Psychedelic-Assisted Therapy: A New Way Forward in Mental Health

by
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Abstract

In the following pages, I will cover many topics relating to psychedelic-assisted therapy. Initially, I explore the historical background of psychedelic use in indigenous communities around the world followed by an introduction of psychedelic-assisted therapy in North America during the 1950s through to the early 1970s. Next, I include a brief literature review citing the beneficial claims of psychedelic-assisted therapy for end of life anxiety and depression, treatment-resistant depression, obsessive-compulsive disorder, and substance misuse struggles. Additionally, I cite research claiming the potential for psychedelic therapy to enhance positive emotions, creativity and psychological growth. Moreover, I report the long-term mental health benefits of psychedelics. Next, I discuss current theories about the mechanism of action of psychedelics; I believe it is imperative to understand how these compounds function neurologically and phenomenologically. I discuss the importance of set and setting and how these relate to creating the most beneficial container for psychedelic-assisted therapy. I also address the requirements for preparing the voyager for a psychedelic experience and the essential components of integration. Finally, I briefly suggest recommendations for the future in psychedelic care.

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Thank you to the many service workers and establishments in this fair city of Vancouver for providing comfort, sustenance and vibrant energy to focus and fuel momentum. To the friends who encouraged me to work alongside them, sharing space in our shared efforts of completing our projects. To the random strangers who stopped to chat, allowing me a brief human encounter after too many hours submerged inside my computer.

And finally, thank you to this generous land upon which I am grateful to live. I gain nuanced inspiration and energy from the seasons of change and the glorious magnitude of the mountains and the ocean.

Dedication

To my mother, for showing me how to love first. I miss you every day.

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Chapter One: Introduction

The profound impacts of psychedelic-assisted therapy have positively and monumentally transformed thousands of individuals' lives. Through a brief literature review, I will discuss at length the documented benefits of psychedelic-assisted therapy for mental health and wellness. The purpose of this project is to substantiate the claim that psychedelic-assisted therapy is a relevant, meaningful, and successful healing initiative. I would like to see psychedelic-assisted therapy as an accessible treatment option for those in need. I hope to persuade those who possess beliefs of psychedelics as dangerous, harmful, or self-indulgent towards an expansion in thought, describing psychedelics as complex, multifaceted, mysterious substances that contain monumental healing properties for those who suffer. Additionally, I hope that this document will contribute to decreasing stigmas around psychedelic use and bring forward knowledge that supports new drug policy initiatives that seek to reform drug laws and put an end to the war on drugs.

> Large numbers of people could benefit from the use of psychedelics…by the irresistible realization that each of us is a small part of something much greater than any of us, that separateness is an illusion, there is nothing to fear, and love is accessible, shame can be left permanently behind" (Feldmár, 2008, para 3).

Methods

This project presents a brief literature review of some of the existing quantitative and qualitative research on psychedelic-assisted therapy. Additionally, I include a synthesis of relevant theories on the mechanism of action of these compounds as well as recommendations for how to ensure ethical care. The wealth of data in the academic literature inspired me to

understand and synthesize rather than contribute to new research. I believe that my project, a thorough synthesis and analysis of current, relevant research, will have a more meaningful impact on readers' thoughts and actions than the addition of new qualitative research.

Positioning the Author

I am a cisgender, white, female, student therapist, residing on the unceded, ancestral, traditional homelands of Səl̓ílwətaʔ (Tsleil-Waututh), Xʷməθkwəy̓əm (Musqueam), & Sḵwx̱wú7mesh (Squamish) peoples in Vancouver, BC, Canada. I have come to write this project because of my lived experience and encounters with psychedelic substances that have influenced my life in positive ways. I recognize that my past experiences bias me to be a believer in the therapeutic benefits of psychedelic-assisted therapy. My experience includes advocating for diverse groups of people, many of whom have endured complex developmental and intergenerational traumas, substance use struggles, mental health diagnoses, and homelessness.

Analysis of the Diagnostic and Statistical Manual of Mental Disorders

The Diagnostic and Statistical Manual of Mental Disorder (DSM-5) defines abnormal behaviours and symptoms into categories of disorders, pathologizing the vast array of human experience and resilience. The DSM-5 puts illness inside the brain. It is important to understand the mechanism of the brains function and how that plays a role in the mental wellness of an individual, but the brain is not the only location of illness, and it does not operate in isolation. The brain exists within a body that resides within a community, a society, and an ecology. Anderson (2012) discusses how individual selves are influenced by and influence the selves of others; naming context as a determinant of behaviour.

Professional and diagnostic practices enforced through the DSM-5 often conceal and support social injustices and unethical and disproportionate access to power and privilege (Sutherland et al., 2016). Moreover, Cosgrove and Wheeler (2013) critique how large pharmaceutical companies often profit from diagnostic labelling and influence the DSM-5 diagnostic categories. Winslade (2017) critiques pathologizing diagnostic language as internalized oppression and a form of injustice. Reynolds (2012), draws attention to the affronts on dignity occurring within the mental health system and the medicalized language of mental illness that often conceals the suffering of poverty, trauma, and substance misuse.

When we locate an illness inside an individual, we run dangerously close to blaming the individual for their difficulties, poverty, substance use struggles, or trauma; this negates the oppressive structures and systems that are often the cause and source of difficulties. Often mental health concerns are the result of an individual's response to unequal and differential distribution and access to resources, as well as individual external and environmental factors (Arthur & Collins, 2014). Certain behaviours that often warrant a mental health diagnosis may be forms of resistance, not illness. For example, one's use of an illicit substance may be the best choice for that individual to survive their traumatic experience.

Although I struggle with the diagnostic categorization of patterns of human behaviour, I will adhere to the use of DSM-5 terminology in this project because it is the predominant language of communication between mental health professionals utilized within mental health and substance use programs. Additionally, I cannot ignore the potential benefits of the diagnostic properties. A DSM-5 diagnosis is often required for an individual to receive economic resources for care and clients may feel a connection to their disorder or diagnosis (Sutherland et al., 2016).

A diagnosis may also bring validation and legitimization to an individual's concerns and comfort in knowing they are not alone in their struggles (Sutherland et al., 2016).

Describing Substance Misuse

As much as possible, I will refrain from using the terms addiction and alcoholism in this project and instead commit to non-pathologizing ways of communicating substance misuse struggles. While I am professionally reluctant to use the terms addiction and alcoholism, they appear in this project to mimic the language of cited academic literature and to authentically report and locate research within its social and political climate.

Definition of Terms

Psychedelic

Psychedelic or "mind-manifesting" is a broad term encompassing many different substances and was first suggested by Humphrey Osmond in the 1950s (Osmond, 1957). Various psychedelic substances including D-lysergic acid diethylamide tartrate (LSD), psilocybin, N, N-Dimethyltryptamine (DMT), mescaline, methylenedioxymethamphetamine (MDMA), and cannabis produce similar subjective effects on users including an altered state of consciousness, perception, cognition, and emotion (Bouso & Riba, 2014; Halberstadt, 2015; Jaffe, 1990; Krebs & Johansen, 2012; Nichols, 2016). These mind-altering manifestations have otherwise been present only through dreams and religious ceremony (Jaffe, 1990). Over the last seventy-odd years, the psychedelic experience has come to symbolize what many individuals describe as transcendental, ego-dissolving, profound, and mystical.

Classic Psychedelic

This project will investigate the therapeutic utility of the classic serotonergic psychedelics which exert their effects primarily by an agonist action on brain serotonin 5-hydroxytryptamine (5-HT) 2A receptors (Nichols, 2016; Halberstadt, 2015). These include LSD, psilocybin, ayahuasca (DMT), and mescaline. I will focus my discussion on LSD, psilocybin, and ayahuasca. I mention mescaline, which is derived from several cacti including peyote and huachuma, also known as San Pedro, for cultural and historical reference; however, as scientific research of this substance is limited, I will keep its discussion to a minimum. I will not consider cannabis, ketamine, ibogaine, MDMA, 5MeO-DMT (5-methoxy-N, N-dimethyltryptamine), or 3MMC (Methylmethcathinone) in this project. Although commonly described as psychedelics generating shifts in consciousness and perception, these latter substances function under a different mechanism of action and are, therefore, beyond the scope of this project (Nichols, 2016).

Ayahuasca

Ayahuasca is an Amazonian psychoactive brewed tea composed of the pounded bark from Banisteriopsis Cappi vines and the leaves from Psychotria Viridis both found in the Amazon basin and used sacramentally by indigenous peoples of South America (Bouso & Riba, 2014; Pollan, 2018; Schultes & Hoffman, 1979). Psychotria Viridis contains N-Dimethyltryptamine (DMT), which is a Schedule 1 controlled substance (Schultes & Hoffman, 1979). Although DMT is a controlled substance, use of ayahuasca is permitted in certain religious ceremonies (Nichols, 2016). For example, the Sainto Daime Church has legal permission to import and use ayahuasca in Canada (Rochester, 2017).

D-Lysergic Acid Diethylamide Tartrate

D-lysergic acid diethylamide tartrate (LSD) is a semi-synthetic compound derived from ergot fungus which grows in the seeds of rye and other grasses (Anderson, 1996). The earliest synthesis of LSD occurred in 1938 by Sandoz Research Laboratories in Switzerland (Anderson, 1996). The psychologic, perception-altering effects were discovered accidentally by Swiss chemist Albert Hoffman in 1943 (Anderson, 1996; Bogenschutz & Johnson, 2016; Hoffman, 1979). LSD was sold and marketed as a psychiatric drug Delysid beginning in 1947 by Sandoz but was withdrawn from circulation in 1966 (Pollan, 2018). LSD arrived in the United States in 1949 (Oram, 2016). The recreational use of LSD rose in popularity amongst the general public in the 1960s as did its circulation on the black market (Anderson, 1996).

Psilocybin

Psilocybin, the active psychoactive ingredient in multiple species of mushrooms, has been used for thousands of years for religious and spiritual purposes (Carod-Artal, 2015; Zamaria, 2016). For example, the Mazatec indigenous peoples of Oaxaca, Mexico used psilocybin mushrooms to commune with spirits, heal ailments, and experience the divine (Carod-Artal, 2015). In 1955, María Sabina introduced Robert G. Wasson to these mushrooms. She was the first Mazatec curandera, or native shaman, to permit Westerners participation in the sacred, healing ritual known as the velada (Metzner, 2005). Wasson published a detailed account of this mushroom session in Life magazine in 1957 (Metzner, 2015; Tylš, Páleníček, & Horáček, 2014). Psilocybin was first isolated and identified in 1958 and synthesized in 1959 by Albert Hofmann (Tylš et al., 2014). The recreational use of mushrooms containing psilocybin rose in popularity amongst the general public in the 1960s (Tylš et al., 2014).

Psychotomimetic Theory/Model Psychosis Theory

Researchers and psychiatrists and others in scientific circles in the 1950s initially referred to psychedelic substances as psychotomimetics, implying that they elicited in users a mental state resembling psychosis (Hoffer, 1967; Osmond, 1957).

Entheogen

In more recent times some researchers have shifted to the term entheogen, from the Greek, generating the divine within, to highlight the spiritual aspects of psychoactive substances. The term was first introduced in the 1970s, with intention to decrease stigma and rehabilitate psychedelic substances by distinguishing recreational uses from the ancient spiritual role (Pollan, 2018).

Psychedelic – Assisted Therapy/ Psychedelic Therapy:

Group or individual therapy that involves the ingestion of a psychedelic substance. Attention to set and setting is essential to maximize therapeutic benefits.

Psychedelic Therapist/Guide:

An individual who facilitates psychedelic-assisted therapy. The individual sits with the one ingesting the substance, ensuring their safety and comfort during the session.

Microdose

A sub-perceptual dose of a psychedelic substance. The dose does not generate shifts in perception but is said, anecdotally, to contribute positively towards mental well-being, creativity, and positivity.

Voyager

An individual ingesting a psychedelic substance in the context of psychedelic-assisted therapy.

Ordinary Waking Consciousness

The average ways in which human beings perceive and make sense of the world, the mental state of any individual without a psychedelic substance. Ordinary waking consciousness varies across individuals. Nevertheless, there are perceptual consistencies across most individuals when perceiving the world, namely existence of time and space, and a feeling that one is a single entity, separate from other life forms and the planet. Humans come to understand their reality through the lens of their ordinary waking consciousness; this lens is limited by the social and environmental cues, norms, and mores about what is acceptable and rational. In this way, ordinary waking consciousness is psychological, biological, and social.

Chapter Two: Brief History of Psychedelics and Therapeutic Applications and Practices

Psychedelics have been used by various populations in early cultures, before written history, in a variety of sociocultural and ritual contexts (Nichols, 2016). The term psychedelic is a familiar term in Canada and the United States and conjures various beliefs, judgments, excitement, and fears depending on an individual's lived experience and awareness. There is no doubt that psychedelics played a significantly influential role in transforming youth culture in the 1960s and 1970s, and many of these transformative values remain with us to this day (Nichols, 2016). Countless books, essays, songs, and art, inspired by psychedelics, have perpetuated into mainstream culture for decades (Nichols, 2016). Roughly 30 million people in the United States have used psilocybin, LSD, or mescaline (Krebs & Johansen, 2013).

Brief History of the Sacred Use of Psychedelics in Indigenous Cultures

Psychedelics are the most ancient form of psychopharmacological agents (Nichols, 2016). Humans all over the world have known of the healing and creative potential of some of these substances in the context of sacred, religious, and culturally defined ceremony for thousands of years (Bogenschutz & Johnson, 2016; Krebs & Johansen, 2012).

In ancient India, the psychedelic substance Soma was highly revered, documented praises of its healing properties can be found in Vedic hymns and the Rigveda (Wasson, 1971). Ancient Greeks were known to use a hallucinogenic brew called kykeon (κψκεον) in ceremony (Wasson, Hoffman, & Ruck, 2008). Pre-columbian Mesoamerican societies, including Olmec, Zapotec, Maya, and Aztec, used various psychoactive plants (Carod-Artal, 2015). In Mexico, the ritual use of psychedelic mushrooms dates back 3000 years, and it is still widely used today (Carod-Artal, 2015). Specifically, Aztec shaman used psilocybin mushrooms for healing and in religious

ceremony (Ott & Bigwood, 1978). These Aztec mushrooms were named "god's flesh," suggesting the ancient belief of their propensity to connect the user with a higher mystical power (Schultes & Hoffman, 1979). The imagery of a mushroom head, which suggested as an early reference to psilocybin, appeared in Bradshaw rock art in Australia and Sandawe rock art in Eastern Tanzania (Pettigrew, 2011). Peyote, a cactus which contains the psychoactive compound mescaline, has been used historically by Native Americans for thousands of years; it is currently still used in religious ceremony by the Native American Church (El-Seedi, De Smet, Beck, Possnert, & Bruhn, 2005).

Numerous stories throughout the ages establish the psychedelic experience as consciousness shifting, healing, transformative, and connecting. Many in the scientific community, however, do not find legitimacy in ancient and shamanic practices; modern society seeks scientific evidence and legitimacy of empirical research to believe claims of the validity of the healing potential of psychedelic substances.

A recent upsurge in clinical studies on the therapeutic benefits of psychedelic psychotherapy has shown promising results. Psychedelics are now considered physiologically safe in therapeutic and clinical research settings, have no known significant toxicity, and a low dependency risk (Bogenschutz & Johnson, 2016; Nichols, 2016). Psychedelics have shown potential in treating depression, substance misuse disorders, anxiety and obsessive-compulsive disorder (Carhart-Harris & Goodwin, 2017; Roseman, Nutt, & Carhart-Harris, 2017; Watts, Day, Krzanowski, Nutt, & Carhart-Harris, 2017).

Current Research Initiatives

The present-day is an exciting time in psychedelic research as an increasing number of studies gain funding and approval at various universities. The Heffter Research Institute is a non-profit organization aimed at helping, designing, reviewing, and funding psychedelic studies in the United States and Europe (Heffter Research Institute, 2019). Since 2003, Heffter has sponsored research initiatives at Harbor-UCLA Medical Center, Johns Hopkins University, and New York University (Heffter Research Institute, 2019). The Multidisciplinary Association for Psychedelic Studies (MAPS) is a "non-profit research and educational organization that develops medical, legal, and cultural contexts for people to benefit from the careful uses of psychedelics and marijuana" (Multidisciplinary Association for Psychedelic Studies, 2019, para 1). MAPS, founded in 1986 by Rick Doblin, is committed to changing the legal status of psychedelics so that we may begin incorporating these essential medicines in the medical system. The Beckley Foundation, founded and directed by Amanda Feilding since 1998, strives to fund psychedelic research and fuel evidenced-based drug policy reform (Beckley Foundation, 2019).

Brief History of the Therapeutic Application of Psychedelics in North America

During the 1950s through to the early 1970s, psychedelic research was encouraging and exciting, and psychedelics were thought to be a promising intervention for psychiatry (Bogenschutz & Johnson, 2016). Stanislov Grof, a psychiatrist with more than 50 years of experience researching the healing and transformative potential of non-ordinary states of consciousness (Fadiman, 2011), described his beliefs about the benefits of psychedelics in the following quote:

> It does not seem to be an exaggeration to say that psychedelics, used responsibly and with proper caution, would be for psychiatry what the microscope is for biology and medicine or the telescope is for astronomy. These tools make it possible to study important processes that under normal circumstances are not available for direct observation. (as cited in Carhart-Harris et al., 2014, p. 3).

Psychedelics were legally used in clinical and experimental settings until the 1960s (Grinspoon & Bakalar, 1979). During this time, thousands of research papers documented over 40,000 individuals treated with psychedelics and claimed long-lasting psychological and behavioural effects (Bogenschutz & Johnson, 2016). In the 1960s, psilocybin was widely used in the experimental research of mental disorders and psychotherapy (Metzner, 2005). Grinspoon and Bakalar (1979) sum up the breadth and extent of influence of psychedelics with the following quote:

> Many people remember vaguely that LSD and other psychedelic drugs were once used experimentally in psychiatry, but few realize how much and how long they were used. This was not a quickly rejected and forgotten fad. Between 1950 and the mid-1960s there were more than a thousand clinical papers discussing 40,000 patients, several dozen books, and six international conferences on psychedelic drug therapy. It aroused the interest of many psychiatrists who were in no sense cultural rebels or especially radical in their attitudes. (p. 192).

Psychiatric Treatment in the 1950s

Psychiatric treatment and practice during the 1950s stemmed from two seemingly contradictory viewpoints, on the one hand, "institutionally based practitioners relied on somatic

or bodily interventions that seemed outdated or problematic" (Dyck, 2008, p. 29). On the other hand, community-oriented psychotherapists tended towards approaches that "lacked a biological foundation (Dyck, 2008, p. 29); these approaches did not see intended improvement, especially with severe mental illness. Psychopharmacology, a less invasive form of treatment, began to increase in popularity after the age of often harmful and permanent somatic therapies like lobotomies, Electroconvulsive therapy (ECT), insulin coma therapy, and Metrazol shock therapy (Dyck, 2008). Psychedelic research emerged during a time when the psychiatric community began identifying pharmaceuticals as a viable treatment option for those with mental illness.

Psychedelic research permitted the possibility of bridging psychopharmacology and psychoanalysis (Dyck, 2008). Developing ideas from LSD research pointed towards a biological and social antecedent to mental illness, which suggested the need for a treatment that targeted both the neurological and emotional processes. "During the 1950s, psychedelic psychiatry promised a consciousness-raising, identity-changing therapy within a medically sanctioned and scientifically rigorous environment" (Dyck, 2008, p. 30). Psychedelics became an essential feature in psychoanalysis, not a solution but a tool to facilitate the client towards healing with the support of a trained therapist (Dyck, 2008).

Weyburn Saskatchewan LSD Research

Saskatchewan was considered a world leader in medical research and LSD studies during the 1950s (Dyck, 2008). Beginning in 1950, Saskatchewan psychiatrists began using LSD as an adjunct to psychotherapy to treat mental illness, most notably alcoholism (Anderson, 1996). Humphrey Osmond, superintendent of the Weyburn Psychiatric Hospital in Saskatchewan,

worked with psychiatrist Albert Hoffer; they oversaw many LSD experiments in the 1950s (Anderson, 1996; Dyck, 2008).

Between the years, 1959-1962 psychedelic research saw a golden age, with LSD treatment reported as having widespread success (Anderson, 1996). In Canada, LSD research reported a 50% improvement rate with chronic, treatment-resistant alcoholics (Smith, 1958). Saskatchewan alone reported 50-80% recovery rates for more than 2,000 patients (Anderson, 1996). Additionally, more than 300 scientific papers from scientists and psychiatrists all over the world "evidenced the positive role LSD could play in psychotherapy" (Anderson, 1996, p. 12) and proclaimed, "LSD research to be of fundamental importance towards establishing a cure for alcoholism and other psychosomatic illness" (Anderson, 1996, p. 12).

Psychotomimetic Theory

Research at the Weyburn Psychiatric Hospital in Saskatchewan in the 1950s was initially informed by the psychotomimetic theory of LSD, implying that LSD mimicked a mental state resembling psychosis (Anderson, 1996; Dyck, 2008). This theory postulated that by ingesting LSD, psychiatrists and researchers could familiarize themselves with the inner experience of some of their patients and hence come to understand how best to treat them. Scientists could isolate the derivatives of mental illness through subjectively understanding the phenomenology of those experiencing psychosis and creating model therapies to assist such individuals (Osmond, 1957).

In 1957 Osmond reported a review of the clinical effects of psychotomimetic agents, he was particularly interested in the substances ability to mimic mental illness, most notably schizophrenia (Osmond, 1957). Osmond believed that the scientific and psychiatric community

could use these substances to train and educate health care providers and facilitate their "understanding of the strange ways of the mind" (Osmond, 1957, p. 420).

From Psychotomimetic to Psychedelic

Eventually, Osmond and Hoffer noticed, through their experiments, additional properties of this mysterious substance that led them to question the original model psychosis theory. Hoffer and Osmond observed favourable properties of psychedelics suggesting a varied use that permitted beneficial increases in self-awareness, introspection, and reconnection with spiritual or philosophical ideologies (Dyck, 2008). They believed in the potential for psychedelics to treat alcohol addiction, believing that LSD might be able to "cultivate strength and insight"(p.52), in the alcoholic (Dyck, 2008). It became clear to these early researchers that LSD had the power to assist individuals in unearthing a new perspective of self, released from the former bounds of an integrated self-concept, facilitating access to something beyond previously imagined (Anderson, 1996). "LSD had become increasingly beneficial to psychotherapy because of its ability to break down the natural defensive barriers of subjects, thereby making them more open to psychiatric counselling" (Anderson, 1996, p. 9).

The model psychosis theory began to seem unhelpful to the Saskatchewan psychiatrists, who consistently witnessed the relevancy of the LSD subjective experience over the biochemical properties of the drug itself (Anderson, 1996). Osmond believed the psychotomimetic was too narrow a term as it did not encompass the vast subjective quality these substances induced; he offered the term psychedelic, or mind-manifesting, to illuminate the potential beneficial and fruitful uses these compounds had for the human mind (Osmond, 1957).

Psychedelics as a Viable Treatment Option for Alcoholism

British Columbia was also a hub of psychedelic research during the golden age, Hollywood Hospital in New Westminster executed thousands of LSD treatments for privileged individuals (Anderson, 1996). A.M. Hubbard was Hollywood Hospitals' Director of Psychological Research and treated numerous alcoholics with LSD with relative success. Hoffer and Osmond were curious about his methods and invited him to Saskatchewan to demonstrate his therapeutic techniques (Anderson, 1996). What resulted from their collaboration was a decision to merge with other researchers and practitioners at the Saskatchewan Hospital and conduct psychedelic experiments (Anderson, 1996). The resulting study was the first of its kind; it outlined the psychedelic method in treating patients with alcoholism (Chwelos, Blewett, Smith, & Hoffer, 1959). This detailed report described therapeutic impacts and psychological aspects of the LSD experience in 40 patients with alcoholism. The authors concluded that LSD facilitates the individual towards "self-surrender" and "self-acceptance;" at the time many alleged that "the resolution of the problem of the alcoholic lies in this surrender" (Chwelos et al., 1959, p. 589).

Golden Rule

Many early researchers believed it necessary for professionals administering psychedelics to be familiar with the subjective effects of LSD by having ingested it themselves. Osmond (1957) declared this the golden rule of psychedelic research and stated, "those who have had these experiences know, and those who have not had them cannot know and, what is more, the latter are in no position to offer a useful explanation" (Osmond, 1957, p. 428). Duncan Blewett, University of Saskatchewan's psychology professor, quoted, "it should be absolutely illegal for

somebody to offer themselves as a guide into any dangerous territory unless they've been there" (Anderson, 1996, p. 9).

Recreational Psychedelic Use

When many hear the term psychedelic, images of strung-out hippies, kaleidoscopes, tie-dye, and counterculture protests that vehemently rebel against the status quo may come to mind. There is a cultural legacy in western society that categorizes psychedelics as a risky, dangerous, and hedonistic endeavour. In the 1960s, many believed recreational use of LSD infused youth counterculture by damaging and twisting young minds, leading to public, medical, and political concern (Nichols, 2016; Oram, 2016). Psychedelics were also associated with the anti-Vietnam war movement and the civil rights movements. The ideals propagated by antiwar efforts often by adolescents and young university students were seen by mainstream culture as resulting from drug use (Nichols, 2016). Former Harvard University professor Timothy Leary's message to "turn on, tune in, and drop off," a message to explore inner enlightenment and abandon convention, concerned authorities and political forces (Nichols, 2016).

Widespread recreational use of LSD overshadowed the positive, groundbreaking and beneficial claims of research. The media, medical professionals, and the federal government condemned the use of LSD (Anderson, 1996). As media criticisms, public fear and hysteria grew, the United States (US) federal government sought to enact stricter rules to curb substance use (Oram, 2016). The US Controlled Substances Act of 1970 and the United Nations Convention of 1971 placed psychedelics in the most prohibitive category of drugs, schedule 1 (Nutt et al., 2013; Oram, 2016). According to Nutt et al., (2013), the political decision by the United Nations to list psychedelic compounds as Schedule 1 drugs was based on unclear and

inconsistent assumptions and was not backed up by scientific methods or a proper grasp on explicit pharmacology and toxicology.

The political agenda to control recreational substance use had the cataclysmic effect of terminating legitimate medical research (Dyck, 2005; Oram, 2016). Although thousands of scientific papers substantiated the beneficial role of psychedelics as an adjunct to psychotherapy, research came to a halt in the 1970s (Anderson, 1996; Bogenschutz & Johnson, 2016). The experiences of thousands who used these substances in a safe therapeutic environment were unfortunately buried in history in the wake of the much louder and riskier counterculture.

Chapter Three: Brief, Selected, Literature Review

Chapter three provides a brief, selected, literature review of current research into the benefits of psychedelic-assisted therapy. Psychedelic therapy has given individuals relief from noxious symptoms, alleviation from anxiety, depression, and substance misuse struggles, as well as improvements in well-being. dos Santos et al. (2016) conducted a "systematic review of clinical health trials published from 1990 to 2015"(p. 193), to evaluate the therapeutic potential of psychedelic substances. In the six clinical trials included in this systematic review, the authors found consistent beneficial effects for "treatment-resistant depression, anxiety and depression associated with life-threatening diseases, and tobacco and alcohol dependence" (p. 193). Psychedelics have also shown promising potential in enhancing creativity and promoting general well-being and positivity in individuals (Kometer et al., 2012; Schmid, Enzler, Gasser, & Grouzmann, 2015; Soler et al., 2016). A discussion of past and current research occurs in the following paragraphs. The first part of this chapter will discuss the use of psychedelics in treating depression, anxiety and improvements in well-being. The second part will discuss the use of psychedelics to treat substance use struggles. I will also briefly review current research about the benefits of microdosing psychedelics.

Prevalence Rates of Mood and Anxiety Disorders

Major Depressive Disorder (MDD) is a common, debilitating, and disabling worldwide illness (Abdallah et al., 2016; McGirr et al., 2015; Murrough et al., 2013). It is estimated that approximately 17% of the United States population and 11.3% of the Canadian population meet criteria for MDD within their lifetime (Kessler et al., 2005; Statistics Canada, 2012); additionally, MDD is the leading cause of worldwide disability among psychiatric disorders

(Collins et al., 2011). This frequently chronic illness correlates with an elevated risk of suicide, impairment in daily functioning, heart disease and economic difficulties (Abdallah et al., 2016; Newport et al., 2015). Anxiety is also a common debilitating mental illness; approximately 8.7% of Canadians meet criteria for Generalized Anxiety Disorder in their lifetime (Statistics Canada, 2012). Many individuals with anxiety and depression suffer from persistent and severe symptoms as current pharmacological remedies show limited efficacy (dos Santos et al., 2016). Additionally, some of the adverse side effects make it difficult for folks to continue taking medication (dos Santos et al., 2016). Limited efficacy is especially true for those suffering from Treatment-Resistant Depression (TRD), these patients show "insufficient response to at least two adequate antidepressant treatments" (Murrough et al., 2013, p. 1134). Often, there is no symptomatic relief from depression despite treatment of antidepressant medication and psychotherapy (McGirr et al., 2015). Additionally, the full effects of antidepressants do not show up for weeks to months after initiation of treatment regimens (Abdallah et al., 2016). Thus, improved intervention is necessary to address the unmet needs of those suffering from depression and anxiety.

Psychedelics to Treat End of Life Anxiety and Depression

The following studies have shown the powerful therapeutic effects of psychedelic therapy in treating end of life anxiety and depression in individuals with a terminal illness (Gasser et al., 2014; Gasser, Kirchner, & Passie, 2015; Griffiths et al., 2016; Grob et al., 2011; Ross et al., 2016). I will discuss these studies in detail in the following section. Individuals with cancer often develop comorbid clinically significant depression and anxiety symptoms; nearly 40% of these individuals meet criteria for a diagnosis of major depressive disorder, other mood disorder, or

anxiety disorder (Holland et al., 2013; Mitchell et al., 2011). Some cancer patients are prescribed antidepressants to alleviate their depressed mood and anxiety; however, the efficacy of these treatments is limited with many individuals showing no improvements of their symptoms and/or adverse side effects (Grassi, Caruso, Hammelef, Nanni, & Riba, 2014; Ostuzzi, Matcham, Dauchy, Barbui, & Hotopf, 2018; Walker et al., 2014). Similarly, psychological treatments have shown limited efficacy, with existential orientations showing some but not significant evidence in treating these individuals (Breitbart et al., 2015; Faller et al., 2013; Spiegel, 2015).

In the 1960s and 70s, various studies indicated that psychedelics might have the potential to treat psychological distress in individuals who have cancer (Grof, Goodman, Richards, & Kurland, 1973; Kast, 1967; Richards, Rhead, Dileo, Yensen, & Kurland., 1977). These past research designs did not consist of the modern-day evidenced-based standards like controlled conditions and blind studies; thus, it is ineffective to infer their results towards general populations in the present day. These studies did, however, plant the seed to warrant curiosity and future research that has since taken place.

Psilocybin to Treat End of Life Anxiety and Depression

There are reports of psychedelics showing promise in relieving anxiety and depression in individuals suffering from a terminal illness. Specifically, research in the past decade has revealed that a single dose of psilocybin coupled with psychotherapy demonstrates anxiolytic and antidepressant effects alongside improvements in quality of life, life meaning, and optimism in individuals with advanced-stage cancer (Grob et al., 2011; Griffiths et al., 2016; Ross et al., 2016).

Grob et al. (2011) conducted a double-blind, placebo-controlled study, which showed that a single dose of psilocybin (0.2mg/kg) decreased psychological distress in individuals with a terminal cancer diagnosis. The sessions took place in rooms decorated with "fabric wall hangings and fresh flowers to provide a pleasing and comfortable environment" (p. 73). The authors found a reduction of anxiety in cancer patients as well as a lower score on the Beck Depression Inventory at six-month follow-up.

In a randomized, double-blind, cross-over trial, Griffiths et al. (2016), compared high (22 or 30 mg/70 kg) and low (1 or 3 mg/70 kg) doses of psilocybin administered to participants under psychologically supportive conditions. The sessions occurred in a "living room-like environment" under the care of two guides (p. 1183). The nondirective and supportive guides encouraged participants "to lie down on the couch, use an eye mask to block external visual distractions, use headphones" that played "classical and world music," and "focus their attention on their inner experiences" (Griffiths et al., 2016, p. 1183). "High-dose psilocybin produced large decreases in clinician- and self-rated measures of depressed mood and anxiety, along with increases in quality of life, life meaning, and optimism, and decreases in death anxiety" (Griffiths et al., 2016, p. 1181). 80% of participants in this study continued "to show clinically significant decreases in depressed mood and anxiety" at six-month follow up (Griffiths et al., 2016, p. 1181).

Ross et al. (2016) conducted a randomized, blinded, controlled, cross-over study to investigate the efficacy of psilocybin "administered in conjunction with psychotherapy to treat clinically significant anxiety or depression in patients with life-threatening cancer" (p. 1166). The study included 29 participants randomly assigned to the experiment condition of a single

dose (0.3 mg/kg) of psilocybin or active control condition of a single dose of niacin (250 mg). The results indicated that psilocybin assisted psychotherapy led to reductions in anxiety and depression in cancer patients. These effects lasted up to 8 months. The authors note the novel findings, as it is rare in psychiatry to find a single dose of any substance contributing to long term antidepressant or anxiolytic effects. The authors noted the following secondary effects: reductions in "cancer-related existential distress," increases in "spiritual well-being and quality of life," and improvements in "attitudes towards death" (Ross et al., 2016, p. 1177).

To bring qualitative data to psychedelic research, Belser et al. (2017) interviewed 13 participants from the trial conducted by Ross et al. (2016). Many participants noted transformations in personal relationships, and one participant described they began "seeing loved ones in a new way" (Belser et al., 2017, p. 361). Participants described that feelings of anger and resentment shifted towards "acceptance of the human experience" (p. 363). One participant noted:

> I felt like my family was doing their best and that people tried as hard as they could. And that even people that weren't there for me did their best, and certain things from the past were in the past. [pause] And that was okay. (Belser et al., 2017, p. 363).

One participant described "a greater understanding of the people around me" while another participant described his new connection with his partner, "I was appreciating the pureness of her, if you will, her being, in a way" (p. 365). Every participant stated they experienced emotions "beyond what they were able to access in their daily lives" (p. 366). One participant said he "experienced all the emotions I know how to experience," and another said she felt, "all of them, all of them. Every possible emotion" (p. 366).

Most participants stated they lost their sense of self echoed in the following statements: (a) "losing the firm grasp on sort of 'me-hood, including my past, my relationships, my personality," (b) "I didn't have a body . . . I was just like this soul, this entity," (c) "my consciousness, or my soul, or whatever, was flying out of my body" (Belser et al., 2017, p. 368). Many participants spoke of feelings of connectedness with others, nature, and the universe: (a) "we're all kind of a greater whole," (b) "we're all going to be connected again in the universe," (c) "I felt like I could reach out to anybody and connect with them," (d) "an overarching theme of this psychedelic spiritual realm is just like the interconnectedness of things," (e) "everything is connected—you know, it's not people—it's animals, it's trees—everything is interwoven, and that's a big relief. It's a big comfort" (Belser et al., 2017, p. 369).

LSD to Treat End of Life Anxiety and Depression

Gasser et al. (2014) conducted the first study in more than 40 years to "evaluate safety and efficacy of LSD as an adjunct to psychotherapy" (p. 512), in 12 patients with anxiety associated with a life-threatening illness. This study, unique to previous LSD studies as it followed contemporary research standards, was a "double-blind, randomized, active placebo-controlled pilot study" (p. 512). A moderate dose (200 µg) of LSD was administered in a psychotherapeutic context in a "safe, quiet, and pleasant room in a private office" (p. 515). Participants were instructed to "lie on a mattress on the floor or sit comfortably on a chair" (p. 515). The authors reported no drug-related severe adverse effects. Results indicated significant reductions in trait and state anxiety found via the State-Trait Anxiety Inventory (STAI).

Gasser et al. (2015) evaluated the long-term effects at 12 months follow up that LSD assisted psychotherapy had on nine of the original 12 participants through semi-structured

interviews. Additionally, they explored participants reported subjective present-day emotions and recorded any long-lasting psychological changes. One participant spoke of how new emotional insights helped them release their fear of death:

> The LSD session sets things free in my mind, which under normal conditions may not have appeared, because they might have been suppressed. I mean I did sense certain freeing moments for myself. That I could let go of the weight of the fear … Well I was surprised to find real stirring of emotions, which I usually would not have felt with all my self-control and restraint. (Gasser et al., 2015, p. 61).

Another participant found comfort in letting go of their ego; the interconnectedness permitted them to understand their illness through a new perspective:

> I had the opportunity to relax. I rather connected to my inner world. Closed eyes. It was less about my illness. I was able to put it into perspective. … Not to see oneself with one's sickness as centre. There are more important things in life. … The evolution of humankind for example. … Your Inner Ego gets diminished, I believe, and you are looking at the whole … you are indeed starting to build relations with plants or with the entire living world around. You think less about yourself, you are thinking – across borders. (Gasser et al., 2015, p. 61).

One participant spoke of a new existential orientation towards death and dying that alleviated their suffering, “Dying is as usual or unusual as life itself. You cannot separate it. I simply have to familiarize myself with the idea and the process. And for that an LSD session is of priceless worth” (Gasser et al., 2015, p. 62).

The present study has shown that psychological improvement as "achieved during 3 months of LSD-assisted psychotherapy is stable over a 12-month period" (Gasser et al., 2015, p. 64). Participants showed a reduction in psychopathological symptoms. The authors noted that participants also showed "positive psychological changes," which included their "mental strengths, self-assurance, equanimity, and increases in relaxation" (p. 64).

Taken together, when ingested within the parameters of a safe and therapeutic context, psilocybin and LSD have potential to alleviate noxious psychological symptoms in those who face a terminal illness.

Psilocybin to Treat Treatment-Resistant Depression

Psilocybin is a safe, well-tolerated, and effective treatment, successfully reducing depressive symptoms in individuals with TRD (Carhart-Harris et al. 2016; Carhart-Harris et al., 2018; Lyons & Carhart-Harris, 2018).

Carhart-Harris et al. (2016) conducted an "open-label, single-arm pilot study"(p. 625), involving 12 participants that examined the safety, efficacy, and feasibility of psilocybin treatment in individuals with TRD. Participants listened to music while relaxing "on a ward bed in a supine or reclined position" (p. 621). Two psychiatrists supervised participants for the duration of their treatment. Results indicated that psilocybin sessions helped alleviate depressive symptoms up to three months follow up.

The sample size was small for this study, so it is difficult to make reliable inferences about the efficacy of psilocybin treatment. Nevertheless, all 12 patients presented with reduced depressive symptoms, eight reached complete remission after one week of follow up, and seven

reached remission at three months. Moreover, no severe or adverse reactions to the psilocybin were found in any of the participants. This data is promising enough to warrant further research.

Carhart-Harris et al. (2018) conducted another "open-label trial of psilocybin for treatment-resistant depression" (p. 399). Twenty patients with a diagnosis of TRD underwent two psilocybin doses seven days apart administered in a supportive setting. Researchers found "marked reductions in depressive symptoms" (p. 399), up to 5 weeks after treatment. These results sustained up to six months follow up. It is difficult to draw concrete conclusions from open-label studies, but the results are promising enough to demonstrate the demand for double-blind, randomized control trials of the use of psilocybin and more generally psychedelics for the treatment of TRD.

Often referred to as the depressive-bias, individuals with MDD tend towards higher instances of pessimism (Lyons & Carhart-Harris, 2018). In a recent study, Lyons and Carhart-Harris (2018) tested for the usefulness of psilocybin with psychological support in lowering pessimism in individuals with TRD. Researchers indicated this study was the first of its kind as no other studies have utilized behavioural measures to "objectively address cognitive biases integral to depression" (p. 6), and the way these biases may shift after psychedelic supportive treatment. Researchers measured participants level of pessimism before and after psilocybin therapy (one week after dose) and matched with controls. Participants in this study had a baseline of pessimism which was "excessive and unrealistic when predicting the occurrence of future life events" (p. 6), those tending towards higher pessimism also tended towards more severe depressive symptoms (Lyons & Carhart-Harris, 2018). After psilocybin treatment, participants' pessimism and depressive symptoms decreased, and they more accurately predicted future life

events; these changes were not observed in the control group. These findings indicate that "psychologically supportive administration of psilocybin" (p. 10), reduces depression bias in individuals with TRD which may enable individuals to imagine a more precise, optimistic, and realistic future for themselves. It is evident that when protocols are in place to ensure proper screening and therapeutic support, psilocybin treatment is safe and effective for individuals with TRD.

Ayahuasca to Treat Major Depressive Disorder

A small "open-label trial conducted in an inpatient psychiatric unit" by Osório et al. (2015) evaluated "the effects of a single dose of ayahuasca in six volunteers" (p. 13), with a diagnosis of MDD. Researchers reported rapid and sustained antidepressant and anxiolytic effects observed "between baseline and 1, 7, and 21 days"(p. 13), following ayahuasca ingestion. Although a small study and lacking control conditions, the results are promising and support the need for further research.

Psilocybin to Treat Obsessive-Compulsive Disorder

Moreno, Wiegand, Taitano, & Delgado (2006) conducted a double-blind study that "investigated the safety, tolerability, and clinical effects of psilocybin in patients with OCD" (p. 1735). This "small proof-of-concept, phase I study"(p. 1738), utilized an escalating dosing schedule to modify individuals' tolerability to higher doses. A total of nine participants with a DSM-IV diagnosis of Obsessive-Compulsive Disorder (OCD) underwent four single-dose psilocybin exposures administered at one-week intervals. Results indicated a reduction in OCD symptoms across all participants with improvements lasting longer than 24 hours. "In a

controlled clinical environment, psilocybin was safely used in subjects with OCD and was associated with acute reductions in core OCD symptoms in several subjects" (p. 1735).

Psychedelics as Tools to Improve Well-Being

In a double-blind, randomized, placebo-controlled, cross-over study, 16 healthy participants ingested a moderate dose of LSD (200µg) and placebo (Schmid et al., 2015). Authors found that LSD led to the increase of subjective well-being, happiness, closeness to others, openness, and trust.

Psilocybin and Positivity

Kometer et al. (2012) found that psilocybin directs emotional processing towards positivity rather than negativity. Many individuals suffering from mood disorders tend to incorporate negative bias into their everyday experience. In a "randomized, double-blind study, 17 healthy human subjects" ingested "psilocybin (215µg/kg), serotonin antagonist ketanserin (50 mg), or psilocybin plus ketanserin" (Kometer et al., 2012, p. 898). Psilocybin helped shift this negative bias towards a positive direction and elevated positive mood suggesting that psilocybin may shift one's "emotional bias across various psychological domains" (p. 898).

Psilocybin Contributes to Meaningful Insights

Zamaria (2016) conducted unstructured interviews with eight adults who reported past psilocybin use. Their phenomenological approach seeks to understand the "positive and persisting psychological and behavioral aftereffects"(p. 285), of psilocybin use. Participants reported the enduring quality of meaningful insights gained from their experience with psilocybin. Data from the interviews suggested the tendency for psychedelic use to increase long term introspection and self-reflection and give individuals insight into what elicits subjective

experiences of happiness. One participant described how psilocybin therapy elicited gratitude and happiness:

> The trip helped me to feel so happy and grateful. I felt like time slowed down so much that I was just in one moment. The past and the future stopped existing and I felt this amazing feeling. It was like bliss or heaven or Nirvana. (Zamaria, 2016, p. 292).

Another participant recounted that their experience allowed them to let go of negative weight and feel more grounded:

> I felt pretty good the next day. Like something had been cleared or that a weight had been removed. I felt much lighter, kind of limber, energetic, you know, pretty happy. I had a strong sense of calm, clarity, and of being grounded. (Zamaria, 2016, p. 292).

The words of the following participants suggest the potential for psychedelics to act as an agent for psychological healing and growth:

> I have this sense of self-awareness. . . a kind of understanding what I'm here for and what I'm meant to do. I think I'm more aware of the things that will make me happy. . . the things that I believe will ensure a stable, happy, fulfilling life. (Zamaria, 2016, p. 293).

Microdosing

Microdosing is defined as taking a sub-perceptual altering dose of a psychedelic (Fadiman, 2016). Anecdotal reports indicate microdosing may have many benefits, including enhanced creativity and problem-solving abilities, and alleviation of anxiety and depressive symptoms (Fadiman, 2016; Prochazkova et al., 2018). Self -reports from volunteers who microdose indicate reductions in social anxiety, reduction in environmental triggers of traumatic memory, and higher propensity to be in the present moment (Fadiman, 2016).

In a small study, Prochazkova et al. (2018) aimed to "quantitatively explore the cognitive enhancing potential of microdosing psychedelics in healthy adults" (p. 3401). They measured 38 non-blinded participants performance on two "creativity-related problem-solving tasks"(p. 3401), once before taking a microdose and once after microdosing effects were "expected to be manifested" (p. 3401). They found that "both convergent and divergent thinking performance was improved after a non-blinded microdose, whereas fluid intelligence was unaffected" (p. 3401). While these results are promising, randomized placebo-controlled trials are needed to talk definitively about the effects of midcrodosing.

As described, there is a wealth of research demonstrating the therapeutic utility and benefit of classic psychedelics in the treatment of depression and anxiety in a variety of individuals. There is also evidence to suggest the ability for psychedelics to promote general positivity and enhanced mood. The following section will highlight past and current research that claims the efficacy of psychedelics in the treatment of substance use disorders.

Prevalence of Substance Use Disorders

Substance use disorders are widespread, leading to harmful and adverse social and individual consequences (Bogenschutz & Johnson, 2016). The leading preventable cause of disability and death globally is due to misuse of alcohol, tobacco, and other drugs (Rehm et al., 2009). Approximately five million deaths occur worldwide, and roughly half a million deaths occur in the United States every year from tobacco alone (National Center for Chronic Disease Prevention and Health Promotion (US) Office on Smoking and Health, 2014; World Health Organization, 2011).

Approximately 21.6% of adult Canadians, roughly six million people, will meet criteria for any substance use disorder during their lifetime (Statistics Canada, 2012). Alcohol is the most common substance; 18.1 % of Canadians experience alcohol abuse or dependence in their lifetime (Statistics Canada, 2012). In the United States, approximately 19.7 million people age 12 and over met criteria for any substance use disorder in 2017 and 14.5 million meet criteria for alcohol use disorder (Substance Abuse and Mental Health Services Administration, 2018). The lifetime prevalence of alcohol use disorder in the US is estimated at just below 30% (Grant et al., 2015).

The current opioid epidemic claimed the lives of more than 1400 people in British Columbia in 2017 and roughly 30% of Canadians report using some form of opioids (Nathoo, Poole, & Schmidt, 2018). While harm reduction efforts and the availability of naloxone has saved countless lives, individuals still struggle with debilitating dependency on opioids, a pattern and lifestyle that often leads to marginalization and stigmatization

Conventional "treatments" for deleterious substance use produce small effects (Kessler et al., 2005; dos Santos et al., 2016). For example, psychopharmacological and behavioural substance misuse treatments generate meagre success rates and low efficacy (Bogenschutz & Johnson, 2016; Eishens & Atherton, 2018). In the United States, approximately 69% of individuals who smoke cigarettes would like to stop smoking; however, only 35% of those who intend to stop and utilize available treatments remain abstinent from cigarettes long term (Cahill, Stevens, & Lancaster, 2014).

Alcohol dependence is challenging for individuals to overcome even with the best current treatments, leaving many unable to achieve recovery (Krebs & Johanson, 2012).

Pharmacological alcohol treatments elicit small to medium effect sizes, and relapse is common (Bogenschutz & Johnson, 2016). When investigating pharmacotherapies for the treatment of alcohol use disorder, approximately 1/9 remain abstinent or avoid relapse (Rösner et al., 2010) Thus, there is an unmet need in treating individuals who misuse substances.

Psychedelics to Treat Alcohol Dependence: Past Research

As mentioned in chapter two, during the 1950s through to the early 1970s, psychedelic research was encouraging and exciting, the way of the future in psychiatric care (Bogenschutz & Johnson, 2016). "LSD, psilocybin, and other hallucinogens were legally available for clinical use as an experimental treatment until the mid to late 1960s" (Bogenschutz & Johnson, 2016, p. 251).

Before psychedelics were legally prohibited, an abundance of studies demonstrated the efficacy of psychedelics in the treatment of alcohol dependence. Over 30 publications during the 1950s-1970s described the clinical impacts of LSD treatment for alcohol dependence (Bogenschutz & Johnson, 2016). Some are as follows: Chwelos et al., 1959; Hollister, Shelton, & Krieger, 1969; Savage & McCabe, 1973; Smart, Storm, Baker, & Solursh, 1966. The results of these publications were variable but encouraging, and almost half of them administered a control group.

Between 1953 and 1969, roughly 1100 individuals suffering from alcohol dependence received LSD psychotherapy (Abuzzahab & Anderson, 1971). The subjective reports of 75% of the patients treated with a single dose of LSD psychotherapy showed improvement (Abuzzahab & Anderson, 1971). These past studies, however, lacked the scientific credibility of rigorous modern standards and therefore are difficult to generalize across larger samples (Abuzzahab &

Anderson, 1971; Nichols, 2016). After the criminalization of LSD led to an abrupt halt in research in the early 1970s, the academic community placed these studies out of circulation, categorizing them as too limited to warrant any conclusions to efficacy.

An array of medical literature criticized psychedelic studies in the 1950s for not employing standardized scientific standards, most notably the absence of placebo controls and the double-blind (Dyck, 2008). Anderson (1996) admits that the initial experimentation with LSD in the 1950s could be considered unethical and controversial by rigorous standards of today, but they also bring in a relevant argument of whether it is fair to judge the past by the ethical standards of the present. Perhaps it is possible to learn from the past treatments by placing them within the cultural conditions under which they took place, suspending judgments of their empirical practice and focusing on gaining valuable insights. Thoroughly washing away previous knowledge about the psychedelic experience seems foolhardy, negligent, and unethical.

Krebs and Johansen (2012) conducted a meta-analysis from 1943-2010, which included six randomized controlled clinical trials of LSD and alcohol dependence. Experimental groups consisted of 536 adults, 325 were "randomly assigned to receive full-dose LSD," and 211 were randomly assigned to a control condition (p. 2). This meta-analysis incorporated the results from the following six studies: Bowen, Soskin, & Chotlos, 1970; Hollister et al., 1969; Ludwig, Levine, Stark, & Lazar, 1969; Pahnke, Kurland, Unger, Savage, & Grof, 1970; Smart et al., 1966; Tomsovic & Edwards, 1970).

All participants were male, and all received a single high-dose of LSD during a therapeutic session. Krebs and Johansen (2012) found that one dose of LSD led to "significant beneficial effects on alcohol misuse at first reported follow-up assessment" (p.7). Authors

indicated significant effects up to 6 months follow up. They also found that LSD led to other benefits: participants commonly spoke of new insights, self-acceptance, greater openness, positivity and optimism for the future.

Psychedelics to Treat Substance Dependence: Current Research

Unlike the research in the 1950s-1970s, the new psychedelic renaissance of the past decade implements modern-day scientific credibility and ethical standards. Recent studies have demonstrated that psychedelics have the potential to assist individuals in reducing problematic drug and alcohol use (Bogenschutz et al., 2015; Fábregas et al., 2010; Garcia-Romeu, Griffiths, & Johnson, 2014; Hendricks, Clark, Johnson, Fontaine, & Cropsey, 2014; Johnson, Garcia-Romeu, Cosimano, & Griffiths, 2014; Noorani, Garcia-Romeu, Swift, Griffiths, & Johnson, 2018; Thomas, Lucas, Capler, Tupper, & Martin, 2013).

Hendricks et al. (2014) found that psychedelics may help individuals abstain from alcohol and other substances in populations with felony charges. Their longitudinal study of 25, 622 individuals reporting a history of substance use, found that individuals who used psychedelics were more likely to comply with legal requirements surrounding other substances of misuse. This study suggests that the use of psychedelics may aid in drug abstinence and promote prosocial behaviour.

Ayahuasca to Treat Substance Dependence

Fábregas et al. (2010) found that the consumption of ayahuasca by some indigenous groups assists in maintaining sobriety from substances that engender dependence. Furthermore, "the ritual use of ayahuasca does not seem to be associated with the psychosocial problems that drugs of abuse typically cause" (p.4).

In a research study including Canadian First Nations individuals with substance use and related struggles, Thomas et al., (2013) found that ayahuasca in conjunction with group therapy demonstrated the potential to decrease alcohol, tobacco, and cocaine use and promoted lasting positive changes. Moreover, the authors found that individuals participating in ayahuasca retreats reported enhanced mindfulness, empowerment and hopefulness. One voyager spoke of her experience in the following quote:

> [The retreat] affected my life in giving me another chance at life rather than being stuck in my addiction and just living for my addiction. . . . I realize that I deserve a better life and I love myself. And I have more respect for myself. And the honesty that, just being honest with myself and others, had a major impact . . . [ayahuasca] really opened my eyes. It was like I was shut down [before drinking ayahuasca]. My mind and my eyes were shut down to everything. After the retreat I felt like a brick was lifted off of my shoulders and I was just feeling free. (Thomas et al., 2013, p. 37).

Another participant spoke of experience in the following quote:

> Other treatments [for my addiction] sort of like scraped the surface as they say. This one got deep, deep into myself, which I've never admitted to or confronted I guess you could say in the other treatments. And this was just a mind-bending experience, boy! [laughs]. I can't believe what I saw and who I talked to, like my mom and my dad and my granddaughter who are in the next world there [i.e., have passed away]. And it really, really touched me deeply and I think about that every day (p. 38).

Psilocybin to Treat Alcohol and Nicotine Dependence

Psilocybin has been shown to have potential therapeutic utility in treating individuals with alcohol dependence and nicotine dependence (Bogenschutz et al., 2015; Johnson et al., 2014; Garcia-Romeu et al., 2014; Noorani et al., 2018).

Psilocybin to Treat Alcohol Dependence

In their open-label proof-of-concept study, Bogenschutz et al. (2015), aimed to demonstrate the need and feasibility for further psychedelic research, explicitly targeting the therapeutic potential of psilocybin in the treatment of alcohol dependency. Psilocybin was administered orally to 10 volunteers with a diagnosis of alcohol dependence according to the DSM-IV criteria (Bogenshutz et al., 2015). Volunteers underwent three phases of treatment: psychosocial treatment only, psilocybin and psychosocial treatment, post-treatment follow-up. The authors found that one or two doses of psilocybin, administered in therapeutic sessions, led to a significant increase in alcohol abstinence, as well as lower alcohol cravings, increased self-efficacy and increased motivation. Authors noticed that individuals who reported a stronger psilocybin experience associated with improvements in self-efficacy, cravings and drinking behaviour (Bogenschutz et al., 2015).

Psilocybin to Treat Nicotine Dependence

In an open-label pilot study, psilocybin was administered as an adjunct to psychotherapy in a smoking cessation program; subjects were nicotine dependent and had previously made attempts to stop smoking without long-term success (Johnson et al., 2014). Results indicated that smoking cessation rates exceeded the average rates from psychotherapy alone, indicating the

promise of this powerful substance in treating substance dependency and surely cements the argument for the need for further research.

"In an open-label pilot-study," psilocybin was used to treat nicotine use disorder (Garcia-Romeu et al., 2014, p. 1). 15 participants who self-identified as cigarette smokers received two or three psilocybin doses alongside cognitive behavioural therapy for smoking cessation. "Twelve of 15 participants demonstrated biologically verified smoking abstinence at 6-month follow-up" (p.1).

Noorani et al. (2018) reported that psilocybin experiences ignited insights into individuals' self-identity that powerfully diminished their desire to smoke as well as alter smoking behaviour. Participants recounted that the imprint of the psychological experience offered through psilocybin overpowered short-term tobacco withdrawal symptoms. Additionally, positive effects beyond smoking cessation, including altruism and prosocial behaviour, were reported (Noorani et al., 2018). One participant declared that psilocybin alleviated their withdrawal symptoms in the following quote:

> I have smoked for a number of years, and I have attempted to quit on numerous occasions, and I always would go through withdrawal. I didn't with psilocybin…I didn't wake up in the middle of the night [after the session], I slept like a log. My mind was preoccupied with the psilocybin experience, so, it [withdrawal] didn't really affect me. (Nooranit et al., 2018, p. 6)

Psychedelics: A Relatively Safe Intervention

Psychedelic drugs are considered physiologically safe in supervised settings, have no known toxicity, and do not lead to dependence (Griffiths, Richards, McCann, & Jesse 2006;

Grob et al., 2011; Hasler, Grimberg, Benz, Huber, & Vollenweider, 2004; Sessa, 2008; Carhart-Harris et al., 2016; Nichols, 2016; Studerus et al., 2010). Additionally, there have been no documented cases of overdose deaths occurring after ingestion of LSD, psilocybin, or mescaline (Nichols, 2016). Nonetheless, these powerful compounds are not harmless; attention to specific psychological and acute physiological risks will be discussed in chapter five.

Unlike substances that lead to dependency, psychedelics do not impact the dopaminergic system of the brain (Nichols, 2016). Psilocybin is used most frequently in psychedelic research because of its known relative safety, significant duration of action, and easy oral absorption (Tylš, Páleníček, & Horáček, 2014). Additionally, psilocybin does not carry the same cultural stigma as other psychedelic substances, most notably LSD.

Long Term Use of Psychedelics

In a study by Krebs and Johansen (2013), researchers focused on the current mental health status and prevalence of lifetime psychedelic use in the United States. They found that among the total population sampled, 13.4% reported lifetime use of psychedelics. In this group, they did not find any significant associations of long-term psychedelic use and negative mental health outcomes. Use of psychedelics, interestingly, was associated with a lower rate of mental health problems.

Johansen & Krebs (2015) surveyed 135,000 randomly selected US adults on domains of psychedelic use and mental health. Among the 19,299 self-reported long-term psychedelic users they found "no significant associations between lifetime use of psychedelics and increased likelihood of past year serious psychological distress, mental health treatment, suicidal thoughts, suicidal plans and suicide attempt, depression and anxiety" (p. 270). Furthermore, the evidence

suggested that there is no clear indication that psychedelic use is an "independent risk factor for mental health problems" (p. 270). In contrast, the authors found the opposite, psychedelic use was associated with a lower likelihood of psychiatric treatment.

Halpern, Sherwood, Hudson, Yurgelun-Todd, & Pope, (2005) compared 61 Navajo Native American Church members who reported regular use of peyote with 79 individuals who reported minimal use of peyote. Researchers compared these groups on domains of cognitive function, memory, attentional and executive functions. They found no deficits in cognitive function in the peyote group, nor were there any associations with peyote exposure and neuropsychological performance (Halpern et al., 2005).

Bouso et al. (2015) studied the impact of long term ayahuasca use on "general psychological well-being, mental health and cognition" by comparing mental health and psychological well-being assessments of "regular ayahuasca users (n=127) with non-ayahuasca religious controls (n=115) at baseline and one year later" (p.1). Regular ayahuasca use correlated with a decrease in psychopathology and an increase in psychosocial well-being. Long term use of ayahuasca correlated with higher scores on neuropsychological tests and decreased risk of psychopathology (Bouso et al., 2015).

Hendricks, Thorne, Clark, Coombs, & Johnson (2015) compared domains of psychological distress and suicidality with psychedelic use across a sample of 191,832 respondents of the National Survey on Drug Use and Health from 2008-2012. They found that 27,235 respondents reported lifetime classic psychedelic use. Lifetime classic psychedelic use was associated with a decreased probability of psychological distress, suicidal ideation, and suicide attempts. Furthermore, psychedelics demonstrated to be a protective factor against

suicidality and psychological stress. This study suggests that psychedelic therapy might be helpful in suicide prevention strategies.

Many of these studies have small sample sizes, so it is difficult to make grand inferences across general populations, further research that implements larger sample sizes will give us more information about how to proceed with these powerful substances. It is clear, however, that the current legal restrictions, declaring psychedelics as harmful and without legitimate psychological benefit, do not align with the evidence outlining consistent positive and beneficial effects of these compounds for a variety of ailments.

Chapter Four: Phenomenology and Neural Correlates of the Psychedelic Experience

In this chapter, I discuss the phenomenological psychedelic experience and highlight recent developments in neuroscience that attempt to locate its neural correlates. I examine relevant theories about how psychedelics work to facilitate the positive therapeutic effects I discussed in chapter three. Psychedelics are known to impact brain chemistry, most notably the serotonergic system. Psychedelics also impact global brain function and neural connectivity. Moreover, psychedelics are known to induce "unique mind-manifesting properties" (Baumeister, Barnes, Giaroli, & Tracy, 2014, p. 165), alongside feelings of "transcendental enlightenment" (Dyck, 2008, p. 41). Many describe these experiences as mystical, profound, and spiritually significant (Bogenschutz & Johnson, 2016; Turton et al., 2014; Zamaria, 2016). Recent research emphasizes "the central role of the altered state of consciousness experienced during the drug's acute effects" (Bogenschutz et al., 2015, p. 290). The meaning gained from the psychedelic experience poses central significance in therapeutic healing; therefore, it is essential to discuss how the lived experience contributes to the overall positive effects.

I believe it is crucial to have a foundational understanding about what is happening both neurologically and phenomenologically to know the best way forward as practitioners in the psychedelic arena. I believe the work of facilitating and integrating a healing process for clients comes from a fundamental understanding of how these medicines work to generate meaningful changes. Although the current chapter explores psychedelics and the psychedelic experience, I am not advocating for rampant recreational use of these substances outside the boundaries and containment of psychedelic-assisted therapy.

Phenomenological Psychedelic Experience

This section will categorize the varieties of the psychedelic experience through common themes; however, I recognize the powerful shifts in experience due to set and setting, which I will discuss in chapter five.

Alterations in Perception

Psychedelics can produce alterations in waking consciousness which manifest as perceptual disturbances in auditory, visual, somatosensory, and proprioceptive sensations as well as perceptual disturbances in time (Blewett & Chwelos, 1959; Schmid et al., 2015; Turton, Nutt, & Carhart-Harris 2014). Specifically, psychedelics can induce feelings of weightlessness, variations in perceived brightness in the visual field, variations in perceived visual patterns and colour, and shifts in temperature (Blewett & Chwelos, 1959). Psychiatrist Stanislov Grof discussed his LSD experience in the following way: "I experienced a fantastic display of colorful visions, some abstract and geometrical, others figurative and filled with symbolic import" (as cited in Fadiman, 2011, p. 52). Under the influence of psychedelics, the sensory messaging shifts and individuals perceive an alternative reality. As one participant in psychedelic research declared, "…The things you normally consider as reality are just not as they seem to be" (Gasser et al., 2015, p. 62). Humphrey Osmond proclaimed his experiences with LSD as "not escapes from but enlargements, burgeoning's of reality" (Osmond, 1957, p. 428). Psychologist Ralph Metzner described one encounter with psychedelics in the following way:

> I lay down on the floor and stretched out, feeling very relaxed and yet very alert…all of a sudden I found myself in completely new and magical worlds…when I closed my eyes, fantastically beautiful and intricate geometric depth patterns were interweaving behind

> my eyelids, watching, colliding, streaming by at great speed…my skin was embracing me, enwrapping me, in a kind of alternatively wet and dry, hot and cool almost unendurably pleasurable embrace. (as cited in Fadiman, 2011, p. 58).

After Albert Hoffman accidentally ingested LSD in 1943, he noted his subjective experience in his laboratory journal:

> I noted with dismay that my environment was undergoing progressive change. Everything seemed strange and I had the greatest difficulty in expressing myself. My visual fields wavered and everything appeared deformed as in a faulty mirror. I was overcome by a feeling that I was going crazy, the worst part of it that I was clearly aware of my condition…I was seized by a peculiar sensation of vertigo and restlessness. Objects, as well as the shape of my associates in the laboratory, appeared to undergo optical changes…In a dream-like state I left for home…(where I) fell into a peculiar state of 'drunkenness' characterized by an exaggerated imagination…After two hours this state gradually subsided. (as cited in Anderson, 1996, p. 2-3).

Psychedelics can also increase an individual's propensity to visually perceive beauty in their surroundings and increase imagination and creativity (MacLean, Johnson, & Griffiths, 2011). Alexander "Sasha" Shulgin, a pharmacologist and chemist who discovered, synthesized and ingested over 230 psychoactive compounds, described his experience of mescaline in 1960, under the care of a psychologist friend acting as a guide, in the following quote:

> I saw the world that presented itself in several guises. It had a marvel of color that was, for me, without precedent, for I have never particularly noticed the world of color. The rainbow had always provided me with all the hues I could respond to. Here, suddenly, I

> had hundreds of nuances of color which were new to me, and which I have never, even today, forgotten. The world was all so marvelous in its detail. (as cited in Fadiman, 2011, p. 53).

Ineffability

Many individuals find the ineffable, sacred, profound nature of the psychedelic experience challenging to represent in language (Turton et al., 2014; Chwelos et al., 1959). LSD is said to induce:

> portentousness – the capacity of the mind to see more than it can tell, to experience more than it can explicate, to believe in and be impressed with more than it can rationally justify, to experience boundlessness and boundaryless events, from banal to the profound. (Freedman, 1968, p.331).

It could be that the "sensory aspect of the experience is out of the bounds of the usual experience for which our language is intended" (Chwelos et al., 1959, p. 583). Moreover, individuals may struggle to articulate their thoughts because the speed of their arrival is too rapid to describe (Blewett & Chwelos, 1959).

Belser et al. (2017) underscored the ineffability of such experiences through the words of a voyager, "You cannot express what is happening. You have a complete blockage, because there is no vocab, there is no word" (p. 371). Another voyager noted, "I mean, it's really hard to describe. You just know, but you feel it in a very intense way because part of it is in the process of knowing, you realize that you didn't know before" (Belser et al., 2017, p. 371). Three voyagers used the following "paradoxical juxtapositions to describe their experience: "formless

mass," "indescribable confluence of joy and sorrow," and "wonderful nothingness" (Belser et al., 2017, p. 371).

Mystical Experience

Psychedelics can occasion "profound existential experiences"(Carhart-Harris et al., 2012, p.2138), and lead to spiritual or mystical experiences that have long-lasting psychological effects (Turton et al., 2014). According to William James, (1902) mystical experiences take up a noetic quality signifying their capacity to register not only as a feeling state but as a "state of knowledge," an enduring conviction of the revelation of ultimate truths and reality. Noetic refers to:

States of insight into depths of truth unplumbed by the discursive intellect. They are illuminations, revelations, full of significance and importance, all inarticulate though they remain; and as a rule they carry with them a curious sense of authority for after time. (James, 1902, p. 370).

The Pahnke-Richards Mystical Experience Questionnaire denotes seven domains of mystical experiences: internal unity (pure awareness; merging with ultimate reality), external unity (unity of all things, all things are alive; all is one) transcendence of time and space, ineffability and paradoxically (claim of difficulty describing the experience in words), a sense of sacredness (awe), noetic quality, and a deeply felt positive mood (joy, peace, love) (Griffiths, Richards, McCann, & Jesse, 2006).

While there is no clear consensus on the mechanism of action of psychedelics, the most persuasive evidence suggests that the individuals' connection to the mystical, profound and meaningful experience of psychedelics mediates perceived benefits and positive aftereffects

(Bogenschutz & Johnson, 2016; Garcia-Romeu et al., 2014: Johnson et al., 2014; Noorani et al., 2018; Ross et al., 2016; Zamaria, 2016). The subjective experience is integral to the success of psychedelics. Michael Pollan sums up this idea succinctly in his book How to Change Your Mind with the following quote:

> What is striking about this whole line of clinical research is the premise that it is not the pharmacological effect of the drug itself but the kind of mental experience it occasions--involving the temporary dissolution of one's ego-that may be the key to changing one's mind. (Pollan, 2018, p. 11).

One voyager described a transforming view of the world due to psychedelic-assisted therapy:

> I feel like there was a major difference in my perception of the world. Things seemed a lot richer than I had noticed them before, any other time. It just felt like the veil was pulled back and that I could perceive life as a deeper, richer experience. (Zamaria, 2016, p. 290).

Garcia-Romeu et al. (2014) conducted a study in which individuals were treated with psilocybin assisted psychotherapy for the treatment of smoking cessation. Those who abstained from smoking reported a stronger likelihood of mystical-type experiences. Mystical experience measures correlated with smoking abstinence. Moreover, Garcia-Romeu et al. (2014) proposed that the subjective experience of psilocybin carried more significance than the actual pharmacological impact.

Furthermore, the suggestibility of these compounds and the intentionality of the voyager contributes to their meaningful effects. For instance, many individuals use psychedelics in

tandem with smoking cigarettes. It is only when the voyager intends to stop smoking that the profound psychedelic experience engenders abstinence from cigarettes.

Psychedelics and Introspection

Use of psychedelics can induce powerful, compassionate, and open introspective experiences that elicit spontaneous insights about the self and nature (Blewett & Chwelos, 1959; Bogenschutz et al., 2015; Carhart-Harris et al., 2014; Zamaria, 2016). Blewett & Chwelos (1959) believed that psychedelic therapeutic potential lies in the voyager's achievement of a "remarkable degree of insight and self-understanding" (p. 11). They argued that when the individual leans into a new level of identity, what abides is the freedom to be oneself, free from self-judgment or fear of uncertainty of self or others. This new identity often arrives as a revelation, anew, clear and profound. A voyager describes encountering internal wisdom in the following quote:

> I was inspired to think about myself and my life, and what I really want or what would really be good for me. Thoughts would just come to me that seemed to be coming from some wise place. I felt like I could think with a lot of clarity about the meaning of things as they relate to me. Words would come to me like poetry or philosophy about my life or my experiences (Zamaria, 2016, p. 291).

Dyck (2008) highlighted the variety in individual responses to psychedelics during the LSD trials in Saskatchewan. Psychedelics sparked differential philosophical, spiritual, and epistemological worldview questions in users, and although the phenomenological experience varied, most individuals reported that LSD "fundamentally modified their being" (Dyck, 2008, p.

30). The distortions and alterations in perception, coupled with profound personal insight and feelings of self-discovery (Dyck, 2008).

Noorani et al. (2018) conducted a qualitative study on psychedelic therapy for smoking cessation, and many voyagers reported that psilocybin assisted therapy led to "profound insights into their self-identity or smoking behaviour" (p. 4). Many saw smoking as trivial once they met with the mystery and awe-inspiring magic of life that psilocybin seemed to render. The expansion and awareness of the newfound possibilities led some participants to experience their smoking as a futile, uninteresting, quizzical, and pointless endeavour (Noorani et al., 2018). The following quote from a voyager iterates this quality succinctly:

> …smoking just seemed like this miniscule flick of the – pshh, like that, it was nothing compared to everything that I was feeling and thinking, and it was all coming together in this holistic picture of everything, past, present and future. And smoking – whatever! – like just so pointless, it's just nothing to do with anything. Like a little pebble in your shoe – just brush it off and then you… you know, the world is so much bigger! (Noorani et al., 2018, p. 5).

Some voyagers also spoke of "reawakening an inner power" and a "reconnecting of core values" that had faded (Noorani et al., 2018, p. 4). Voyagers found a semblance of inner peace and connectedness, love and acceptance for themselves and a deep feeling of gratitude and appreciation for the world around them. This quality is articulated in the words of another voyager:

> I had always had the sense of everything being connected. And [the psilocybin session] reinforced that, very strongly… [If I were to smoke] I would be a polluter…ashtrays and

> butts all over the place, and you're causing harm to other people's health as well. And so you were re-looking at your place in the universe and what you were doing to help or hinder it. The universe as such. And by smoking, you wouldn't be helping. (Noorani et al., 2018, p. 5).

Ego Dissolution and Connectedness

Themes like ego-dissolution and connectivity show up consistently in psychedelic experiences (Carhart-Harris et al., 2012; Carhart-Harris et al., 2014; Nour, Evans, Nutt, & Carhart-Harris, 2016; Zamaria, 2016). Ego dissolution is central to the psychedelic experience and assists individuals in experiencing expanded perceptions relating to inter-connectedness and unity, with others', and, I would argue, with nature and environment. Within the psychedelic experience, individuals may be "able to see themselves objectively" (p. 584), which helps alter the "usual concept of self" (Chwelos et al., 1959, p. 584). In the words of some who volunteered in LSD experiments, "I had finally understood by experience the feeling of union with the cosmos," and "I experienced a transcendental feeling of being united with the world" (Chwelos et al., 1959, p. 584).

Numerous reports indicate psychedelic induced experiences of ego dissolution are central to the drugs' powerful and persisting aftereffects (Carhart-Harris et al., 2014; Harrison, 2010; Lebedev et al., 2015; Zamaria, 2016). One participant describes their experience of ego dissolution the following way:

> Feeling like I could feel every particle and movement that was happening, in and around me in the most subtle, beautiful way. . . every particle of existence felt like it was an

> extension of me, from me to the air and plants around me to all other things, everything was connected and I could see it and feel it. (Zamaria, 2016, p. 291).

Thomas et al. (2013) found that individuals who participated in ayahuasca experiences tended to show improvements in various domains, observing greater subjective feelings of connection with self, other, spirit, and nature, as well as an overall improvement in the quality of life. One voyager described their encounter with ayahuasca the following way:

> I got my spirit back, for one. Nature, like it's saying "wake up and smell the coffee." Like it's so beautiful outside, and where was all that all this time? You know, I was just living [with] a black cloud over me. And the black cloud's been removed basically. Because life is a lot nicer than it ever was. You know? I go spirit bathing every morning (Thomas et al., 2013, p.38).

Belser et al. (2017) highlighted the phenomenological experience of a voyager who used simile and metaphor to communicate ego dissolution:

> It was like being inside of nature, and I could've just stayed there forever—it was wonderful. All kinds of other things were coming, too, like feelings of being connected to everything, I mean, everything in nature. Everything—even like pebbles, drops of water in the sea . . . it was like magic. It was wonderful, and it wasn't like talking about it, which makes it an idea, it was, like, experiential. It was like being inside a drop of water, being inside of . . . a butterfly's wing. And being inside of a cheetah's eyes. (p. 371).

Shifts in Emotion and Personality

Psychedelics are also known to produce powerful shifts in emotion, working memory, cognition, and personality (Turton et al., 2014; Schmid et al., 2015). Schmid et al. (2015) found

that LSD led to an increase in subjective well-being, happiness, closeness to others, openness, and trust (Schmid et al., 2015). Maclean et al. (2011) argued that the mystical experience brought on by psychedelics contributed to personality shifts in openness. Carhart- Harris et al. (2015) found that LSD enhanced responsiveness to suggestion, which may have implications for the use of LSD as an adjunct to psychotherapy. Results of this study may indicate that those with high trait conscientiousness might be particularly sensitive to the suggestibility-enhancement effect of LSD (Carhart-Harris et al., 2015).

Gasser et al. (2015) pointed towards "cognitive, psychodynamic, and emotional experiences induced by LSD" (p. 67), as contributing factors in the positive aftereffects. They surmised that the emotional 'peak experiences' catalyze nuanced inner perspectives and creative insights that foster coping strategies and propel individuals towards healing. One participant described their LSD experience the following way:

> It encouraged me to let the feelings flow … to free myself from my fears. To look at my grief. It was necessary. It was relieving. Afterward I was able to laugh about it. It is a fluctuating world of emotions you have to pass during these eight hours … Except the feeling of grief and fear … there were other sequences and nuances. … A lot is happening there. (Gasser et al., 2015, p. 61).

Increasing Sensitivity to Others

Psychedelics increase and enhance an individual's sensitivity to the feelings of others and tolerance of another's viewpoints and values (Chwelos et al., 1959; Maclean et al., 2011). "I was conscious of an extremely acute sense of awareness of perception of another's mood, almost thoughts" (Chwelos et al., 1959, p. 584). According to Schmid et al. (2015), the tendency for

LSD to produce empathogenic mood effects may assist in facilitating a positive therapeutic relationship. Osmond (1957) suggested the practical benefits of LSD for psychotherapy; he discussed the power of LSD to develop empathy within the therapeutic relationship, which is crucial for success in therapy.

Understanding the Psychedelic Experience through Neuroscience

I have discussed the role of the phenomenological experience as integral to inducing beneficial effects. The following paragraphs will explore current theories of the neurobiological mechanism of action of psychedelics and the neural correlates of the psychedelic experience. The theories are not meant to detract from one another or obscure human phenomenology; alternatively, a multitude of explanations is preferred to comprehensively synthesize the remarkably elaborate distinctions of the human brain and the psychedelic experience.

Many of the following research studies do not account for variabilities of the human experience contingent upon social and ecological environments. For example, viewing the brain through a brain scanner informs researchers what happens when an individual is put inside a machine, neglecting multiple dimensions of brain organization and interaction in other contexts. I recognize that the human brain does not exist in isolation from the social and ecological environmental context the individual resides. I do not believe that so-called mental illness emerges from the neurobiological or neurochemical underpinnings of the brain but is brought on by a complex interplay of genetics, biology, trauma, social dislocation and isolation. I believe an oppressive, unjust, and unequal society is to blame for much mental and emotional suffering. For example, Alexander (2012) argued that so-called “addiction” could be better understood socially as an adaptation to a poorly integrated and isolating free-market capitalist society (Alexander,

2012). Addiction is not merely a matter of a diseased mind or a maladaptive human, but an adaptation to dislocation, an adaptation to an individual lacking in psychosocial integration (Alexander, 2008).

Nevertheless, I believe an analysis of neuroscience thickens the interpretations of the derivatives of complex human thought and consciousness and strengthens insights of how psychedelics induce powerful shifts in perception and negative emotional states. Through advanced technologies that allow visual representations of the brain, researchers can investigate the differences between the neurobiology and neuro-connectivity patterns in many human brains before and after ingesting psychedelics. With more details of neurochemistry, neuroanatomy, and neurobiology, individuals may ultimately have more insight into their thoughts, emotions, and behaviour.

For many, neuroscientific explanations of the psychedelic experience may increase the legitimacy of the experience, validate subjective feelings, and decrease stigmas about psychedelics as dangerous substances. Neuroscientific explanations classify human thoughts and behaviour as typical human responses to environments, the way that any human brain might respond to the particular context the individual is surviving. There may be a sense of freedom and connection when an individual comes to know their behaviour as fundamentally human. Foundational awareness of neuroscience may help alleviate self-blame and shame, as individuals come to know their struggles as adaptations rather than pathologies Additionally, I believe it is fascinating to look inside the brain and witness the neural correlates of human behaviour, especially when we can isolate similar neurology in similar quoted experiences across humans.

Neurological Components of the Psychedelic Experience

Current research is drawing exciting conclusions about the neural mechanisms of human consciousness and the transformative neural mechanism of the psychedelic experience. The brain consists of systems mediated by chemical and electrical connections. Psychedelics are thought to impact neural chemistry, global brain function and neural connectivity. Psychedelics are known to activate (5-HT) 2A serotonergic receptors (Nichols, 2016; Halberstadt, 2015). Researchers detected serotonin in the mammalian brain in 1953, ten years after Albert Hoffman discovered LSD (Nichols, 2016). In 1954, researchers proposed that the psychoactive effects of LSD attributed to an interference with serotonin (Nichols, 2016). Therefore, Nichols argued that "the whole field of serotonin neuroscience, and especially the role of serotonin in brain function, was catalyzed by the discovery of LSD (Nichols, 2016, p. 267).

According to Baumeister et al. (2014), symptoms of anxiety and depression have roots in an imbalance of neural chemistry in the serotonergic system; thus, many modern antidepressants work by specifically targeting brain chemistry in the serotonergic system. Psychedelics' have a distinctive impact on serotonergic function which suggests a novel mechanism of action (Baumeister et al., 2014). Although the neurobiological interactions induced by psychedelics remain speculative, research has identified "receptors and neurotransmitter pathways" by which psychedelics are enacting their therapeutic effects (Baumeister et al., 2014, p. 156).

Entropic Brain Hypothesis

Entropy is a means to quantitatively measure the level of randomness, chaos, disorder, or uncertainty in a self-organized system (Carhart-Harris et al., 2014). When thinking of the brain as a self-organized system, the Entropic Brain Hypothesis states that the quality of consciousness

depends on the brain's measure of entropy (Carhart-Harris et al., 2014). This theory suggests that human consciousness exists on a spectrum between high and low entropy.

Lowest entropy conscious states maintain rigid, inflexible, highly organized cognition and are common in individuals with depression, OCD, substance misuse, and rigid or narrow thinking (Carhart-Harris et al., 2014). Rigid, narrow patterns of thought refer to the negative thought loops, self-deprecating thought patterns, and negative self-talk that often exacerbate struggles and are difficult to stop.

The highest entropy states constitute high disorder and flexible cognition and are said to be analogous to primitive states of consciousness that existed before modern, adult, human, ordinary waking consciousness (Carhart-Harris et al., 2014). Additionally, elevated entropy is a defining feature in the psychedelic experience, infant consciousness, early psychosis, and magical thinking (Carhart-Harris et al., 2014). "Increased subjective uncertainty or puzzlement accompanies states of increased system entropy" (Carhart-Harris et al., 2014, p. 2).

Childhood Consciousness

Psychedelics induce an alternative state of consciousness that increases relative system entropy synonymous with primitive states of consciousness or the developing child brain (Carhart-Harris et al., 2014). I do not wish to conflate childhood or primitive conscious states with simpler states; I would argue, the opposite is true. William James believed that one’s propensity for genius lay in their capacity to perceive their world anew, an ‘unhabitual perception’ without usual rigid dimensions (Blewett & Chwelos, 1959). In childhood consciousness, the neural connectivity patterns transmit more chaotically, randomly, and flexibly, with less efficiency and organization. Unlike the adult conscious state, the child

conscious state has not yet defined reality through pragmatic dimensions; the lens by which a child views the world has not yet come into prescriptive focus. A developing child brain learns how to conceptualize their world through experiences, which shape their patterns of thinking about themselves and the world around them; however harsh or pleasurable. “Once our mold for world making is formed it most strongly resists change. The psychedelics allow us, for a little while, to divest ourselves of these acquired assumptions and to see the universe again with an innocent eye” (Osmond, 1957, p. 430). In the words of Aldous Huxley, describing his experience with mescaline: “the eye recovers some of the perceptual innocence of childhood, when the sensum was not immediately and automatically subordinated to the concept” (Huxley, 1954, p.7).

The rattling of the brain and awakening of new neural patterns and connections under the influence of psychedelics shares the quality of childhood consciousness in that it offers the possibility of inducing the subjective feeling of experiencing something for the first time. This newness quality feeds the mystical dimensions of the psychedelic experience. Alexander “Sasha” Shulgin, a pharmacologist and chemist who discovered, synthesized, and tried over 230 psychoactive compounds, described his psychedelic experience akin to a childlike consciousness the following way:

> More than anything else, the world amazed me, in that I saw it as I had when I was a child. I had forgotten the beauty and magic in the knowingness of it. I was in familiar territory of space wherein I had once roamed as an immortal explorer, and I was recalling everything in it that had been authentically known to me then and which I have abandoned, then forgotten, with my coming of age. Like the touchstone that recalls a

> dream to a sudden presence, this experience reaffirmed a miracle of excitement that I had known in my childhood but had been pressured to forget…… (as cited in Fadiman, 2011, p. 53-54).

The Default Mode Network

In addition to the ideas of increased brain entropy in primitive and psychedelic conscious states, Carhart-Harris et al. (2014) propose that psychedelic conscious states produce disintegration of "highly organized activity within the default mode network (DMN)" (p. 1). Distinct anatomical brain structures connected through neural networks comprise the DMN (Buckner, Andrews-Hanna, & Schacter, 2008; Raichle et al., 2001). The human brain consists of organized hierarchical systems, controlled in part by the DMN and connected via carved out neural patterns and connections. The DMN is said to be at the highest level of functional brain hierarchy; the "central orchestrator or conductor of global brain function," responsible for managing order in the complex brain system (Carhart-Harris et al., 2014, p. 6). The areas of the brain that make up the DMN are generally highly correlated (Carhart-Harris et al., 2016) The degree to which the DMN is highly connected to other brain networks suggests its hierarchical role. Functional connectivity in the DMN increases from birth to adulthood (Carhart-Harris et al., 2014).

Differential Default Mode Network Activity

Activity in the DMN increases when the human mind is said to be at rest; it lights up when the mind is wandering, daydreaming, ruminating, or in self-referential thinking (Buckner et al., 2008; Raichle et al., 2001; Sood & Jones, 2013; Carhart-Harris et al., 2014). Moreover, increased activity in the DMN correlates with "autobiographical memory retrieval, envisioning

the future, and conceiving the perspectives of others" (Buckner et al., 2008, p. 1). The DMN is integral in supporting ideas about the self, relation to others, and the world. Decreased activity in the DMN occurs when individuals are engaged in executing cognitive tasks and focusing on the external environment (Buckner et al., 2008). When individuals engage in various tasks that do not have a self-referential thinking pattern, they often suppress activation in the DMN. Think of the common expression, "I lost myself in my work." The ideas of self subside when an individual engages in a cognitive task.

Abnormally increased activity in the DMN is associated with depression, anxiety, substance dependence, and Post Traumatic Stress Disorder (Sood & Jones, 2013; Sheline et al., 2009). Many individuals have difficulty suppressing negative thoughts about themselves and self-referential thinking that is rooted in blame, shame, disgust, and anger. As described, the DMN comes online when we are engaged in these self-referential thoughts. When the brain is wired to support reinforced patterns of negative thought and behaviour, individuals may have a higher likelihood of experiencing depressive symptoms and substance misuse. These thought patterns exist within the brain as reinforced patterns of neural connection. These patterns become deeply rooted, centralized, and automatic.

Psychedelics have been shown to decrease activity in the DMN (Brewer et al., 2011; Carhart-Harris et al., 2012; Sheline et al., 2009). LSD was shown to disrupt and disorganize neural communication within the DMN (Carhart-Harris et al., 2016). Psilocybin has produced reductions in cerebral blood flow and a decrease in brain activity in the medial prefrontal cortex and the posterior cingulate cortex (Carhart-Harris et al., 2012). These two areas are considered the main nodes of the DMN (Buckner et al., 2008; Carhart-Harris et al., 2018). Through

functional magnetic resonance imaging (fMRI) analysis of 10 volunteers who had ingested ayahuasca, Palhano-Fontes et al. (2015) found significant decreases in DMN activity. Ayahuasca use was associated with diminished activation in the DMN and decreased functional connectivity of normally highly connected systems (Palhano-Fontes et al., 2015).

Psychedelics reduce connectivity patterns between normally highly connected brain regions while simultaneously disrupting the brains inhibitory control of incoming sensory information (Tagliazucchi, Carhart-Harris, Leech, Nutt, & Chialvo, 2014; Baumeister et al., 2014; Carhart-Harris et al., 2016). Psychedelics essentially trim down the neural connections between the various parts of the brain that usually are in frequent communication. Psychedelics can have positive potential by disorganizing and dismantling the hierarchy of brain systems and dismantling the neural patterns of negative thought and behaviour (Carhart-Harris et al., 2014). One way to think about this is to visualize the brain as a network of roads. The DMN is a network of highly populated cities connected via many superhighways and constantly traversed. Psychedelics work to disrupt these superhighways; busy roads are now re-routed, connecting to distant cities rarely visited. Psychedelics may assist individuals faced with depression or substance misuse issues by breaking down negative neural patterns and inviting new neural connections, essentially positively transforming thoughts and behaviour.

Neural Correlates of Ego Dissolution

The neural correlates for ego-dissolution possibly lie in the deactivation of the DMN. As mentioned, the DMN is associated with self-referential thinking, and important for maintaining self-identity, as a separate entity from the outside world. Carhart-Harris et al. (2012), found a correlation between volunteers' subjective ratings of the disintegration of self (ego dissolution)

and decreased blood flow in the DMN. In the words of a couple of volunteers, "I existed only as an idea or concept (p. 2139)," "I didn't know where I ended and my surroundings began" (p. 2139). The quicker the decrease in blood flow and oxygen consumption in the DMN, the higher the likelihood a volunteer reported ego dissolutions (Carhart-Harris et al., 2012).

Taken together, it seems that psychedelics impact the chemical release of serotonin, increase brain entropy, dismantle hierarchical brain function, and create new neural connections. More generally, psychedelics may assist users in interrupting negative thoughts and behaviours through the dismantling of current neural patterns they exist on (Carhart-Harris et al., 2014; Watts et al., 2017). This reorganization of neural networks may account for psychedelics positive therapeutic effects. An adult human brain before the psychedelic experience is hardwired for efficient processing, highly organized to streamline the quickest route to patterns of thinking. These preferred neural pathways cemented in the brain are created and affirmed through recurrent, habitual thoughts and experiences. In the words of Donald Hebb, "Neurons that fire together wire together!" (Hebb, 1949) As the brain is trained to venture a certain route, the neural pathways travelled most often become increasingly difficult to avoid.

The higher entropy state and deactivated DMN of the psychedelic experience is akin to a dynamic reconnecting brain system free from rigidity and painful self-referential loops of self-deprecation and rumination. I think of the following metaphor of how trails are carved out in the forest. The path that gets walked down daily is easy to spot and thus much more likely to receive hikers. If the path gets neglected, it will be harder to find and more difficult to walk down. Psychedelics disrupt the forest trails; the designated pathways vanish and merge with the foliage, and neglected pathways appear. Psychedelics uproot the encoded pathways that have maintained

reality and expose a new reality; this creates a multitude of experiences for the user, both perceptually and intellectually. Psychedelics potentially rewire the brain; new connections igniting new ways of thinking and making sense of the world which relieves suffering.

Chapter Five: Strategies for Therapeutic Spaces

The purpose of Chapter five is to examine the strategies for creating therapeutic spaces that maximize the potential for healing effects of psychedelics. I will review the importance of set and setting as it relates to psychedelic treatment and the core competencies of psychedelic therapists. I will discuss the essential components of integration as it relates to psychedelic therapy as well as some known risk factors and strategies for screening clients.

Set and Setting

In this section, I discuss the importance of set and setting, followed by recommendations for how to set up therapeutic spaces to increase the likelihood of a beneficial psychedelic experience. As noted in Chapter 4, there is an indication that individuals who encounter mystical or profound psychedelic experiences are more likely to achieve perceived benefits and positive aftereffects. These mystical experiences are enhanced and influenced by the set and the setting (Zamaria, 2016). “Set refers to the participants’ mindset going into the experience” (Zamaria, 2016, p. 289). The setting consists of the therapeutic environment, guiding of the session, and dosage administered (Zamaria, 2016). “The role of fostering a positive set and setting is crucial to a positive outcome” (Sessa, 2008, p. 825). What is important to note is that the beneficial impacts of psychedelics do not occur with the ingestion of the drug itself. When individuals ingest psychedelics alongside trained, experienced staff in a supportive environment, the known benefits increase. There is some anecdotal evidence to suggest microdosing psychedelics can lead to improvements in mood and creativity, but this discussion is beyond the scope of this project.

Set

Set includes the emotional state of the individual before ingesting psychedelics including their "temperament, mood, affect, preparation for the experience, and general level of stimulation (Zamaria, 2016, p. 289). Furthermore, the voyager's personality plays an enormous and critical role in how the substance manifests and the magnitude of its effects (Barr, Langs, Holt, Goldberger & Klein, 1972). Additionally, I believe the set includes the foundational neurobiology of the individual. The manifestation of various neuronal connections induced by the psychedelic substance creates a nuanced constellation of networks. New connections carry different meaning depending on how the brain is wired pre psychedelic experience.

Cultural Influences on Set

The cultural milieu dramatically influences an individual's beliefs, ideas, fears, or excitements about what the psychedelic experience could entail, which directly impacts their mindset. In a famous 1953 article titled, *My 12 Hours as a Madman*, Sydney Katz recites his horrible and terrifying experience under the influence of LSD as an "excursion into madness" (Katz, 1953). As described in chapter two, during this time the psychotomimetic theory declared that psychedelics mimicked the symptoms of psychosis and thus were a window in understanding the schizophrenic mind (Osmond, 1957). Indeed, the cultural setting delineating psychedelics as agents to induce psychosis may have impacted Katz's phenomenological experience of LSD.

Additionally, cultural stigmas and feared judgements of psychedelics may contribute to negative experiences, or, what is colloquially known as bad trips. Fears of criminal punishments or negative judgments from society, friends, or family may sway an individual's mindset and

thus induce a difficult and deleterious psychedelic journey. Alternatively, when the social and legal systems are more accepting of psychedelic therapy as a legitimate healing initiative, these fears may subside. The beliefs about the legitimacy of psychedelics, which are often the product of social norms, educational institutions and the media, shape set and setting, and therefore influence the phenomenological experience of the psychedelic voyager. I believe the legitimacy of current research may positively impact more diverse groups of individuals to broaden their perspective and invite psychedelics to the table as valid therapeutic interventions. Moreover, the cultural acceptance of psychedelic substances as a viable treatment option with proven health benefits may contribute to more positive outcomes for the individual voyager. With this collective acceptance, voyagers may enter experiences with less fear, more openness, and thus, increase the propensity for enlightening profound or mystical experiences.

Setting

The "setting refers to the physical, social, and cultural environment in which the drug is taken" (Studerus, Gamma, Kometer, & Vollenweider, 2012, p. 1). The setting can include the time of day, the location, whether indoors or outdoors, the general atmosphere of the space, who is present and the contents of the interpersonal relationship (Fadiman, 2011). Chwelos et al. (1959) noted from their LSD experiments that "the environment and particularly the attitude of the people around the person undergoing the LSD experience seemed to influence [his] reaction profoundly" (p. 579).

Strategies for Therapeutic Spaces

Practitioners must know how the set and setting contribute to the outcome of psychedelic therapy so that they may structure parameters and guidelines for facilitation. According to Phelps

(2017), there are three phases of psychedelic therapy: “preparation for the medicine-assisted session, the medicine session itself, and integration of the psychological material that arises during preparation and the medicine session” (p. 460).

Preparations: Before the session

When thinking about how to positively, influence an individual’s psychological set in therapeutic spaces, preparations begin before the ingestion of the substance. Haden, Emerson, & Tupper, (2016) recommend that guides share educational information with a voyager to encourage “positive expectations and attitudes which facilitate spirituality, healing, and connecting with people or nature” (p. 248). Additionally, Haden et al. (2016) suggest involving voyagers in the dosage choice after discussing with a guide about the "different dosage effects and duration of substance action" as well as the "pharmacological profiles" of specific psychedelic substances (p. 248).

Blewett & Chwelos (1959) recommended various suggestions for preparing the voyager for the journey as follows: spending time writing an autobiography, preparing a list of questions, thinking about underlying issues or problems, learning about proposed physical symptoms, and preparing for the onset of emotions often expressed through tears and laughter.

Essential Components of the Therapeutic Relationship

As boundaries of reality blur and the felt sense of structure in the world dissolve, psychedelics can feel destabilizing and frightening. Voyagers may fear that this alternative consciousness will not subside, and they might never gain back their familiar and safe consciousness. To mitigate possible fearful reactions, an established therapeutic relationship with trust and good rapport between guide and voyager pre-treatment is essential (Blewett &

Chwelos, 1959). The felt sense of safety for the voyager strengthens with an established and trusted therapeutic relationship.

During the Session

Pre-Onset of Effects

It often takes up to 30 minutes for perceived effects to show up after ingesting a psychedelic substance. The time before the substance takes effect is essential for establishing the psychological set (Blewett & Chwelos, 1959). During this time, the therapist's role is to assist the client in avoiding "development of certain unfortunate psychological states" (Blewett & Chwelos, 1959, p. 29). The therapist does this by helping the client avoid unnecessary boredom, minimize anticipation of symptoms, and dissuade fear and anxiety (Blewett & Chwelos, 1959).

Blewett and Chwelos (1959) believed that boredom could lead to a destructive therapeutic relationship. These authors suggested turning the attention of the voyager towards a pleasant activity of mutual interest to the guide. They also suggested minimal attention toward symptom development. If the voyager is waiting in anticipation for the somatic and psychological changes, they may begin to feel anxious or disappointed in their absence. The authors suggested listening to music, reading poetry, or observing visual art or photographs as a relaxing way of diverting voyagers' attention from their developing symptoms (Blewett & Chwelos, 1959).

Additionally, Blewett and Chwelos (1959) warn against distracting the voyager excessively from their somatic experience that developing symptoms surprise or shock them. Moreover, if the voyager is heavily involved in a task and their developing symptoms inhibit

them from continuing said task, the interruption may feel inconvenient or imposing and lead to disappointment when they cannot complete their initial intention.

Blewett and Chwelos (1959) believed that if the voyager experiences significant anxiety and discomfort during the initial onset of symptoms, the likelihood of more anxiety throughout the experience increases. Thus, attention from the guide to dissuade any fears is essential during the initial stages of the experience.

Flight of Ideas or Flight into Symptoms

With the onset of symptoms occurring, the guide's main task is to keep the voyager "relaxed and receptive to change" (Blewett & Chwelos, 1959, p. 31). According to Blewett & Chwelos (1959), the urge to fight off the psychedelic effects or fixate on a "flight of ideas" may lead to difficulties. A flight of ideas or activity is when a voyager turns their undivided attention outwards, on a manner of interest, to distract them from the destabilizing and confusing dissolution of their perceived reality and physiological symptoms. They may become fixated on either thinking about, solving or discussing an all-consuming query and often in doing so deny that there are any psychedelic effects.

In contrast, Blewett and Chwelos (1959) described some individuals' tendency to fixate upon physiological symptoms in what they term a "flight into symptoms." The strangeness of developing symptoms begets fear, and the fear exacerbates with an intentional awareness of symptoms. The authors argued that any physical discomfort or pain felt by psychedelic experience is mainly psychologically induced. If the individual can let go of their fear and anxieties, they can surrender into the strangeness of their physical sensations. They argue that all

who ingest psychedelics will encounter some period of fear and the therapeutic benefit depends upon the voyager's ability to work through their fear. The guide is there is assist in this process.

The guide can mitigate the possibility of undesirable effects by offering reassurance and helping the voyager from fixating on their somatic symptoms or any all-consuming ideas. The guide can assure the voyager that their symptoms are expected and that their fears are unrequired.

Allowing Emotions

Often individuals will be moved to tears or laughter, seemingly from an observer as to be at random (Blewett & Chwelos, 1959). The guide's encouragement of unreserved emotional expression will allow the voyager to explore what arises without judgement. The affect often connects to a deeper meaning for the voyager. For example, Blewett and Chwelos (1959) observed that laughter for many meant realization and new clarity about answers to many deep problems and the absurd quality of their former coping strategies.

Self- Acceptance and Self-Concept

Blewett and Chwelos (1959) argued that the variability in the psychedelic experience lies on a continuum between the individual's relationship between self-acceptance and self-concept. Additionally, they suggested a relation between an individual's capacity for self-acceptance and their willingness to surrender to the psychedelic experience. They argue that surrendering is paramount to achieve optimal effects. "Paradoxically the ability to abandon the established self-concept increases with self-acceptance and decreases with diminished self-regard" (Blewett & Chwelos, 1959, p. 5). When one is unable to accept themselves, the vulnerability of exposing

shameful self-constructs leads to a struggle to maintain control of the substance's effects; this lack of surrendering, negatively impacts the experience.

Easing Discomfort from Ineffability

As mentioned in chapter four, the powerful perception-altering effects of psychedelics are often difficult to describe. Blewett and Chwelos (1959) warn that individuals tend to withdraw when they are unable to communicate what is happening. The ineffable experience is often intensified when the voyager becomes aware of alternate realities and "rearrangement of old and new concepts" (p. 31), which feel intensely significant and important. A profound experience consists of a deconstruction of the voyagers "accustomed attitudes and sets" (p. 12). Imagine for a second having a mind-manifesting experience within that you cannot communicate, finding the secret to life but being unable to share it with the people around you. This could feel frightening, destabilizing and isolating. Guides can assist in easing anxiety during this possible situation by encouraging voyagers to surrender; fighting and resisting are what brings about difficulties in the psychedelic experience. If they surrender into this new reality, one in which words and language do not abide, they may open their minds to whatever arises within. The guide could assist the voyager in recognizing that induced alterations in perception are not frightening but instead they "permit a new and startling awareness of beauty" (Blewett & Chwelos, 1959, p. 31).
When a voyager can find stability in an experience that occurs outside their waking consciousness, they may discover a new perspective or outlook on life (Blewett & Chwelos, 1959).

When the psychedelic experience is therapeutic, the person can release concerns about "escaping from or explaining the drug effects but accepts them as an area of reality worthy of

exploration" (Blewett & Chwelos, 1959, p. 9). In these instances, the distressing effects are minimized, and the voyager gains new insights and greater self-understanding. In summary, the therapist aims to support and assure while relieving potential anxiety. The guide supports the voyager in noticing what arises physiologically and psychologically while simultaneously assuring of the safety, and regularity of the effects. Therefore, the guide supports the voyager in noticing their symptoms just enough to induce open curiosity while distinguishing any awareness that propagates fears or the need to over-analyze the experience.

Attention to Setting

Physical Environment

The attention to the immediate setting is essential to consider when thinking about therapeutic spaces. Blewett and Chwelos (1959) prescribed a comfortable and quiet environment, supportive for the voyager to lie down, and void of interruptions and intrusions from the outside world. They advised against any distractions that pulled the voyager's attention towards external commitments, which I argue, could include personal electronic devices. To create a positive, attractive, and comfortable environment for participants, researchers suggested offering relaxing music, aesthetically pleasing visual stimulation, and something to induce profound emotional processing (i.e., photos of family and friends) (Chwelos et al. (1959); Blewett & Chwelos, 1959).

Fadiman (2011) affirmed positive aspects of both indoor and outdoor settings. When indoors, therapists can manipulate the surroundings to ensure maximum comfort and safety, minimal distractions, and higher possibility of a user to experience an inner state. When outdoors, the possibility of an increased connectedness with nature occurs, which many voyagers

describe as a foundational aspect of their journey. Whether indoors or outdoors, the most important thing about the setting is maintaining physical, personal, and psychological safety and support (Fadiman, 2011).

Importance of Music

Carefully selected music is central to creating an optimal setting for the therapeutic experience (Blewett & Chwelos, 1959; Chwelos et al. 1959; Fadiman, 2011; Haden et al. (2016). Music can be helpful as it distracts the voyager from the physiological effects of the drug and supports the voyager to depart from their usual self-concept (Blewett & Chwelos, 1959). When one focuses on the intricacies and layers of music, one notices the perception-altering effects of psychedelics in a frame of reference that progresses their conscious awareness towards the wondrous complexity and beauty of the music (Blewett & Chwelos, 1959). Thus, enhanced enjoyment of the experience occurs, as perceptual alterations are welcomed and appreciated.

Therapist Qualities and Competencies

The following is a brief discussion about the desired qualities and competencies of psychedelic therapists. The wisdom gained from both traditional indigenous knowledge and current scientific research recommends that the therapist's primary function is to provide "appropriate safeguards or set and setting controls for all participants for 8-10 hours after ingestion of a psychedelic (Haden et al., 2016, p. 248). The therapist role is akin to a trustworthy guide, listening empathically while facilitating and supporting the participant's own inner healing intelligence (Mithoefer, Grob, & Brewerton, 2016). The therapist ensures the session is maximally safe and beneficial; this allows for the increased probability that the voyager has a profound experience. Phelps (2017) outlined six psychedelic therapist competencies as follows:

"empathic abiding presence, trust enhancement, spiritual intelligence, knowledge of the physical and psychological effects of psychedelics, therapist self-awareness and ethical integrity, and proficiency in complementary techniques" (p. 450). The therapist must also have compassion, intuition, and loving-kindness (Fadiman, 2011).

Chwelos et al. (1959) gave directions for the staff who had contact with patients undergoing LSD treatment to express openness, non-judgmental, and compassionate care. On the contrary, staff who exhibited an unfeeling or hostile persona brought out fear and hostility in patients (Chwelos et al., 1959). As described in chapter two as the golden rule, these authors also demanded that the staff had already undergone their own LSD experience before they could work with patients. They believed staff who had experienced LSD themselves had a higher capacity for empathy, acceptance and understanding and thus were better able to assist patients. I would argue that the golden rule applies today; I believe that practitioners should have personal lived experience with these compounds before offering guidance.

Integration

An essential step in psychedelic therapy is the process of integration, a synthesis of various elements into a whole (Phelps, 2017). Integration in psychedelic therapy consists of understanding the symbolic layers and themes of the profound psychedelic experience, determining how to incorporate the wisdom of the experience into the intricate details of everyday life, and generating long-lasting behavioural and emotional shifts that honour the wisdom gained (Bourzat, 2019).

Why Integration is Essential

Intentional integration can increase the potential for psychedelic substances to have long-lasting beneficial effects (Bourzat, 2019). As the psychedelic renaissance flourishes and the popularity of underground opportunities to partake in psychedelic experiences increases, the need for integration escalates. Whether or not a practitioner has training in psychedelic therapy, it is likely they will come across clients who have experience with psychedelics. In therapy, individuals may wish to explore their past psychedelic sessions and talk through the emotions and insights they received during a potentially profound experience. Therefore, therapists must know how to hold space for the integration of past meaningful psychedelic experiences.

After engaging in enlightening psychedelic therapeutic experiences, many individuals re-enter a mainstream society that has little appreciation or understanding of their journey. The juxtaposition of a safe therapeutic container during the psychedelic session with an unknowing community may lead to feelings of isolation and disconnection for the individual (Bourzat, 2019). The integration process is meant to honour the past psychedelic experience, which can help contrast potential societal judgments and alleviate the client's discomfort, pain, and isolation.

Without Integration

Without having the safe therapeutic space to process these powerful experiences, individuals can become disoriented, scared, confused and unable to function (Bourzat, 2019). The profound revelations and wisdom gained might fade away as individuals return to their previous way of life, social environments, old patterns, habits, and ways of being. The healing journey may need to include changing some aspects of daily life, social community, vocation,

and environmental stimuli. Intentionally structuring meaningful integration practices into everyday life, decreases the likelihood individuals will fall into old habits. If voyagers want to continue to traverse newly connected neural pathways, they must intentionally explore and behave in ways that nurture their past psychedelic experience.

Suggestions for Integration

The integration process can last for days or a lifetime; it investigates the revelations and meanings created during the psychedelic experience and how to process meaning towards long term impacts and behaviour shifts. Bourzat (2019) suggests the days and weeks following a psychedelic journey as the most optimal time to begin the process of intentional and practical integration. Integration can take many forms, and some suggestions are as follows: engaging relationally with friends and family to repair ruptures, confronting past perpetrators of abuse or violence, utilizing rituals to grieve loss, incorporating meditative practices, reading or writing as tools for emotional processing, playfully interacting with the natural world and other people, and painting, dancing, or singing (Bourzat, 2019).

Risks

In this section, I explore some potential risks associated with the use of psychedelics. While there is no known toxicity of these substances, and they do not directly cause death to those who ingest them, psychedelics carry psychological risks and can lead to impairments in judgement for users (Nichols, 2016).

Behavioural Effects

Regrettably, death or injury has occurred due to impaired judgement after psychedelic ingestion. For example, some individuals, under the influence of psychedelics, believe they have

superpowers or the ability to fly. Unfortunately, these beliefs often manifested into poor judgment of safety exemplified when folks leap from tall buildings or stare into the sun (Johnson, Richards, & Griffiths, 2008; Nichols, 2016). Furthermore, psychedelics can be dangerous in hazardous physical environments (Johnson et al., 2008). It is necessary to note that these adverse events occurred outside the boundaries of a safe therapeutic context. Indeed, the risk of psychedelic use increases when used in recreational, unsupervised settings (Doblin, 1991; Hasler et al., 2004; Sessa, 2012; Strassman, 1984; Nichols, 2016).

Physiological Effects

Most concern around psychedelic use primarily centres around psychological impacts, not physiological impacts (Nichols, 2016). Nevertheless, acute, temporary, and uncomfortable physiological effects do occur that may induce fear in users. Some common physiological responses are as follows: nausea, violent headaches, heart palpitations, a feeling of constriction of the throat and chest; pain at the base of the skull; and numbness of the limbs (Blewett & Chwelos, 1959).

Short-term Psychological Effects

Psychedelics can sometimes elicit feelings of anxiety, fear, panic, and paranoia (Blewett & Chwelos, 1959; Johnson et al., 2008). Blewett and Chwelos (1959) described the nature of paranoid thinking that arises in some voyagers. When a voyager begins to mistrust their perceptions and question their reality, they might interpret themselves as “delusional, incapacitated, or helpless” (p. 7).

Moreover, as mentioned in chapter four, many voyagers develop an acute awareness of the feelings of others. Individuals may feel these effects so intensely they may begin to believe

others can read not only their emotions but their every thought (Blewett & Chwelos, 1959). When voyagers feel insecure about the nature of their thoughts or believe their thoughts reveal some shameful aspect of their being, the profound empathogenic connection elicits fear and arouses suspicion and uncertainty about oneself and others. Thus, an established safe container for psychedelic-assisted therapy and a trusted therapeutic relationship can mitigate these insecurities. When the voyager feels safe enough and supported by the guide their paranoia of revealing a shameful aspect of their identity decreases. If they have a safe container for exploration, difficult experiences can prove monumental, transformative and healing.

Long – Term Psychological Effects

Psychedelic use may exacerbate schizophrenia or other psychotic disorders (Johnson et al., 2008). Some claim that the use of psychedelics leads to the development of permanent psychiatric disorders, like schizophrenia (Zamaria, 2014). The scientific community is divided, one group suggests psychedelics cause psychiatric disorders and the other group suggests psychedelics induce a traumatic experience that accelerates or triggers the manifestation of psychiatric disorders in those who were already susceptible (Zamaria, 2014).

Screening

From what is known about the variable quality of the psychedelic experience based on the unique characteristics of the individual, it is essential that therapists screen participants before subjecting them to psychedelic therapy. While some may not benefit as much as others, some may have intensely negative experiences. As mentioned, psychedelics could be potentially dangerous to those with a predisposition to psychiatric disorders (Zamaria, 2014). A personal or family history of mental illness increases the vulnerability of harm from psychedelics (Moreno et

al., 2006; Sessa, 2012; Studerus et al., 2012). Additionally, experience, motivation, and emotional expression are essential to include when screening clients (Studerus et al., 2012; Zamaria, 2014).

Chapter Six: Limitations, Recommendations, and Concluding Remarks

In Chapter six, I discuss the limitations of this project and of psychedelic therapy. Additionally, I briefly consider recommendations for the way forward in psychedelic treatment, including my beliefs about the need for the decriminalization of psychedelic substances, broadening accessibility, and honouring the wisdom of indigenous communities.

Limitations

Many of the studies discussed in this project have small sample sizes, often with fewer than 20 participants; thus, it is difficult to make grand inferences across general populations. Further research that implements larger sample sizes will give us more information about how to proceed with these powerful substances.

I am concerned with how to make psychedelic therapy accessible for everyone, especially groups who face marginalization from society and have limited economic mobility. Marginalized communities, especially people of colour, are grossly underrepresented in modern psychedelic research (Michaels, Purdon, Collins, & Williams, 2018). Most psychedelic research, while promising, predominantly includes white samples, this makes it difficult to generalize to more diverse populations and leaves other communities from the benefit of psychedelic therapy (Michaels et al., 2018). The stigma of drug use disproportionately discriminates people of colour and is tied to the history of the unjust war on drugs; white folks have the privilege of exposing psychedelic use with fewer consequences. This unequal distribution of freedom excludes many individuals from psychedelic experiences (Michaels et al., 2018). People of colour may not have the same access to psychedelics, even in a legal, health-oriented setting, as they "may feel that they are playing out the stereotypes that people of color are drug users and engage in illegal

activity" and their own community members may further criticize them from engaging in White treatment (Michaels et al., 2018, p. 12)

Accessibility of Research Participation

Volunteering for psychedelic research also has an economic burden. Many research designs require a minimum 8-hour time commitment, as well as preparatory sessions and integration sessions (Michaels et al., 2018). It is essential to reflect that not every community has the freedom to partake in such extensive time and hefty economic commitments. When individuals have lower-paying jobs, shift work and childcare needs, they are less likely to participate in research.

Accessibility of Current Treatment Centres

Psychedelic therapy in treatment centres is presently difficult to access, costing hundreds if not thousands of dollars and is, therefore, limited to the privileged few. For example, an Ayahuasca retreat centre in the Andes offers retreat packages that cost between 1000-2000 USD (Gaia Sagrada Ayahuasca Retreat Centre, 2019). A psilocybin retreat centre in Jamaica offers packages that cost between 3000-4000 USD (MycoMeditations, 2019). These packages omit the cost of travel or time away from work. Moreover, many healers travel and perform ayahuasca ceremonies in affluent countries like Canada, where clients “pay up to several hundred dollars a session” (Tupper, 2011, p. 4). There are new psychedelic clinics in Canada that are currently forming. For example, Numinus is creating a network of transformative healing centres aimed at a holistic an integrative approach encompassing psychedelic supportive therapies and sophisticated technologies to offer healing and connection (Numinus, 2019). As white affluence

which is attached to economic mobility, is the dominant and pervasive image of the psychedelic community, strategies for inclusion of diverse cultural groups is needed.

Need for Decriminalization

The current legal punitive status that places psychedelics in a strict category outside of therapeutic benefit continues to reflect the war on drugs, regardless of therapeutic benefit. As noted above, I advocate for the use of psychedelic substances in a therapeutic setting with a trained therapist or guide. I am not advocating for the recreational use of psychedelic substances. I believe therapeutic environments can maximize the healing potential of psychedelics and minimize the risk of adverse psychological impacts and dangerous behaviour. I do think, however, that it is essential to decriminalize psychedelic substances as their present illegal status disproportionally targets communities who cannot afford to access expensive treatment centres. If psychedelics are only approved for use in strict medical and supervised settings, those who use psychedelics outside of supervised medical settings might face criminal penalties. Having psychedelics only available to an affluent community creates a divide and unjustly prioritizes the needs of those who can afford to seek out a safe legitimized therapeutic container for use. Others, who have fewer means might still receive harsh criminalized penalties for using the same substances.

Additionally, harsh drug laws push folks to use in the shadows and increase the risks of harm from use. Decriminalization would decrease the unjust criminal repercussions for folks who use outside of therapeutic contexts. Decriminalization is one step in the direction of inclusivity and accessibility for all communities and minimizes the war on drugs' unjust criminalization of poverty.

Future of Psychedelic Treatment

When thinking about the future of psychedelics and mental health, it is difficult to know the best way forward. Haden et al. (2016) proposed a variety of contexts in which psychedelic supervision can take place including, “psychotherapy, indigenous healing circles, dance events, music festivals, palliative care wards, or natural environments” (Haden et al., 2016, p. 248).

The potential benefits these substances can induce is known; therefore, it is necessary to create therapeutic and medical facilities that allow their use. As research grows, more articles are published and documentaries released, acceptance of psychedelic treatment will become more mainstream and more people will seek out psychedelic treatment. Indeed, there needs to be a plan for how best to facilitate the future in psychedelic care.

Haden et al. (2016) proposed a model for "regulating the production, distribution, and use of psychedelic substances" (p. 246). They suggest a "government -delegated authority to regulate psychedelics and other currently illegal drugs" (p. 246). This regulating authority would work alongside indigenous groups to oversee the cultivation, importation, production, and distribution of psychedelic substances for medical purposes. Authors argued that this regulatory body must be informed by "public health principles, goals, and objectives," and that revenue is put towards academic research and investments in public health (p. 246). There is a need for “trained, competent, experienced” psychedelic therapists and for a regulatory body to oversee their training and qualification (Haden et al., 2016, p. 246). The regulatory agency would also "establish, monitor, and enforce standards of practice amongst registrants" (Haden et al., 2016, p. 247). It is also essential to include "indigenous, spiritual, and medical practitioners" (Haden et al., 2016, p. 247).

Honouring Indigenous Wisdom

Many psychedelic substances are attached to indigenous cultural practices and have been used for thousands of years. I have concerns about the whitewashing of indigenous cultural traditions. Taking these cultural practices away from their cultural container and placing their future in the hands of colonizing governments and leaders has negative consequences for the indigenous communities. To minimize the perpetual colonizing practices, the present white-centric psychedelic research community must intentionally seek out and centre indigenous voices and respect the cultural lineage many of these substances came from.

Many indigenous communities traditionally understood psychedelics as sacred medicines with different spiritual and mental healing potential and only used under the guidance of a spiritual leader (Michaels et al., 2018). It is essential for those interested in psychedelic therapy to understand indigenous healing practices and the roots and history of specific medicines. The plethora of insights gained from scientific and research communities in the past few decades must not overshadow the thousands of years of indigenous cultural wisdom. There must be proper care to highlight and centre the teachings from elders and indigenous groups whenever possible as "their leadership in crafting best practices would be valuable" (Haden et al., 2016, p. 247).

Additionally, I encourage therapists to investigate the different qualities of an organic psychedelic plant and the synthesized version. For example, synthesized psilocybin, 4AcO-DMT, differs chemically from psilocybin-containing mushrooms. Isolating the chemical psilocybin might alter the biochemical, spiritual and healing significance held when ingesting the holistic plant. Moreover, synthesized psilocybin disconnects the substance from the cultural and

historical practices of the indigenous peoples of Mexico and Central America. Psilocybin containing mushrooms do not exist in isolation from the people and the culture from which they derived. As so much of the beneficial effects of psilocybin is due to the spiritual and mystical experiences evoked, the psychedelic community would be remiss to separate the spiritual quality contained in the cultural and indigenous practices of which these substances originate.

Conclusion

While indigenous cultures have used many psychedelic substances in traditional ceremony as agents of healing and growth for centuries, modern western cultures only began using psychedelics after the discovery of LSD in 1943. The academic and psychiatric community saw a brief golden age of psychedelic-assisted therapy and research in the 1950s and early 1960s with thousands of individuals benefitting from treatment. Psychedelics soon infiltrated popular culture and came to be intertwined with rock and roll and the anti-Vietnam war movement. These tools of consciousness threatened the status quo. Media demonization of these compounds successfully persuaded the opinion of most of the exaggerated dangers and risks associated with psychedelic use. The illegalization of psychedelic drugs further supported negative stigmas around their use as law-abiding citizens absorbed the risk to reputation and freedom associated with these so-called, mysterious, and dangerous compounds.

Current Renaissance

There is currently a psychedelic renaissance as more scientific and academic communities claim the benefits of these substances in the last 15 years. It is no longer possible to condemn these substances as dangerous or debaucherous as science has shown them to have enormous healing potential. I am elated that there has been much research in the last decade,

especially after learning about the wealth of research that sat dormant, underground for decades. The world is finally tuning in.

Legitimacy of Science

The academic community has come a long way in understanding these powerful substances. From the psychotomimetic theory stating that psychedelics resemble psychosis, to a hopeful frontier claiming psychedelics have the power to heal from a myriad of mental health struggles. New research legitimizes and validates thousands of individuals who encountered powerful psychedelic experiences but could not meaningfully identify or integrate what occurred. Scientific research essentially gives proof for what many intuitively know from lived experience with psychedelics, while paving the way for a pendulum swing in the direction of psychedelic substances integrated into psychotherapeutic practices.

Review of the Positive Benefits of Psychedelic Therapy

Contrary to what many believe and what has been popularized by media representations, psychedelics are physiologically safe in controlled settings. They are non-toxic and do not engender dependence like other illicit substances. Additionally, many voyagers claim psychedelic-assisted therapy as the most personally meaningful or spiritually significant experiences of their entire lifetime. Psychedelics have repeatedly been shown to produce long-lasting positive relief from depression, anxiety, OCD, thanatophobia (fear of death), and substance misuse struggles. Although not discussed in this project, psychedelics also alleviate symptoms in post-traumatic stress disorder and eating disorders.

Studies with Psilocybin and LSD show a single dose in a therapeutic setting can decrease anxiety and depression associated with a terminal illness sustained long term. Psilocybin was

shown to reduce noxious symptoms in those with TRD and OCD and ayahuasca has shown rapid, sustained antidepressant and anxiolytic effects.

Psychedelics have been effective in treating substance misuse struggles. Specifically, ayahuasca has helped individuals decrease their alcohol, tobacco and cocaine use, while psilocybin has proved beneficial in decreasing alcohol and tobacco use. Additionally, thousands of individuals have benefited from LSD therapy in the treatment of alcohol misuse.

There is also evidence to suggest psychedelic-assisted therapy can improve mood and well-being, decrease the likelihood of suicidality, and promote empathy, connectedness, happiness, closeness to others, and trust.

Indeed, psychedelic-assisted therapy has great potential for treating many individuals and has shown to have an enormous positive impact on many already. What is less clear is just how these substances are working. Many theories draw attention to neural connectivity patterns, brain entropy, neurochemicals, neural function, as well as the phenomenological roots that ground the success of treatment in the profound meaning the voyagers receive from their experience.

Review of Set and Setting

Everyone who ingests psychedelics typically experiences an altered state of consciousness, a reality outside of their ordinary waking consciousness. Psychedelics have the power to elicit monumental insights about the self which could propel into a depth of understanding. They can also allow someone to erase the boundary between themselves and the rest of the world, increasing feelings of connectivity. Whether this alternative reality encompasses a healing initiative is dependent on a variety of dimensions. This project highlights specific ways of increasing the likelihood of these beneficial experiences and decreasing the

likelihood of harms. There are ways to manipulate the environment and prepare the voyager for a beneficial experience that maximizes the potential for a profound, mystical, and meaning-making psychedelic experience. Namely, attention to set and setting, screening for risk factors, established therapeutic rapport, and the practice of integration.

Further Possibilities: Healing Ecology

Finally, psychedelics may serve as a valuable tool for healing societies and healing the environment. Many voyagers describe their feelings of connectedness with nature and others, an appreciation for the earth and all life forms. These ideas resist anthropocentrism and support ecocentrism. Anthropocentrism states that humans have intrinsic value over other living things, and other life forms exist to sustain humans (MacKinnon, 2007, p. 331). Gaston (2005) reports that anthropocentric ideals resulted in the alterations in the balance of nature and the environmental crisis of today. Ecocentrism alternatively states that all living things have inherent value, distinct from their potential usefulness to humans (MacKinnon, 2007, p. 336). In the wake of the current climate catastrophe, psychedelic substances could help connect humans to nature. Further discussion warrants the utility of psychedelics in fostering ecological healing between human activity and nature.

Amanda Felding reflected the potential impacts psychedelics can have on our society and the environment in the following quote:

> Psychedelics can free us from the societal constructs which we are conditioned with from birth. They allow us to see more clearly, all the common sense things which humanity often forgets. Psychedelics can increase our focus on peace, openness, and compassion.

> They remind us to love one another, appreciate our community and take care of the environment. (Felding, 2019)

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