



The Psychological Effects of the Administration of Psychedelics on the Minds of Healthy Individuals: A Systematic Review

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ABSTRACT

The systematic review aims to integrate the findings of the past 3 years of literature on the phenomenological effects of classical psychedelics on healthy individuals. To ensure a strategic method to review the literature was adopted, guidelines given by Sumaya Laher & Tasneem Hassem were opted for (Laher & Hassem, 2020). For the search strategy, the Sample, Phenomenon of Interest, Design, Evaluation, and Research (SPIDER) method was used to construe keywords for searching relevant literature in PubMed, and Google Scholar. Analysis of the final 4 papers was conducted using the thematic synthesis technique (Thomas & Harden, 2008) and a total of 3 main themes were discovered. The first main theme was "Modes of Communication" in which the participants sensed the presence of other entities. This theme is also further divided into three sub-themes called "Intuitive or Telepathic", "Explicit or Verbal" and "Kinesthetic". The second major theme is called the "Mystical-type Experiences" in which the participants experienced amazement and were left in complete awe of the world. This theme further divides into two sub-themes "Euphoria" and "Unpleasant Experiences". The next main theme was "Inter-relational Purposes of Entities". This theme encompasses the relationship between participants and the psychedelic-induced characters of their imagination divided into four sub-themes in this theme which are named "Friendly and Nurturing", "Presenting", "Jestful and Manipulating" and "Formidable and Intimidating." The study will put the short and long-term effects of these drugs into the consideration of the research community.

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1. Introduction

An increasing interest in the scientific study of psychedelics has recently shown up in the field of the psychological experiences of psychedelics. The cognitive and emotional components of the psychedelics have been given different names depending on the researcher's preference. These can also be called mystical experiences, phenomenological experiences, subjective experiences or simply trips. From the 1960s onwards, hallucinogenic drugs have been categorized into two broad categories either as "serotonergic classic hallucinogens" or "psychedelics," or as "dissociative anesthetics." Psychedelics are compounds that come under the term of hallucinogens which is derived from the word hallucination. Classic hallucinogens tend to exert their primary pharmacological influence through the 5-HT system, i.e. it acts as an agonist of the 5-HT_{2A} receptor (Passie, Halpern, Stichtenoth, Emrich, & Hintzen, 2008; Vollenweider, Csomor, Knappe, Geyer, & Quednow, 2007) "Dissociative anaesthetics," on the other hand are known to affect the glutamatergic system instead of the 5-HT system and produce a different experience compared to other psychedelics. Etymologically, the meaning of psychedelic is 'mind-manifesting'. Psychedelic is interestingly a neologism that contains the

words original words *psychē*, meaning 'soul', and *dēloun* meaning 'to make observable, or to reveal'. This subtype of hallucinogens includes three categories known as lysergamides (e.g., lysergic acid diethylamide), tryptamines (e.g., psilocybin and N, N-dimethyltryptamine), and phenethylamines (e.g., mescaline, and phenylisopropylamines). All of these produce a reversible and transient effect on the conscious state of the administrator which are psychological states patently different from ordinary states of consciousness involving significant changes in subjective experiences, like alteration in the perception of the external world and one's sensations, feelings, and thoughts, and a changed sense of space and time, the as well as disintegration of self-consciousness (i.e. ego dissolution), and hallucinations or the feeling of unity (Dittrich, 1998; Schmidt & Berkemeyer, 2018; Studerus, Gamma, & Vollenweider, 2010; Tagliazucchi et al., 2016; Wittmann, Giersch, & Berkovich-Ohana, 2019).

The classics among psychedelics are usually considered to be lysergic acid diethylamide, psilocybin, N, N-dimethyltryptamine and ayahuasca, mescaline. These will also be the center of focus of this systematic review. We exclude from our study psychedelics like ketamine, methylenedioxymethamphetamine (MDMA), and ibogaine, as their effects and pharmacology are distinguished from the classic five. Classic psychedelics produce a whole range of experiences of multifaceted altered states of consciousness which are characterized by dramatic changes in self-consciousness and interrelated psychological functions like altered perception, pseudo-hallucinations, including visual illusion, and synesthesia, alterations in both mood and cognitive capacities, and transcendence of space and time (Preller & Vollenweider, 2018). One of the core features of the experiences of psychedelics is the rather profound but short-lived alteration in self-consciousness which is experienced as a dissolution of the sense of self/ego and a disintegration between the self and the world (Metzinger, 2009; Woźniak, 2018). However, the peculiar phenomenon of ego-dissolution is neither an all-or-nothing affair which does not occur on its own (Studerus, 2013; Studerus, Gamma, & Vollenweider, 2010). The experience of ego-dissolution is dose-dependent along with a pseudo-hallucination continuum associated with increased emotional and sensory arousal, distinct changes in cognitive functions, the feeling of emotions, often with the recall of emotionally loaded autobiographic memories, and heightened capacity for introspection (Preller & Vollenweider, 2018).

2.1. Aims

The main aims of the study were as follows:

- To identify the subjective experiences of the psychedelic drugs that caused changes both during and after the administration of the drugs within healthy individuals.
- To focus on the both transient and long-term effects of classical psychedelics (lysergic acid diethylamide, psilocybin, mescaline, dimethyltryptamine, and ayahuasca) on the full range of users.
- To sum up from relevant recent literature, i.e. from years 2020-2023, what is said about the benefits along with the potential adverse effects of the drugs?

2.2. Purpose of the study

Psychedelics are extremely interesting in how they shape people's perceptions and moods. This has led to an eruption of research interest in how these psychological experiences can be mapped and taxonomized at a phenomenological level of description (Schmidt & Berkemeyer, 2018). This interest speaks to the necessity of attaining a bird's eye view of the overall literature and where it is headed concerning psychedelics. It can illustrate what research areas are more commonly studied or over-focused while leaving others rather neglected and ignored. The research domain in itself is susceptible to flaws and a thoughtful insight into these can enlighten future researchers to produce higher quality research output.

2.3. Significance of the study

The area of phenomenology, despite its richness of accessorial states of consciousness, remains an under-researched topic in the realm of psychedelic induced states (Houot, 2021). The qualitative element of this limited pool of information is even further from sufficient as the bulk of research utilizes quantitative means to collect data (Miceli McMillan & Fernandez, 2023). The evidence regarding the benefits of these drugs for healthy individuals has also been rather neglected as the typical population sample used in most psychedelic researches consists of individuals with a diagnosis of mental health disorder(s). Even in the medical sphere of the drugs,

many researches still accredit the therapeutic effects to the psychedelic induced states of consciousness (Yaden & Griffiths, 2020). There has not been much stress placed on the improvements seen in healthy individuals or that if these "healthy normals" have the right to experience these improvements at all (Walsh, 2016). For the above reasons, this systematic review was conducted to address the mentioned gaps in the literature focus on the inculcation of a qualitative method of research on healthy individuals within the context of classical psychedelics. This research sums up the phenomenological aspect of the classical psychedelics to underscore both their benefits and drawbacks for the healthy consumer.

3. Methods

An 8-step approach was used to systematically review the literature. Guidelines given by Sumaya Laher & Tasneem Hassem were used on how to conduct the systematic review (Laher & Hassem, 2020). For the first step, background research on the topic of interest was conducted prior to the research question being developed. After defining the research question, the words 'systematic review' were added to the title for the easier identification of the research in different online databases after its publication (Uman, 2011). In the second step, inclusion and exclusion criteria were defined to serve as a guide or reference point for developing search terms. The study's inclusion criteria were all qualitative research articles written in English, and published between the years 2020 and 2023. Studies that considered the cognitive and emotional variables of the classic psychedelics were used: lysergic acid diethylamide, psilocybin, mescaline, dimethyltryptamine, and ayahuasca. Furthermore, the studies that narrowed down their scope to the phenomenological or subjective experiences of these psychedelics on a psychologically healthy sample of both genders and all age ranges were used. The pseudo-hallucinations that showed little to no relational effect on the participants, such as geometrical shapes, were also not included in the review as only those elements of the induced experiences were included that interacted with the participants in some manner. Grey literature was also targeted.

The exclusion criteria were studies that focused only on the biology or behaviors that the serotonergic hallucinogens elicited. Articles that weren't published or focused only on animals or psychedelics other than the classics were excluded from the scope of this research. Now comes the step of formulating a search strategy. For this, the strategy given by Alison Cooke, Debbie Smith, and Andrew Booth was adopted which refers to Sample, Phenomenon of Interest, Design, Evaluation, and Research method (SPIDER) (Cooke, Smith, & Booth, 2012). The following search terms used for the SPIDER search were searched on the advanced search feature of PubMed, and Google Scholar. PubMed allows access to literature in the fields of medicine and mental health, while Google Scholar has a broader data set. Both of these databases were used for their specific features. Synonyms and Boolean functions (AND, OR, NOT) on the terms were also used to ensure all relevant data would show in the search. Truncations were not used as the administration of these characters was automatically covered in the advanced search options of both PubMed and Google Scholar.

Next, in step number four, a careful screening of the literature was conducted. The keywords were searched using an advanced search option with the filter on years from 2020 to 2023. Search results were gathered using the above search terms. Search results in PubMed were 45 and reading the research titles led to the filtering down of the articles from 45 to 10. Further reading the abstracts decreased the number leaving 9 to be read in full length out of which 4 were selected for the removal of duplicates and quality assessment. Google Scholar showed 70 research results which were reduced to 21 after reading the titles. Screening using the abstracts shrunk the number down to 9. Lastly, reading the articles in full length led to the finalization of 1 paper. So, 5 articles were selected, 4 from PubMed and 1 from Google Scholar. Two papers were found to be duplicates, one of which was removed. A total of 4 papers were deemed relevant to the scope of the research. In step five, an assessment was conducted through the use of the Critical Appraisals Skills Programs (CASP, 2018) checklist to assess the quality of studies to ensure the filtering out of those studies that lay below the quality bar. No paper was found to be below the quality bar.

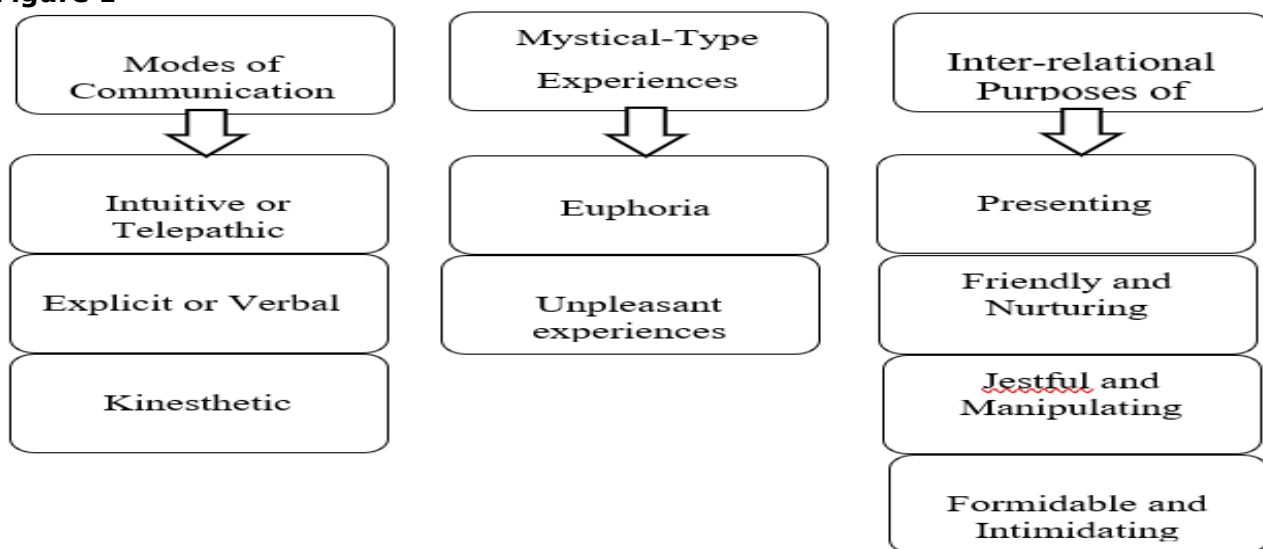
Next, two types of data were collected; descriptive and analytical. The descriptive data included the name of the author, date of publication, age range of the participants and study design. Analytical data was also gathered in which results of the studies were compiled concerning the research question. More attention was paid to including the maximum amount of even loosely relevant data for analysis in the next step. All of this data was collected and stored

in a Word file. Step seven included using a data analysis method. In this case, the experiences of the individuals were analyzed using the thematic synthesis technique (Thomas & Harden, 2008) which comprises 3 steps. Firstly, we encircled all the codes on the printed Word file. Coding was done ensuring coverage of related text according to its meaning. The accurate 'translation' of codes across multiple studies was also ensured to maintain coherence in the codes. These codes were then separated on a blank paper in a non-hierarchical manner. The text was then re-read to check for any inconsistencies so that the codes finalized could be used for stage two of the analysis. Next, descriptive themes were developed by arranging the codes in a hierarchical manner in which similar groups of codes were brought under one umbrella code word which was either taken from the codes or penned out to cover the group of descriptive themes that it encompassed. Lastly, analytical codes were generated by inferring new themes from the existing descriptive themes through a thorough discussion. This process was completed by all of the themes being renewed to a more valid and reliable form one by one.

4. Findings and Discussion

This chapter encompasses the findings that emerged from the analysis conducted in the previous chapter as well as the supporting literature. The findings of the selected papers comprised three main themes in total. A concept map has also been construed to visually demonstrate the themes along with their sub-themes.

Figure 1



4.1. Modes of Communication

The first theme was "Modes of Communication" in which the participants sensed the presence of other entities with which they either verbally or non-verbally communicated. The communication was a peculiar demonstration of the power of psychedelics on the mind. This theme comprises the sensed presence of sentient beings and how these were experienced as 'beyond oneself'. This theme is also further divided into three sub-themes called "Intuitive or Telepathic", "Explicit or Verbal" and "Kinesthetic".

4.2. Intuitive or Telepathic

The first sub-theme is Intuitive or Telepathic and describes that the entities were sensed in a vague, and indistinct way. These presences had no visual aspect to them, but rather subtle hints reminding the participants of their peculiar presence. The phenomenon of intuitive or telepathic communication emerged as a prominent theme in the analysis of psychedelic experiences (Gomez Emilsson, 2019; Strassman & Qualls, 1994). Participants consistently reported encounters with entities in a way that lacked explicit visuals, and relied on an uncertain and indistinct perception. This unique mode of communication was marked by subtle clues, inducing a feeling of ambiguity and enigma.

4.3. Explicit or Verbal

The second sub-theme is Explicit or Verbal associated with an omnipresence in which the participants could articulate and explicitly describe the presence of an entity that was always

present and largely ubiquitous. It was the universal presence of an entity that was ever-living and seemed perhaps indivisible in some cases.

In contradiction to the vague and indistinct essence of intuitive communication, explicit or verbal communication established a conspicuously different dimension to psychedelic experiences (Gomez Emilsson, 2019; Strassman & Qualls, 1994). The omnipresence of entities expressed in explicit or verbal communication tests to our conventional comprehension of personalized psychedelic experiences. The shared essence of these encounters implies a collective aspect to the psychedelic realm, where entities exist beyond the subjective borders of individual consciousness. The indication of a universal presence gives rise to the contemplation on the unification of these experiences and the likelihood of shared dimensions in the context of psychedelic (Gomez Emilsson, 2019).

4.4. Kinesthetic

The third sub-theme was Kinesthetic in which the entities displayed certain visuals communicating to the participants what they were expressing. The use of body movements like dance and gestures allowed the covert communication of such beings. Entities also communicated through their body movements, incorporating visual displays like dance, and gestures (Ott, 1997; Strassman & Qualls, 1994). The incorporation of these visual displays transcends the conventional verbal communication. By employing visual displays, the entities occupied the participants in a shared narrative that moves beyond linguistic and cultural barriers (Ott, 1997). This mode of communication invites further investigation into the formative and participatory feature of psychedelic experiences, throwing light on the complex ways in which entities engage with and impact human consciousness.

4.5. Mystical-Type Experiences

The second major theme is the "Mystical-type Experiences" in which the participants experienced amazement and were left in complete awe of the world. In this theme, the participants reported an increase in meaningful connections with others and found a deep sense of purpose and engagement in their lives. This theme is further divided into two sub-themes named "Euphoria" and "Unpleasant Experiences".

4.6. Euphoria

The first sub-theme of Euphoria stems from a dramatic increase in levels of interpersonal connectedness and an ecstatic uplifting of one's emotional state. This euphoric state was accompanied by visual effects or psychedelic-induced hallucinations which were both auditory and visual. This euphoric state also enabled people to find a deeper sense of meaning in their work as they considered the impactful consequence of their work on the broader community. They creatively approached problems with higher levels of motivation and enthusiasm. These individuals also grew closer to nature and developed insight into the characteristics of their personalities. Another feature of this sub-theme that surfaced was the enhanced joy of listening to music occurring in the majority of participants in one study. These effects were described as the most enjoyable by the participants of that study. Investigating the profound relationship between psychedelics and music unwinds an interesting theme that transcends auditory sensations. It showed to provide the participants with an enhanced and playful experience (Gomez Emilsson, 2019; Strassman & Qualls, 1994). The transformative essence of these psychedelic-induced ecstatic or euphoric experiences stretches beyond the temporary effects, impacting participants' perception and capabilities concerning nature, creativity, and the interconnectedness of all things. The uplift of emotional states of the participants speaks to the cultivation of a profound sense of unity with the broader social circle. The delight experienced in music unravels an escalated feeling of joy among the majority of participants, highlighting a peculiar multi-sensory amplification induced by the classical psychedelics (Gomez Emilsson, 2019; Strassman & Qualls, 1994).

4.7. Unpleasant experiences

Unpleasant experiences are the second sub-theme and this encircles the most frightening aspect of a psychedelic experience which includes the fear of becoming insane and the experience of complete ego death or dissolution. The transient effects of these unpleasant experiences also included panic attacks, confusion, paranoia and disturbing visions. These features were characteristic of manifesting altered states of consciousness and were only terrible during the duration of the trip. The participants then calmed themselves down by using different methods like storytelling to erase confusion, waiting out for the effects to wear off, or reminding

themselves of being in a transient psychedelic-induced state; they later extracted a great source of wisdom from such experiences. The experience led to the improvement of interpersonal relationships, self-empowerment and control, a level of gratitude for their existence and the resolution of deep-seated emotional wounds by providing a richer sense of meaning and purpose in life. Thus even with the most painful psychedelic-induced psychosis, the participants were noted to be genuinely grateful for the manifestation of these positive changes. Getting into the more dire aspects of psychedelic journeys, participants described facing the fear of mental instability and the taxing experience of ego dissolution (Ott, 1997; Strassman & Qualls, 1994). Participants used different coping strategies, like storytelling to diminish their perplexity, reminding themselves of the temporary nature of psychedelic-induced states or waiting for the effects to subside (Ott, 1997). This theme thus brings about the need for further investigation into the nuanced blend of affliction and personal growth.

4.8. Inter-relational Purposes of Entities

The next main theme was "Inter-relational Purposes of Entities". This theme encompasses the relationship between participants and the psychedelic-induced characters of their imagination. It includes the demeanor and role that the entities either actively or passively played in the imaginative theatres of the participants. There are four sub-themes in this theme which are named "Friendly and Nurturing", "Presenting", "Jestful and Manipulating" and "Formidable and Intimidating." Interestingly the participants referred to themselves as "one of" or with the participants showing a radical recognition of oneself as similar to the beings they encountered. Looking into the inter-relational purposes of entities in psychedelic experiences unravels a rich fabric of encounters, with various entities assuming a diverse range of roles that remarkably influence participants' perceptions and self-awareness (Gomez Emilsson, 2019; Strassman & Qualls, 1994).

4.9. Friendly and Nurturing

The first sub-theme of Friendly and Nurturing included the entities' being generous and enthusiastic. These entities also displayed curiosity as part of their character. The entities falling under this theme were perceived as helping and nurturing by their playful and soothing nature. They also manifested as feminine creatures and guides leading the participant to understand the universe as a place only to enjoy. Additionally, these guides or teacher-like nurturers also helped develop self-love and forgiveness or letting go of the wrongs that occurred to the individual. Entities falling under the sub-theme of friendly and nurturing are distinguished by their enthusiastic, generous, and guiding nature. These entities play a pivotal role in cultivating an optimistic self-perception, and facilitating qualities of self-love and forgiveness (Gomez Emilsson, 2019; Strassman & Qualls, 1994). The participants' experiences with these entities are often described as calming and joyful, creating a feeling of unity and oneness with the universe.

4.10. Presenting

The second sub-theme, Presenting, played the simple role of showing an intriguing object(s) and then getting the focus of the participant's attention upon it. Entities in the presenting sub-theme take on a supportive role by presenting interesting objects and steering participants' focus and attention (Ott, 1997; Strassman & Qualls, 1994).

4.11. Jestful and Manipulating

In the third sub-theme, Jestful and Manipulating, the participants experienced a character that had a childish, mischievous, and potentially threatening element to it. It not only presented itself as being jovial and funny but also had a darker edge with hints of the risk of things getting dramatically violent. Entities identified by a mix of mischievousness, childishness, and potential threats introduce a layer of intricacy to the emotional aspect of psychedelic experiences (Gomez Emilsson, 2019; Strassman & Qualls, 1994). The jestful and manipulating entities tended to test participants with a mix of playfulness and potential darkness, creating an emotionally demanding atmosphere.

4.12. Formidable and Intimidating

The last sub-theme, Formidable and Intimidating, had a trickster-like aspect and it was unclear whether the creatures were trying to protect or threaten the participants. These characters caused confusion and double-mindedness to test the strength of the participant's decisions. Entities that exhibited a trickster-like aspect, showed to cause confusion about their

intentions, and therefore formed the sub-theme of formidable and intimidating (Ott, 1997; Strassman & Qualls, 1994). The ambiguity regarding these entities tests the power of participants' decisions and induces unpredictability to the overall experience.

5. Conclusion

The review highlights an effective, quick-acting solution to resolve everyday psychological battles and offers a consolidated way of regaining a sense of empowerment, meaning and purpose in life. It also brings the necessity of further research on this topic into the limelight as a deeper understanding will lead to a wider adoption of these drugs by the public. This will transpire the informed administration of these drugs and help those desperately seeking it and more importantly, prevent individuals from developing debilitating mental health problems.

5.1. Limitations

The limitation of the systematic review includes the possible neglect of the specific research designs of each paper in favor of integrating the findings as a whole. The analysis process may have assumed the similarity of loosely related terminologies used across the analyzed studies potentially overlooking any subtle differences in their meanings. Although this likely hasn't caused much incoherence, it is the necessity of systematic reviews to mildly compromise in this regard.

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