalar, 1979; Lee and Shlain, 1992; Stevens, 1987). Psychedelics came to be associated with ‘hippies’, left wing politics, pacifism, and the free love movement of the 1960s (Jarnow, 2016).

After around a 25-year hiatus, research began again in the 1990s (Cooper, 2012). Since then, there has been research which suggests that psychedelics are safe and tolerable in treating obsessive compulsive disorder (Moreno et. al, 2006), end of life psychological distress (Gasser et al., 2014; Griffiths et al., 2016; Grob et al., 2011; Ross et al., 2016), alcoholism (Bogenschutz et al, 2015), tobacco addiction (Johnson et al., 2014) and major depressive disorder (Carhart-Harris et al., 2016a, b). There have been no reported prolonged cases of psychosis or perception disorder in modern trials with psychedelics (Rucker, Iliff, & Nutt, 2017).

Psychedelic treatment sessions in a clinical setting tend to occur like this: preparation sessions facilitate trust and rapport between the participant and the therapist, as well as giving the participant guidance to facilitate the ‘best’ psychedelic experience. The session itself takes place in a welcoming and comfortable environment with dim lighting, eye-shades, and relaxing and emotionally-directing music. A study Kaelen et al. (2018) observed the influential role of music in psychedelic therapy sessions, in how it influenced the psychedelic experience. Empathic support is provided by two trained therapists, who are present at all times during the session. After the session

with the psychedelic drug, an integrative session occurs where the participant recounts and makes sense of their experience (Roseman, Nutt, & Carhart-Harris, 2018; Schenberg, 2018). It is worth noting that therapeutic support is an essential component of treatment, and that without it, there may be few positive effects, or even negative effects (Oram, 2014).

It seems that there are (at least) three main difficulties with integrating psychedelic therapy into our current psychiatric paradigm. The first is the extreme difficulty in conducting DB-RCTs (Doblin, 2001; Hendy, 2018; Pollan, 2018). The second is the inability to isolate one clear explanatory variable (Doblin, 2001; Sloshower, 2018), and the third is the mystical and spiritual dimensions of psychedelic drugs' mechanisms of action (Corbin, 2010; Pollan, 2018; Sloshower, 2018). Since DB-RCTs, isolating a single explanatory variable, and reductive neurobiological-style explanations are arguably paradigmatic of experimental psychiatry, the fact that psychedelic therapy may be incompatible with them has serious implications for the progress of research.

The Role of the Law

Psychedelic drugs are considered to be Class A in the United Kingdom (UK), and Schedule I in the United States of America (US). These classifications are given to drugs which have a high potential for abuse, have no currently accepted medical use, and are not safe to use, even under medical supervision (Nutt, King, & Nichols, 2013). Nutt et al. argue that the classification of psychedelics in this way occurred not because of the harmful effects of these drugs, but because of historical accident, and the assumption that there were no medical benefits for such drugs. They argue that decisions regarding the classification of drugs are inconsistent, and may have been made for political rather than health-related reasons. This may also be due to the fact that decisions about the drugs' safety or lack thereof were made before modern scientific methods allowed a proper understanding of their pharmacology and toxicology. Nutt et al. also note that once a drug has been

classified as Schedule I, it is extremely unlikely that any medical use will be found, since it becomes so difficult to do research with said drug (Strassman, 1991).

In order to facilitate research, it seems that legalisation, or at least decriminalisation is a necessary step (Marks, 2019). In order for this to occur in the US, Food and Drug Administration (FDA) approval is necessary (“Unapproved Drugs”, 2020). In the essay, I refer more often to FDA procedure, firstly because the US is responsible for the development of 42% of new chemical entities (Keyhani et al., 2010), and secondly, because there is simply for information available on FDA procedures. In the coming section I will discuss current criteria a drug must meet in order to be approved by the FDA.

Paradigm Incompatibility and its Implications for Research

Psychedelic therapy is in several ways incompatible with the paradigmatic experimental tools which are used to determine the efficacy of a drug. Psychedelic researchers are tasked with making their research experiments fit in with the current psychiatric paradigm. This may be impossible, have serious implications for how effective psychedelics are perceived to be by the scientific community, and also erase important aspects of psychedelic therapy, especially as it is used indigenously (Sloshower, 2018). Hendy (2018) argues that these methodological negotiations are a key site for looking at the struggle of psychedelic therapy to be perceived as credible, and are crucial in looking at the politics surrounding psychedelic research. For various reasons (a discussion of which is beyond the scope of this dissertation), the following methods have become some of the core standards which indicate the efficacy and legitimacy of psychiatric drugs.

Double-Blind Trials

Double-blind trials are clinical trials where both the patient and the experimenters are unaware of whether the participant has received the active test drug or the placebo (Doblin, 2001).

The double-blind trial is considered to be a ‘gold-standard’ of medical research, since it decreases the likelihood of biased observations of how effective the treatment outcomes are (“Placebos and Blinding in Randomized Controlled Cancer Clinical Trials for Drug and Biological Products Guidance for Industry”, 2019). Since the Thalidomide crisis, where babies were born with physical deformities after their mothers took thalidomide for morning sickness, the FDA became much stricter on the requirements that a drug must meet in order to be approved (Corbin, 2010). The FDA requires that drugs seeking approval should show efficacy in at least two DB-RCTs (Hendy, 2018; “Adequate and Well Controlled Studies”, 2019; Doblin, 2001). Observation of efficacy in DB-RCTs is also required by the Medicines and Healthcare products Regulatory Agency in the UK (Rucker et al., 2017).

DB-RCTs are a valuable tool for clinical research, however they pose something of a problem for psychedelic research. Doblin (2001) notes that practically speaking, due to the profound and dramatic effects of psychedelic drugs, it is incredibly difficult to blind the subject and the researcher to the treatment condition, a sentiment which has been noted by several other researchers in the psychedelic field (Hoffer, 1967; Kast, 1970). Griffiths, Richards, McCann, and Jesse (2006) found that researchers correctly guessed the treatment condition 77% of the time. In other words, because the majority of the time both the experimenter and the participant are aware of the treatment condition, the trial is not therefore blinded. This makes it extremely, or even impossible for psychedelic research to meet the DB-RCT standards set out by the FDA.

Isolating One Explanatory Variable

Another difficulty for psychedelic research lies in the isolation of one explanatory variable. A variable is some factor which varies across individuals or situations (Shaughnessy, 2014). Researchers usually choose one variable which they manipulate (i.e. the independent variable). The effect is what the experimenter measures (i.e. the dependent variable). Confounding variables are

variables which may provide an alternative explanation for the results. For example, when looking at whether or not breastfeeding causes children to have a high IQ, one must control for parental IQ, lest it be this variable, and not breastfeeding, which affects IQ (Der, Batty, & Deary, 2006).

Experimenters must attempt to control for such variables, because in order to draw any causal explanations from an experiment, alternative explanations for changes in the participants need to be ruled out. It is also the case that the fewer independent variables the better, because when there are multiple, it can be challenging to tell which independent variable elicits change in the dependent variable.

The problem for psychedelic research is that it is difficult to isolate one, or even two independent variables. As you can see from my description of a psychedelic therapy session, there are always multiple factors involved which could arguably have caused the effect: psychedelic drugs are always concurrent with psychotherapy, the kind of music which is played has an important role, and the setting in which it takes place is also of vital importance. “Context stripping” is a massive problem for psychedelic research precisely because of the complex networks of interactions which are involved (Rucker et al., 2017; Sloshower, 2018). An experiment by Storm, Baker, and Solursh (1966) illustrates this exact point. In the 1960s, researchers were excited about psychedelics as a potential treatment for alcoholism, and the results were promising (Grinspoon & Bakalar, 1981). Storm et al. were dubious of the purported effects, and so conducted an experiment where they attempted to isolate the effects of the drug from all other variables. Participants were administered LSD in neutral rooms by clinicians who were instructed not to interact with them at all during the session, apart from to administer an extensive questionnaire. The volunteers were constrained, blindfolded, or both. Since many psychedelic researchers acknowledge that an appropriate environment and concurrent psychotherapy is *integral* to a beneficial experience with psychedelic drugs, it was not surprising to them that the results of the experiment failed to replicate the promising results that had been observed in previous experiments.

This once again brings up issues with the FDA, since this body requires that it is the substance alone which is responsible for the therapeutic efficacy (Slowshower, 2018). This requirement does not allow for the investigation of complex interactions of factors such as music, dieting, praying, decor etc. In the current paradigm, these are all variables which either need to be eliminated, controlled for, or be seen as confounding variables. Reducing psychedelic therapy down to one variable is therefore not strictly possible, and this has the unfortunate consequence that clinical trial designs are not able to account for the complex mutual interactions between drug and non-drug variables in a psychedelic therapy session (ibid). Because these complex interactions are crucial aspects of psychedelic therapy, this leaves the researcher operating in the current paradigm in an awkward position. They either attempt to design an experiment with multiple independent variables, which may have implications for the perceived legitimacy of psychedelic research, or they simply use one independent variable (i.e the drug itself), which erases extremely important aspects of the psychedelic experience which are crucial to the success of the drug in treating disorders.

Reductive Neurobiological-style Explanations

Mystical and spiritual dimension of psychedelic therapies can pose a problem due to the prevalence of reductive neurobiological-style explanations in contemporary psychiatry. When those who have taken part in psychedelic treatment trials are asked about their experiences, or why they feel better, they say things like “I felt like sunshine twinkling through leaves, I was nature.” (Watts et al., 2017, p.534), and “Then I felt the presence of God: I have always thought that he was a man because of the way I was raised, reading the bible, but it felt like a female energy” (ibid, p.535). Such statements are at odds with the kind of explanations which are accepted in the mainstream psychiatric paradigm, namely that psychiatric drugs operate on the neurochemical substrates of

mental disorders (Anderson, 2012; Moncrieff & Cohen, 2009). Explanations of why others psychiatric drugs like selective serotonin reuptake inhibitors (SSRIs) work look something like this:

SSRIs block the reuptake of serotonin into the presynaptic nerve terminal via the serotonin uptake site, thus increasing the synaptic concentration of serotonin. This results in increased activation of the presynaptic inhibitory receptors and decreased firing of the serotonergic neurone. In the treatment of depression and panic anxiety, *SSRIs exert their therapeutic effects by increasing the availability of serotonin in the synapse* (Nutt et al., 1999, p.85, emphasis added)

Explanations of the effectiveness of psychedelic therapy, on the other hand, usually appeal to multiple different levels of explanation, not just neurobiological:

It is proposed that psychedelics initiate a cascade of neurobiological changes that manifest at multiple scales and ultimately culminate in the relaxation of high-level beliefs. The purpose of psychedelic therapy is to harness the opportunity afforded by this belief-relaxation to achieve a healthy revision of pathological beliefs (Carhart-Harris, 2019, p.16).

This explanation refers to both neurobiology, and the effect of the phenomenological experience occasioned by the drug on the mental states of the individual. This phenomenological ‘conversion’ experience is an important aspect of the mechanism of action of the drug (Anderson, 2012; Carhart-Harris & Goodwin, 2017; Majić, Schmidt, & Gallinat, 2015; Pollan, 2018). Psychedelics are technically psychoactive drugs, like anti-depressants or anti-psychotics as they exert an effect on the chemical make-up of the brain. However, as can be seen from the above SSRI explanation, mechanisms of action of these kinds of mainstream psychiatric drugs typically do not refer to the

phenomenological experience of the individual, especially not spiritual aspects of that experience. Therefore, the very core of psychedelic therapy challenges the model of psychological interventions in use today (Hendy, 2018). While it is possible to describe psychedelic experiences solely in neurobiological terms, to do so would ignore a vitally important aspect of the treatment: the phenomenological consciousness-altering experience. I believe you could argue that a psychiatrist operating in the current paradigm *could* appeal to the phenomenological experience of the individual when describing mechanisms of action, the issue is more that they simply *do not*.

The reduction of the psychedelic experience to a neurobiological or chemical explanation both erases a vital aspect of the therapy, and delegitimises indigenous knowledge regarding psychedelic experiences (Corbin, 2012). Slosower (2018) explains that psychedelics impact multiple levels of explanation (e.g. biological, psychological, social, spiritual, and energetic), and to attempt to reduce explanations of the mechanism of action of psychedelic drugs to just one level is inappropriate. However, Pollan (2018) succinctly notes that this is a problem for the psychedelic researcher because “it [psychedelic therapy] takes psychotherapy perilously close to shamanism and faith healing, a distinctly uncomfortable place for a scientist to be” (p.159).

The kinds of explanations permitted by the current psychiatric paradigm do not leave room for the mechanisms of action which emerge from psychedelic research (Anderson, 2012). It is also characteristic of psychedelic experiences that one cannot put them into words. This ineffability is problematic under the current paradigm – How could one attempt to objectively measure the phenomenological experience by answering a questionnaire, or explaining to an investigator when words fail you? Or when the words that you would like to say reference some kind of god, or higher power? How can you get the rest of the scientific community to take you seriously? This issue, coupled with the fact that the effectiveness of psychedelic drugs cannot be solely explained in neurobiological terms potentially has consequences for how psychedelic therapy research is perceived in the scientific community as a whole.

How Scientific Values Affect Psychedelic Research

It can be seen from the work of Kuhn and Longino that paradigmatic values have implications for which theories are thought of as ‘good’, which will in turn affect which theories are investigated. Some of Kuhn’s values are also arguably manifested in several of the paradigmatic standards described above. Isolating one explanatory variable maps roughly onto Kuhn’s value of simplicity, because it tries to bring order to previously confused phenomena. The prevalence of reductive neurobiological style explanations for mechanisms of action may be a manifestation of “consistency”. Laypersons prefer neuroscientific explanations, and perceive them as more legitimate, even when the neuroscience information included in the explanation is irrelevant (Fernandez-Duque, Evans, Christian, & Hodges, 2015; Weisberg, Hopkins, & Taylor, 2018). Given this, and the fact that most psychiatric mechanisms of action are written in this style, it makes sense that to be perceived as ‘good’, psychiatric explanations should be consistent with this reductive neurobiological style. By diverging from this style, the research runs the risk of being regarded as less legitimate.

Psychedelic therapy may not be a very good theory according to Kuhn’s values. It is not simple or consistent, and may not have breadth of scope. However, it embodies many, if not all of the values proposed by Longino. The value psychedelic therapy most clearly demonstrates is novelty. This value prioritises theories which differ significantly from accepted theories. The reason for this is that by postulating different processes and principles of explanation, or by investigating things which have not previously been investigated, we express a doubt that the current frameworks are adequate to deal with the problems which we face. Mental ill-health is a massive problem facing our global society (Kessler et al., 2009), and many people express doubts as to whether the current mental health care services available are adequate to deal with the problem at hand (Anderson, 2012; Hogan, 2014; Patel et al., 2007; Slade, 2010). Essentially, if the established methods are not

working well, ‘novelty’ as a value dictates that we should think outside of the box and try something new. Although psychedelic medicines have been around for many years, their potential use in contemporary psychiatry is a relatively new hypothesis. Their use is very much at odds with the current psychiatric paradigm, for both methodological reasons which I have laid out in the previous section, and because of the socio-cultural baggage and misconceptions which come with the term ‘psychedelics’ (e.g. that they are abused recreationally, that they are precipitators of psychosis, that they are the pastime of unemployed ‘hippies’ etc.), not to mention their illegal status (Marks, 2018). Current psychiatric solutions are arguably not sufficient to solve the problem at hand. This, coupled with the fact that psychedelic therapy differs in significant ways from these solutions is, in, Longino’s view, a good thing.

The second relevant value is “complexity of interaction”. This value prioritises theories which treat the interactions between different entities as mutual and dynamic rather than unidirectional processes, and prioritises models in which there are multiple rather than single factors. Moving away from a single explanatory variable approach to a more holistic, multi-directional approach would be much better for psychedelic research. If this value were prioritised, and ‘context stripping’ was not a requirement for clinical experiments, it would no longer be problematic that psychedelic therapy is intertwined with “set” and “setting”. According to Longino’s feminist values, the fact that psychedelic therapy involves mutual and dynamic interactions between multiple factors actually makes it a better theory.

Longino’s value of ontological heterogeneity is also relevant. An ontologically heterogeneous theory grants parity to different kinds of efficacious entities. A theory that is ontologically *homogenous* treats different entities as different versions of the same paradigmatic member of that domain, and assumes that differences between these kinds can be reduced to a single basic kind. It seems that in psychiatry, explanations of mechanisms of actions are usually reduced to some kind of neurobiological or chemical action, and as I mentioned above, these kinds

of explanations are perceived as more legitimate. Ontological *heterogeneity* would allow for the multiple levels of explanatory mechanisms in psychedelic therapy. By giving credence to all levels, it would allow scientific researchers to accept and grant parity to the mystical and spiritual aspects of psychedelic therapy, as well as the neurobiological, spiritual, energetic, and phenomenological levels of explanation. In an ontologically heterogeneous theory, primacy is not given to any one level over the other. In a more feminist paradigm, the fact that the explanation is not reducible to one single level is advantageous.

Psychedelic therapy is also applicable to current human needs, since it aims to alleviate the suffering that humans experience as a result of mental illness. It also arguably ‘diffuses power’ because psychedelic drugs can be found in nature, and it requires only a trained psychotherapist to administer the drugs, as well as a suitable environment for the session to take place. For these reasons I argue that if we were operating in a more feminist paradigm (according to Longino’s criteria), psychedelic therapy would be considered a “good” theory. If the FDA were to prioritise these values, the process of legalisation would arguably be easier, meaning that research would be easier to conduct in this area. If research were easier to conduct, there would be more studies, and the efficacy of the drugs would be easier to ascertain. Therefore psychedelic therapy would have a better chance at being accepted as a main-stream treatment.

Given all this, what would have to happen to the current paradigm in order for it to become more feminist according to Longino’s standards? Values are part of a paradigm, but it is debatable as to whether they are fundamental enough such that prioritising feminist values would result in a paradigm shift or expansion. Paradigm shifts are characterised by a change of scientific goals, change of the linguistic meaning of key scientific terms, as well as a change in the way that scientists perceive the world (Nickles, 2017). In this case, the goal of the two treatment strategies remains constant; to relieve the suffering of those with mental health problems. The key scientific

terms do not seem to change either, but one could argue that the way in which scientists perceive the world is different. One major characteristic of a paradigm shift is that theories from the two different paradigms are not commensurable or comparable, to such an extent that scientists operating in different paradigms are unable to communicate their ideas to each other, because they “work in different worlds” (Kuhn, 1962, p.13). To make such a claim about psychedelic therapy researchers and other psychiatric researchers seems to me to be too strong. It is not immediately obvious that psychedelic therapy and mainstream psychiatry (e.g use of SSRIs and anti-psychotics) are totally separate research avenues, and could not both be legitimate treatment strategies in their own right. An in-depth discussion of this is beyond the scope of my dissertation, so for the time-being I will adopt a weak position, and claim that the points that I have argued above support at the very least, a paradigm expansion or modification i.e. by “adding” in feminist values. By simply “adding” feminist values to the mix, we do end up with a rather large set of values, many of which contradict each other. However as Kuhn noted, several of his values (such as simplicity and breadth of scope) contradict each other. This is not an issue because it is up to the scientist which values they choose to prioritise. The new set of values would be large, ungainly, and contradictory, but that is not to say that it would be wrong. Unless we had simplicity as some kind of meta-value, then it should not be a problem.

Objections

I suspect that the main objection to my argument will be that DB-RCTs, isolating a single explanatory variable, and neurobiological reductive-style explanations are integral in assuring the safety of a drug, and cannot simply be disregarded because they promote ‘problematic’ values. If psychedelic therapy cannot meet these standards, then it should not, by default, become a mainstream treatment. While I am sympathetic to such a suggestion, my point is not that we should do away with such techniques. Undeniably, there are experimental situations where DB-RCTs, or

isolating a single variable are necessary. Rather, I argue that we should *expand* the current paradigm to include different efficacy and safety-testing methods, thus making it easier for alternative solutions to reach the standards of regulatory bodies. As I shall outline in the next section, there are viable alternatives to the methodological techniques and explanatory styles which I have described above.

There is controversy surrounding the use of placebo-controlled trials in psychiatry out-with the context of psychedelic drugs (Lyons, 1999). Even Louis Lasagna, one of those who pioneered the development of the double-blind trial in clinical research has admitted that the importance of DB-RCTs may have been over-emphasised:

We have witnessed the ascendancy of the randomized, double-blind, controlled clinical trial, to the point where many in positions of authority now believe that data obtained via this technique should constitute the only basis for registering a drug or indeed for coming to any conclusions about its efficacy at any time in the drug's career. My thesis is that this viewpoint is untenable, needlessly rigid, unrealistic, and at times unethical... (Lasagna, 1985, p.48)

He cautions against the idea that DB-RCTs should be the only experimental standard for testing the safety of a drug. An effective placebo is essential for a double blind trial - If people can reliably guess which treatment condition they have been assigned to, then it is not a blinded trial. Since this is often the case with psychedelics, effective blinding is not really a possibility. Montgomery (1999) admits that DB-RCTs are the best way of testing the efficacy of a drug, but as an alternative in certain cases, one could simply test that the results are superior to some established treatment which is consistently superior than placebo, and is a suitable equivalent to the drug being tested. This is called a reference-controlled study. Participants would not be blinded to their condition, so it would

have to be an open-label reference-controlled study. Without blinding the trial, results will likely be “better” than had it not been blinded, because of the placebo effect (Chaplin, 2006). For this reason, it is prudent that there should be a relatively high number of high quality open-label reference-controlled studies which show psychedelic therapy to be equivalently effective or more effective than other established treatments in order to reliably establish the efficacy of psychedelic therapy.

As for the problem of isolating one explanatory variable, the most sensible solution would be to keep all factors of “set” and “setting” constant, which is the approach taken by Carhart-Harris et al. (2016b) in their open-label feasibility trial investigating the effectiveness of using psilocybin to treat depression. A possible consequence of this may be that instead of saying, for example, “psilocybin is an effective treatment for X”, one would have to say “psilocybin therapy is an effective treatment for X”, where psilocybin therapy refers to the whole package of psychotherapy, drug administration, music, décor etc. Such a move would require the FDA to embrace the value of ‘complexity of interaction’, and introduce some procedure for approving drugs which are *necessarily* concurrent with “set” and “setting”.

The mystical and spiritual aspects of psychedelic therapy may be made more acceptable by addressing the ontology of scientists, rather than by altering the style of explanation given for the outcomes of psychedelic research. By prioritising Longino's value of ontological heterogeneity, experimental psychiatrists would take a more anthropological approach by noting the importance of being ontologically open-minded. Instead of looking to reduce the phenomenological experience of the individual down to neurobiological or chemical processes, it is important to recognise that this experience still has important explanatory power in and of itself, even if it is not measurable or observable by outside techniques. By prioritising measurable reductive explanations, some explanatory power is lost, since the content of the “consciousness altering” phenomenological experience is usually linked to issues which are causing the individual's struggles, and those who take part in psychedelic therapy tend to cite this phenomenological experience as the most crucial to

their improvement (Majić, Schmidt, & Gallinat, 2015). Although it may be a stretch to say that one should accept these experiences as literally real, it is feasible to recognise that they are real to the individual, and that treating this experience as some kind of explanatory metaphor erases an important dimension of the therapeutic experience. A comprehensive account of the mechanism of action of psychedelic therapy would grant parity to all of the levels of explanation, including any spiritual or mystical elements which may arise. Any account of psychedelic therapy which ignores or dismisses these things is not a comprehensive account of the mechanism of action of psychedelic therapy, and risks delegitimising indigenous knowledge by projecting our own western-educated-industrialised-rich-democratic ontology onto traditional practices (Henrich, Heine, & Norenzayan, 2010). If scientists granted parity to different ontologies, the mystical and spiritual aspects of psychedelic therapy would not be a problem for psychedelic research.

Although psychedelic therapy does not fit in with many paradigmatic experimental techniques or explanatory styles, that is not to say that it is not effective, or that there are not suitable alternative methods of testing efficacy. By expanding our paradigm to include Longino's values, this may provide flexibility in the kinds of methods which are used in the drug approval process, and therefore increase the possibility of psychedelic therapy becoming a mainstream treatment method.

Conclusion

In this dissertation, I have discussed the scientific values proposed by both Kuhn and Longino, and then by looking at the case study of psychedelic therapy, I have shown how these sets of values would either help or hinder research in this area. I conclude that Kuhn's values are arguably manifested in several paradigmatic experimental standards, standards with which psychedelic therapy is incompatible. This renders research in this area incredibly difficult to do in the current paradigm. The fact that psychedelic therapy is disadvantaged in this way is not to say that

it is not effective, and that research is not worthwhile. In fact research up until this point is promising. By prioritising feminist values which allow us to accept differing ontologies, complex webs of interaction, and novel theories, psychedelic therapy would be far more amenable to experimental research because it would no longer be inherently at odds with the values of the psychiatric paradigm.

Although the research suggests that psychedelic therapy *could* be an effective and widely used treatment, I do not wish to argue that a more feminist paradigm would automatically mean that psychedelic therapy would become mainstream. Rather, my conclusion is that if science were more feminist according to Longino's standards, this would create a framework in which psychedelic therapy is given *equal opportunity* to become a mainstream treatment. Essentially, experimental research would not be hindered or disadvantaged by the inherent nature of the therapy itself. The characteristics which make psychedelic therapy incompatible with experimental research in the current paradigm would not be an issue in a more feminist paradigm; in fact, they would become its strengths. Since many of the legislative, methodological, and ontological issues which hinder psychedelic therapy research in the current paradigm would be removed or altered in order to reflect this change in values, plenty of thoroughly and carefully designed research trials of psychedelic therapy could take place. Without these barriers, psychedelic therapy would have a better chance of meeting the standards set out by regulatory bodies, and therefore be more likely to become a mainstream treatment than in the current paradigm. Of course, in this dissertation I only examine how a feminist paradigm would help psychedelic research. Who is to say how many other research avenues would open up if our scientific paradigm were more feminist?

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