# Becoming "Psyched." Exploring the Viability of Psychedelic-Assisted Therapy for Adolescents Experiencing Mental Health and Substance Use Challenges: Risks, Benefits, and Informed Consent

by

Guy (Nat) Brewer

A capstone submitted in partial fulfillment

of the requirements for the Degree of

Master of Counselling (MC)

City University in Canada

Vancouver, BC

March 2025

APPROVED BY

Bruce Hardy, Ph.D., R.C.C., Capstone Advisor, Master of Counselling Faculty

Dawn Percher, M.A., RCC, Faculty Reader, Master of Counselling Faculty

School of Health and Social Sciences

**Abstract**

The use of psychedelic-assisted therapy for the treatment of psychiatric illness, substance use and end-of-life crises for adult populations is well-documented in the scientific literature. Numerous randomized controlled clinical trials have been conducted over the last few decades indicating that for the most part, the use of psychedelic medicines is safe and effective with little to no evidence of risk for physical or psychological addiction. The crucial elements during the session of set and setting, and proper integration following the psychedelic session, underpin this efficacy. This raises the question as to whether adolescent populations might also benefit from these novel therapies as current approaches using psychiatric medications and psychotherapy seem to be failing these young people. This paper aims to explore the viability of psychedelic-assisted therapy for adolescents including its inherent risks and benefits, and the issue of informed consent. Lastly, this paper will conclude with two recommendations for fostering the dissemination of information that is vital for healthcare professionals, caregivers and adolescents seeking information that will lead to informed choice.

*Keywords:* adolescents, informed consent, integration, LSD, MDMA, psilocybin, psychedelic, psychedelic-assisted therapy, psychedelic medicine

**Acknowledgements**

I owe so much to so many during this learning process. First, I would like to thank all of my professors over the last three years for making the work interesting, enjoyable, and challenging. I have grown and developed in self-confidence and competence, and yet, I still have so much to learn. Thank you to Bruce Hardy and Dawn Percher for guiding and mentoring me throughout this final project. Your support and feedback have made a seemingly insurmountable task more doable.

Thank you to all my classmates and your support inside and outside of residency. Each of you have touched my heart in some way and made the arduous journey more palatable and digestible. Thank you also to the staff and fellow interns at my internship site who have helped me to hone my nascent counselling skills and supported me to grow and develop as a counsellor.

Most importantly, thank you to my beautiful wife Tina who supported me in every way possible from hot meals to clean clothes and compassionate support during the really difficult times. I love you with all my heart and would truly not be here if it weren't for your love and support.

**Table of Contents**

Chapter One: Introduction ..... 7

Overview of the Topic ..... 7

Current Research ..... 7

The Problem: The Need for Novel Treatments ..... 9

Purpose Statement ..... 10

Research Questions ..... 11

Pertinence of the Research ..... 11

Contribution to the Field ..... 12

Reflexivity and Positionality Statement ..... 12

Definitions of Key Terms ..... 16

Chapter Two: Literature Review ..... 18

Indigenous Use and Historical Context ..... 18

Early Research and the Psychedelic Counterculture ..... 21

Psychedelic-Assisted Therapy ..... 24

Hypotheses On How Psychedelic Medicines Exert Their Effects ..... 26

The Default Mode Network and Psychedelics ..... 27

A Brief Word about Set, Setting and Protocols ..... 28

Psychedelic-Assisted Therapy for the Treatment of Mental Health Conditions ..... 30

Contraindications ..... 31

Ketamine ..... 31

LSD ..... 32

MDMA and PTSD ..... 33

Psilocybin, MDD and Treatment-Resistant Depression ..... 36

A Brief Word about Alzheimer's Disease ..... 38

The Impact of Spiritual or Mystical Experiences ..... 38

Psychedelic-Assisted Therapy for the Treatment of Substance Use ..... 39

LSD ..... 40

Psilocybin ..... 40

Ayahuasca and DMT ..... 41

San Pedro, Peyote, and Mescaline ..... 41

Effects of Microdosing Psychedelics ..... 42

Adolescents and Psychedelic-Assisted Therapy ..... 42

Adolescent Cognitive Development ..... 43

Effects of Psychedelic Medicines on Adolescent Cognition and Development ..... 44

Ethical Considerations and Issues of Informed Consent ..... 46

Chapter Three: Discussion and Applied Practices ..... 51

Research Questions Revisited ..... 51

Findings, Learnings and Appreciations ..... 53

Limitations, Power Dynamics, and Gaps in the Research ..... 54

Application ..... 55

Final Thoughts ..... 57

Personal Reflection ..... 57

References ..... 61

# Chapter One: Introduction

## Overview of the Topic

This Capstone research project will explore psychedelic-assisted therapies from a number of different perspectives with a view to illuminating the topic of psychedelic medicines for the treatment of adolescent populations. It will investigate the utility of psychedelic-assisted therapies in adult populations in an attempt to survey current uses for prevalent psychiatric conditions such as depression and anxiety, PTSD, substance use, and those in end-of-life crises (Aixalá, 2022; Drozdz et al., 2022; Hoener et al., 2024; Jardim et al., 2021; Krediet et al., 2020; Ross et al., 2022). Additionally, this paper will look at the crucial elements that must be considered if this therapeutic approach is to be utilized with adolescents, particularly issues of informed consent and the appropriateness of the treatment modality for younger populations. Microdosing, spirituality and the importance of set and setting will also be briefly explored.

## Current Research

Psychedelic medicines have been used by Indigenous cultures for ceremonies and rites of passage for thousands of years (Pollan, 2018; Reiff et al., 2020; Richards, 2016; Yaden et al., 2022). Currently, there are numerous studies that have, and are being conducted with psychedelic-assisted therapy and adult populations. Research studies with lysergic acid diethylamide (LSD or acid) were being conducted as early as the 1950s for the treatment of alcoholism (DiVito & Leger, 2020; Richards, 2016). These studies were not as controlled and therefore not as robust as some of the more contemporary studies being performed today. Today's scientific research ideally utilizes double-blind randomized controlled trials as the gold standard for providing results that are robust and significant whether qualitative or quantitative in nature (Gale et al., 2023).

Substances such as 3,4 methylenedioxymethamphetamine (MDMA or ecstasy) are administered in psychedelic settings for posttraumatic stress disorder (PTSD), particularly with first-responders such as firefighters and military personnel. MDMA is believed to alleviate symptoms of PTSD by increasing available neurotransmitters and hormones such as dopamine, serotonin and oxytocin (Riaz et al., 2023). In a short report by Bershad et al. (2024), MDMA was shown to support the positive perception of social images and may enhance sociability as a means of ameliorating negative symptoms of PTSD. Studies with MDMA are currently relegated to adult populations. Unfortunately, adolescents also suffer from the deleterious effects of PTSD.

Psilocybin (from psychedelic mushrooms) was first synthesized in a lab in 1958 by Swiss chemist Albert Hofmann, noted discoverer of LSD and the first person to unconsciously undergo an LSD trip 15 years earlier (Spiers et al., 2024). Psilocybin is gaining momentum as a viable option for adults in the amelioration of long-standing depression that does not seem to improve with standard treatments (Barber & Aaronson, 2022; Carhart-Harris et al., 2018). Coincidingly, adolescents have been experiencing increasing rates of depression and anxiety especially during and post-COVID-19. Standard methods of pharmacological treatment are proving largely unsuccessful therefore novel approaches for alleviating the concomitant suffering from clinical depression and anxiety need to be considered (Racine et al., 2021). Psychedelic-assisted therapy is one such approach. Psilocybin has also been studied for its capacity to decrease the harmful symptoms of alcohol use disorder (Bogenschutz et al., 2022).

LSD, sometimes referred to as acid, is gaining notoriety as a possible psychedelic medicine to support the treatment of substance-based addictions such as alcohol use disorder (Rochester et al., 2022). Like other psychedelics, it appears to bind to certain neurotransmitters and shift cognitive function from psychological rigidity (often present with addiction) to

psychological flexibility. This allows new perspectives to emerge about oneself and one's place in the world, often with a concomitant increase in self-compassion (Agin-Liebes et al., 2024). Well-regulated and ethically conducted clinical studies with adolescent populations utilizing these three primary medicines might open the door to more effective treatments than are currently being employed.

**The Problem: The Need for Novel Treatments**

Adolescents are increasingly afflicted with psychiatric illnesses such as anxiety, depression and posttraumatic stress disorder (PTSD) at alarming rates (Chiu et al., 2020; Kangaslampi & Zijlmans, 2023). This has been especially true following the fallout from the isolation and tension experienced during COVID-19 (Racine et al., 2021). Current treatment modalities that include psychotherapy and/or pharmacotherapy are proving virtually ineffective in alleviating the suffering that these conditions inflict. It has become more commonplace to administer psychiatric drugs such as benzodiazepines and anti-psychotics to adolescents for anxiety and psychosis respectively (Dinnissin et al., 2020). Adolescents need remedies for these challenges that include biological interventions as well as a focus on the cognitive and emotional elements pertaining to their mental health issues.

With the consideration of psychedelic-assisted therapy as a possible solution also comes issues of informed consent, safety and efficacy for adolescent clients (Rajwani, 2022). As Kangaslampi and Zijlmans (2023) point out, extrapolating claims about the effectiveness of a psychedelic medicine from adult studies does not serve to provide robust evidence for how well or poorly adolescent participants might respond in clinical studies. Numerous double-blind randomized controlled clinical trials will undoubtedly need to be conducted to cultivate sufficient data and self-reports that can be utilized to design appropriate treatments, taking into account set

and setting and optimum dosing. Informed consent assumes that the prospective participant understands the procedures, risks and benefits that may be experienced during and following the psychedelic session. While younger adolescents can give assent to a procedure, a certain level of cognitive and emotional maturity is required to give complete consent (Hoener et al., 2024). Methods to assess the capacity to give informed consent need to be developed and refined for their applicability to the use of psychedelic medicines.

**Purpose Statement**

The purpose of this Capstone research project is to investigate the current research on the use of psychedelic-assisted therapies in order to inform the viability of using psychedelic medicines in the treatment of adolescent psychiatric illness and substance use. For the purpose of this research, the term adolescent will refer to people between the ages of 12 and 24 (Siegel, 2015). The hypothesis is that current forms of adult treatment can be explored to develop relevant and effective research approaches and safe protocols for younger populations. This research includes adult psychedelic studies as well as perspectives on the inherent risks and benefits for adolescent populations, including issues pertaining to informed consent.

As often occurs with controversial remedies, questions of ethical practice and informed consent are raised, especially with adolescent populations (Rajwani, 2022). Any form of psychedelic-assisted therapy that would be deemed acceptable for adolescents must be predicated upon the requirement to preserve the well-being, privacy, confidentiality and safety of adolescent participants. There is also a spiritual component to consider when working with these medicines. Indigenous peoples have been in communion with natural plant medicines since time immemorial (Pollan, 2018). We in the West continue to grow in our understanding and honoring of these medicines while striving to work with them in a good way. However, there are also those

who would use these plant medicines primarily for monetary gain, with no respect for context or culture. Without context there can be no profound healing (Dupuis, 2022).

**Research Questions**

Is psychedelic-assisted therapy a viable option for adolescents with mental health and substance use issues? What are the inherent risks and benefits and how do we foster informed consent?

**Pertinence of the Research**

Adolescents are suffering from mental health issues and substance use challenges in staggering numbers. In Canada, they are more likely to suffer from these afflictions than any other age group (Centre for Addiction and Mental Health, 2025). Moreover, many adolescents already have experience using psychedelic medicines in recreational settings, although street ecstasy or molly used at raves barely resembles clinical grade MDMA (Izmi et al., 2024). Research in this area is crucial to support the integration of challenging psychedelic experiences and to help alleviate the destructive effects of mental health challenges such as depression, anxiety, PTSD, and grief and loss. In the writer's opinion, the use of practices from psychedelic-assisted therapy, like facilitating the integration of one's experience after using psychedelics may also be effective in helping to support the integration of mental health crises following psychosis (La Torre et al., 2024).

Discovering novel ways of approaching mental health and substance use issues is paramount to providing safe and effective care to adolescent populations. For this reason, psychedelic-assisted therapy research with adolescents should be considered an important focus for future clinical practice, provided of course that safety and informed consent are at the forefront.

**Contribution to the Field**

Virtually no direct clinical research has been undertaken with adolescents and psychedelic-assisted therapy at the time of the writing of this paper (Sutherland et al., 2025). This research project strives to explore current approaches to psychedelic-assisted therapy for adolescents and to emphasize the need for clinical research that is safe, effective and conforms to ethical standards that safeguard the well-being of potential clinical research participants.

Moreover, there is a huge void with respect to providing safe and effective treatment for adolescents experiencing psychiatric illness and substance use (Rajwani, 2022). Current methodologies provide little to no comfort for youth experiencing anxiety, depression, PTSD, grief and loss, as well as addiction to stimulants such as methamphetamine and depressive substances such as alcohol. Treatments need to be geared toward addressing the underlying issues driving mental health and substance use challenges, particularly unresolved trauma. Research in this area would address the obvious gap in knowledge that exists around the risks and benefits of psychedelic-assisted therapy for adolescents. Additionally, it must provide effective means for obtaining valid and supportive informed consent to procedures and protocols.

Adolescents tend to be an underserved population with respect to clinical studies and marginalized adolescents even more so (Sutherland et al., 2025). These young people are the future of our country and providing safe, effective and supportive therapies followed up by meaningful and thorough integration following therapy is paramount (Aixalá, 2022). This cannot happen without extensive and reliable clinical research.

**Reflexivity and Positionality Statement**

I am a 60-year-old, cis-gender, heterosexual white male of European descent. My roots are in Celtic traditions originating in Scotland, Ireland, Wales and England. I have the privilege

of relatively easy financial access to these medicines. Additionally, as a white male, I am well-represented in the clinical literature regarding psychedelic-assisted therapy with adults, so I am comfortable with its usage. My lens for this work is based upon a Bachelor of Science degree in Forensic Science which allows me to have a better understanding of the chemistry and biochemistry as well as neurobiology that is occurring when using these psychedelic medicines. Additionally, I have studied Pre and Perinatal Health and Psychology which is informed by attachment theory and relational dynamics. The latter field supports me to better understand the mechanisms by which integration and healing can occur peri and post psychedelic experience.

I came into the study of this topic believing that psychedelic therapy would be the be-all and end-all of healing for anxiety, depression and PTSD. I have since learned that it is not feasible or necessarily effective for everyone and, more studies are required to determine appropriate protocols and practices to use, particularly which psychotherapeutic modalities and which medicines would best support particular clients with their unique needs and intentions. Although much research has been conducted with adult populations, there is still much to learn about the intricacies of effectively employing psychedelic medicines in a therapeutic context. This is even more imperative with adolescent populations.

I chose this topic when I started my first introductory course for my Masters in Counselling. I later fine-tuned it to look at psychedelic-assisted therapy specifically with adolescents. I have worked with this population as a Youth Care Worker over the past 3 years and have seen the damaging effects of trauma, mental illness and substance use on our youth. I must admit that when I started this project, I was all for this type of research for this population. I had yet to contemplate possible risks, benefits and the crucial need for informed consent. I also had to consider whether adolescents on the lower end of the age criteria would be able to come away

from psychedelic therapy with the ability to make meaning of their experiences and subsequently integrate the teaching into their daily lives.

Many adolescents that I have worked with in a tertiary psychiatric setting have endorsed use of psilocybin, LSD, salvia divinorum and MDMA recreationally. So many of our youth are already using these substances, without guidance or integration. My thinking is in line with the contemporary belief that psychedelics work through creating changes in the parts of the brain that come together to perform certain functions. I am inclined to accept the REBUS (relaxed beliefs under psychedelics) model and the perspective that psychedelics shift cognition from psychological rigidity (stuck in the same ruminating patterns over and over) to psychological flexibility, allowing for new perspectives and insights to come to the fore (Carhart-Harris & Friston, 2019). This flexibility in thinking allows for greater creativity, supporting new perspectives about the self, others, and the world.

I believe that psychedelic-assisted therapies can be a boon and a curse depending on preparation, protocol and integration procedures. There is much evidence that will be outlined subsequently in the Chapter 2 literature review that supports the efficacy, safety and usefulness of using psychedelic medicines in therapy. Proper set and setting are crucial, as is in-depth and supportive integration. While the experiences during therapy may be wonderful and magical (or frightening and disorienting), proper integration can support the incorporation of experience into the psyche and the participant's everyday lived experience. Without this integration the experience becomes limited to mind-stuff without any substance or meaning. This is what often occurs with recreational use of psychedelics, all pomp with no real meaning. Additionally, these medicines are not meant to be ingested on a regular basis as this can limit their effectiveness and lead to spiritual bypass, where we are not truly working on our underlying issues, we are simply

experiencing the medicine (Fadiman, 2011; Pollan, 2018). Moreover, of vital importance is safety when working with psychedelics such that one has a qualified and conscientious guide to support the therapeutic process.

As an initiated shamanic practitioner (using ceremony and ritual to prompt healing), I have worked with various plant medicines over the years. Cannabis has been a primary master or teacher plant for me. In ceremony I have had insights that have supported my healing and personal growth over the last 15 years. When working with any plant medicine, it is crucial to go into the journey with a strong, clear and concise intention. My belief is that without an intention we are left to the whims of the medicine. While I believe that there is spirit in everything, including psychedelic medicines, I also realize that psychedelic medicine alone is not sufficient to bring about real change. It must be supported by a clear overarching modality or modalities so that proper data can be obtained in clinical trials to ascertain the source of any significant outcomes. Additionally, sessions must be followed by thorough and supportive integration.

Currently, I have not had any experience with psychoactive doses of psychedelics (although I did have some experience with LSD and mescaline as an adolescent). I have been microdosing with psilocybin (sub-perceptual doses) to support my challenges with anxiety and depression. It seems that when I am consistent, my baseline mood is better, but this is purely subjective. I have also worked briefly with amanita mushroom, mug wort and salvia divinorum in both ceremony and ritual. The belief is that while in an expanded or altered state, one can connect with and call upon the spirits to aid in healing. This has been my experience, although not evidence-based beyond qualitative self-report. California white sage is also a plant medicine with which I have much experience. Although not considered psychedelic, it can produce somewhat altered states when used in large quantities.

My biggest concerns regarding administering psychedelic medicines with adolescent populations are the ability to experience and extrapolate meaning, the risk of reinitiating deep trauma without adequate support, the inherent risks and benefits, and obtaining informed consent. Proper screening for suitability is also paramount. These approaches are not for everyone and to think of psychedelic medicines as universal healers is to lose sight of the uniqueness of clients and their lived experience.

Moving forward, I have been invited to sit in on a clinical application of psilocybin with a wise and experienced facilitator to see if leading psychedelic-assisted processes is something I want to pursue. It would require me to become familiar with the medicine by undertaking personal journeys with a guide. This would also involve adherence to the principles of set and setting, and involve the three stages of preparation, administration of the medicine, and subsequent integration so that I have a felt-sense of what a journeyer might be experiencing and can therefore support them in their process.

**Definitions of Key Terms**

**Adolescents-** are considered between the ages of 10 and 19 years and youth are considered between the ages of 15 and 24 according to the United Nations population studies (United Nations Population Fund, 2023).

**Double-blind randomized controlled clinical trials-** a clinical trial in which the subjects are randomly distributed into groups which are either subjected to the experimental procedure (as use of a drug) or which serve as controls (Merriam-Webster, n.d.).

**fMRI-** functional magnetic resonance imaging- magnetic resonance imaging used to detect physical changes (as of blood flow) in the brain resulting from increased neuronal activity (Merriam-Webster, n.d.).

**Integration-** a process in which a person revisits and actively engages in making meaning of, working through, translating, and processing the content of their psychedelic experience (Aixalá, 2022).

**Microdosing**- taking a significantly smaller dose (sub-perceptual) of a psychedelic substance such as LSD or psilocybin (Fadiman & Korb, 2019).

**Psychedelic-** of, relating to, or being drugs (such as LSD) capable of producing abnormal psychic effects (such as hallucinations) and sometimes psychotic states (Merriam-Webster, n.d.).

**Psychedelic-assisted Therapy-** the use of a psychedelic compound in the context of a short term (time-limited) sequence of therapy sessions that are structured to inform, shape, and interpret the psychedelic experience (Nielson & Guss, 2018).

**Set-** refers to the state of the mind and body of the person ingesting the psychedelic substance. This includes their expectations and intentions (Strassman, 2022).

**Setting-** refers to the environment or context within which one ingests the psychedelic substance (Strassman, 2022).

## Chapter Two: Literature Review

This literature review will explore and examine various aspects of psychedelic-assisted therapy including its origins in Indigenous traditions, its cultural impacts, and the early research conducted to explore its efficacy for psychiatric conditions including treatment for substance use and mental health challenges. It will describe the important and essential elements of psychedelic-assisted therapy including a brief overview of various theories that attempt to explain how psychedelics exert their effects in a therapeutic and healing context. The literature review will additionally focus on the use of psychedelic-assisted therapies in adult and adolescent populations including the impact of psychedelics on adolescent cognitive development and issues of ethics and informed consent for this young population.

### Indigenous Use and Historical Context

Since time immemorial, ancient cultures around the world have used indigenous plants and fungi in their traditional practices for nourishment and healing, both physically and psychologically (Pollan, 2018). This relationship with the environment and its flora has supported their survival as well as informing their spiritual and religious practices (Reiff et al., 2020). The existence and knowledge of these sacred practices has been supported by evidence from archaeological and anthropological discoveries (Yaden et al., 2022). Humphry Osmond, a pioneering psychedelic researcher in the 1950s introduced the term psychedelic from the Greek, meaning mind-manifesting (Pollan, 2018; Sloshower et al., 2020). The terms psychedelic and psychedelic medicine will be used interchangeably in this paper.

The umbrella term psychedelic includes psilocybin from mushrooms; lysergic acid diethylamide or LSD, which is an alkaloid formed by the ergot fungus of rye; 3,4-methylenedioxymethamphetamine (MDMA- a synthetic psychedelic), also known as molly,

ecstasy or E (Smith et al., 2021); ayahuasca; mescaline from peyote or San Pedro cacti; cannabis or marijuana; and ketamine (a synthesized dissociative anaesthetic). These latter two are not considered to be classic psychedelics as they do not act directly on the serotonergic system however their effects at high enough doses have been categorized as psychedelic and psychoactive (Strassman, 2022).

Studies point to the impact of the release of various neurotransmitters such as serotonin and dopamine, and hormones such as oxytocin, as well as brain-derived neurotropic factor (BDNF), as the mechanisms by which MDMA modulates emotional circuitry and mitigates the expression of fear and anxiety-related behaviours (Feduccia & Mithoefer, 2018). Serotonin is also implicated as a primary neurotransmitter involved with the psychoactive effects of LSD and psilocybin mushrooms.

In 1943 on April 6, Albert Hofmann a Swiss chemist, accidentally ingested LSD which he had synthesized in his lab 5 years prior. This was the first (and likely the only) unintentional ingestion of LSD in history and led Hofmann to experience a kaleidoscope of colors and images, experiences he would continue to be fascinated by until his death at 102 (Reiff, et al., 2020). Hofmann, who was instrumental in opening minds to the potential for LSD in healing for ailments such as ADHD which is often prescribed with Ritalin, was also believed to be one of the first people to take microdoses (subperceptual doses) of LSD daily, a practice he continued until his death (Fadiman & Korb, 2019).

Naturally occurring psychedelic medicines such as psilocybin, ayahuasca, and mescaline have been used by ancient cultures for healing and ceremony for thousands of years. Ayahuasca, is a tea made from the combination of two plants, one of which contains a mono-amine oxidase (MAO) inhibitor which allows the release of dimethyltryptamine (DMT-the psychoactive and

psychedelic compound) from the other plant (Argento et al., 2019; Pollan, 2018; Strassman, 2022). Studies with Indigenous populations dealing with debilitating substance use have demonstrated ayahuasca's effectiveness at reducing cravings and subsequent use of addictive substances (Argento et al., 2019).

Psilocybin mushrooms were used for centuries by the Mazatec peoples of Mexico. Their ritual use was shared with the Western world when, in 1957, Maria Sabina, a Mazatec medicine woman, was duped into conducting a psilocybin ceremony for R. Gordon Wasson, a banker and devout amateur mycologist (the study of fungi including mushrooms) who was on a research pilgrimage from the United States (Spiers et al., 2024). When Wasson reported his adventure to Life magazine, there was an influx of western presence (including celebrities such as John Lennon) into her small village of Huautla de Jiménez which created deep unrest in her community. They responded by burning her house down. She died alone in 1985, ostracized by her people (Dent, 2023; Pollan, 2018; Strassman, 2022). Albert Hofmann was able to synthesize psilocybin in the lab in 1958 (Spiers et al., 2024).

Peyote and San Pedro are two cacti that elicit mescaline as part of their Indigenous traditional ritual use which occurs in Peru and other nearby South American cultures. Due to the invasion of westerners, the growth of peyote (but not San Pedro, which seems to be in abundance) has hit a huge environmental obstacle and its use has become deemed unsustainable due to over-harvesting (Engel et al., 2023). These psychedelic compounds produce what are oftentimes referred to as non-ordinary states of consciousness (NOSC) which are also achievable through meditation, mindfulness practices and spiritual endeavours (Rochester et al., 2022). The Indigenous use of peyote, San Pedro, ayahuasca, Iboga and psilocybin mushrooms is deeply immersed in a cultural context of healing and an unwavering relationship with the sentience and

spirit of the plant or fungus (de la Salle et al., 2022). Synthetically produced psychedelics such as LSD and MDMA have also proven to be useful for more contemporary healing applications including treatment for alcoholism and posttraumatic stress disorder (PTSD) respectively (Krebs and Johansen, 2012; Pollan, 2018).

Psychedelics and psychedelic-assisted therapies have come to the forefront in psychiatry, psychology, and psychotherapy during the last few decades, particularly in the treatment of psychiatric conditions and end-of -life crises (Kucsera et al., 2023; Ross et al., 2022). Much of the current research can be attributed to present-day pioneers like Rick Doblin who founded the Multidisciplinary Association for Psychedelic Studies (MAPS), a non-profit created to support the renaissance of psychedelic therapy in 1986 (MAPS, 2024). Subsequent research by Dr. Rick Strassman, who conducted DEA-approved clinical trials in 1990 by administering intravenous N, N-dimethyltryptamine (DMT, a key component of the ayahuasca healing ceremony), chronicled DMT's role in the manifestation of mystical, alien and near-death experiences (Strassman, 2000). Although his research methodology was based mostly in qualitative self-reports of volunteer experiences, this seminal work would foster the renaissance of psychedelic research and act as the impetus for more robust, randomized controls. As a result of the ground-breaking endeavors of these pioneers, psychedelic-assisted therapies are thriving and becoming more accessible to the public beyond the application of clinical trials. Unfortunately, this accessibility does not necessarily extend to most marginalized and oppressed peoples or those of lower socio-economic communities, as will be discussed later in this paper (Pilecki et al., 2021).

**Early Research and the Psychedelic Counterculture**

The use of psychedelic substances in the 1960s and 1970s was primarily centred around their recreational use within the hippie counterculture. Hallucinogen use became

synonymous with this free-spirited bohemian movement which created a high level of fear and stigma toward the use of psychedelic substances, research on psychedelics, and the growing fringe society itself (Hendricks et al., 2015; Lowe et al., 2021). It is apparent from the research literature that studies were being conducted with psychedelics as early as the 1950s exploring the therapeutic and medicinal benefits of psychedelics such as LSD and psilocybin, or magic mushrooms (Carhart-Harris & Goodwin, 2017). In the early 1950s, driven by the uncertainties of the cold war, researchers in the United States conducted experiments with LSD to enhance suggestibility and inform interrogation techniques in order to exert control over the behavior of enemy military personnel and civilians in an investigation coded as MK Ultra (Carhart-Harris et al., 2015). In the 1950s and 1960s psychedelic pioneer and father of transpersonal psychology, Stanislav Grof, a Czechoslovakian psychiatrist as well as other prominent psychedelic researchers like Walter Pahnke, began studies with LSD and psilocybin in the United Staes to determine its potential to mitigate the effects of alcoholism, narcotic use, and personality disorders, an endeavour that met with great initial success (Richards, 2016). Unfortunately, within a decade virtually all psychedelic research was shut down due in large part to Nixon's War on Drugs and the urging by prominent figures like Harvard professor and psychologist Dr. Timothy Leary, to turn on, tune in and drop out; which many students and draft dodgers did during the late sixties at the height of the Vietnam War ("Tune In, Turn On and Drop Out," 2024). He had experimented extensively with LSD and had conducted experimental research with psilocybin at Harvard in 1960 (The Psilocybin Project) to determine its potential as a psychotherapeutic agent. Leary was subsequently asked to leave the esteemed institution along with fellow professor Robert Alpert aka Ram Dass in 1963 (Reiff et al., 2020).

In 1970, the Nixon administration placed LSD and psilocybin on Schedule 1 of the Controlled Substances Act, deeming them drugs with no current medical value and a high potential for abuse; research came to a standstill as a result (Barber & Aaronson, 2022). MDMA, which showed promise for the treatment of psychiatric conditions such as PTSD was placed on Schedule 1 as well, suppressing the vital research that had been conducted between the mid-1970s and mid-1980s. Psychedelic research experienced a hiatus until the landmark research of Griffiths et al. (2006), opened up the minds of psychedelic scientists to the mystical and spiritual aspects of psychedelic medicine, in this case psilocybin.

**Impacts in Canada**

Although the lion's share of psychedelic research was being conducted in the United States and Europe in the 1950s and 1960s, a substantial body of work was being explored in Canada which experienced its own impacts from the counterculture movement. The history of psychedelic medicine in Canada centers around Weyburn, Saskatchewan at the Weyburn Mental Hospital in the early 1950s. Albert Hoffer and Humphry Osmond (who is credited with coining the term psychedelic) conducted studies with LSD to determine its efficacy for treating alcohol use disorder with promising results (Rochester et al., 2022). As LSD was legal in the 1950s and showing promise in alcohol use disorder research, in 1962 the premier of Saskatchewan Tommy Douglas, a strong advocate for mental health care, supported research grants for further studies (Boyd, 2024).

This was a pivotal time in expanding our understanding and knowledge base regarding the psychiatric and healing potential of LSD. Also, at that time LSD and mescaline trips supported by a competent guide were being offered as alternatives to in-patient psychiatric care in asylums. Single-dose psychedelic treatments were viewed as a cost-effective alternative to

psychiatric care. This work fostered a greater understanding of the effects of these psychedelic medicines and their potential impact on psychiatric (particularly psychotic) disorders (Dyck, 2019).

As Canada was experiencing its own shifts in politics and social change, the counterculture movement rallied forces to create a broader view on topics of race and sex, seeking out a more coherent and reverent consciousness. In 1961, the conservative Diefenbaker government cracked down on illicit drug use by enacting severe and discriminatory punishments with the advent of the Narcotic Control Act. In conjunction with the Single Convention on Narcotic Drugs, these acts fortified a punitive criminal justice approach to unlawful drug use (Boyd, 2024).

Currently the pendulum appears to have swung again in the other direction. Existing psychedelic research that is being funded by the Canadian government includes the exploration of the potential benefits of psilocybin-assisted psychotherapy (Canadian Institutes of Health Research, 2023). Psilocybin and other psychedelic medicines that are currently being researched in North America and abroad will be discussed in greater detail below.

**Psychedelic-Assisted Therapy**

Since the renaissance of psychedelic research was initiated by the diligent efforts of researchers such as Rick Doblin through his brainchild, the Multidisciplinary Association for Psychedelic Studies, and the undertaking of studies by Roland Griffiths and Bill Richards of Johns Hopkins University and Medical Centre, psychedelic-assisted therapies have re-emerged as a viable option for the treatment of various psychiatric afflictions including end of life crises (Jardim et al., 2021; Ross et al., 2022). Dr. Rick Strassman broke new research ground with his compelling but quantitatively limited DMT studies from 1990-1995. Criticisms of his

methodology included a lack of hard objective data however Strassman's studies were based in the self-reporting of qualitative and subjective experience (Strassman, 2000). These experiences helped to shed light on the nature of near death and mystical experiences.

Many psychiatric issues and addictions are currently being treated with psychedelic-assisted therapy. These challenges include long-term depression, anxiety and PTSD (Barber & Aaronson, 2022; Hoener et al., 2024; Krediet et al., 2020), and addiction to alcohol, cannabis, stimulants such as methamphetamine and nervous system depressants like heroin (Agin-Liebes et al., 2024; Argento et al., 2019; Bhatt et al., 2022). Most current research has been conducted exclusively on adult populations. However, the growing emergence of debilitating psychiatric conditions and various forms of substance abuse and behavioral addiction has necessitated the use of alternative treatments that surpass the relative ineffectiveness of current psychopharmacological and psychotherapeutic interventions currently employed in the treatment of this population.

Due to its swift and sustained effects, psychedelic medicine is proving to be a potential adjunct to psychotherapy that may surpass the efficacy of standard pharmaceutical interventions (Barber & Aaronson, 2022). There are however some caveats. For example, there are ethical concerns with treating active-duty military personnel for conditions such as PTSD, as psychedelics may induce intrusive neurobiological and psychological effects that may interfere with the performance of operational duties (Hoener et al., 2024). Further, psychedelic research has focused primarily on specific populations, with marginalized groups being underrepresented. And much of the early research in this century has been focused on particular afflictions such as PTSD, treatment-resistant depression, anxiety and addictions such that their efficacy for other applications is largely uncharted (Aixalá, 2022).

Many protocols for the psychotherapeutic application of psychedelic medicines are still in the nascent stages of development and require further double- blind randomized controlled studies to ascertain their safety, efficacy, and potential for dependency. Procedures for informed consent, adherence to confidentiality and the potential health risks associated with psychedelic medicines must also be established (Hoener, et al., 2024). Interestingly, according to some researchers many psychedelic medicines demonstrate low potential for abuse and minimal likelihood of overdose, however extensive psilocybin use can create psychological dependence and tolerance has been demonstrated with excessive and prolonged LSD use (Johnson et al., 2018). There are also contrasting opinions on this issue such as the claim from Heal et al. (2018), that all psychedelics pose a threat for abuse and physical harm. The war wages on.

**Hypotheses On How Psychedelic Medicines Exert Their Effects**

Many in the scientific community who are conducting psychedelic-research have posed various hypotheses as to how psychedelic medicines work from a neurobiological and psychological perspective. For example, Argento et al. (2019) posited that ayahuasca, a plant indigenous to South America and used in the treatment of addiction may facilitate the processing of emotional trauma which is buried in the unconscious. These traumas are often resistant to therapeutic interventions that are currently being employed for substance use treatment. By resolving the underlying trauma, it is believed that clients can shift their thinking from a rigid psychological perspective, which perpetuates the trauma and the substance use, to a more flexible way of being in the world, open to new possibilities and concomitant change (Strika-Bruneau et al., 2023).

Carhart-Harris and Friston (2010) have looked to the Default Mode Network (DMN) as a possible area of interest with respect to how psychedelics affect cognitive processes and manifest

their effects. They believe that the ingestion of psychedelics causes the parts of the brain corresponding to the DMN to uncouple or disengage resulting in an altered experience of emotional and sensory stimuli. This process can support the emergence of new insights and new ways of thinking that can lead to the reintegration of difficult memories based on new and impactful experiences that occur during the psychedelic session (Daws et al., 2022).

Another promising perspective from Carhart-Harris and Friston (2019) posits the existence of a phenomenon known as REBUS or relaxed beliefs under psychedelics. This model suggests that psychedelic-assisted therapy can create a substantial change in one's worldview, including the values one holds dear. The shift in the journeyer's perspective can support the emergence of more malleable thinking. This new way of thinking can in turn support new awarenesses and insights fostering greater healing and recovery (Agin-Liebes et al., 2024).

### *The Default Mode Network and Psychedelics*

The Default Mode Network (DMN) is comprised of areas that run down the middle of the brain extending from the frontal cortex (logic and reason) to the amygdala (emotional processing) and hippocampus (long-term memory) (Xu et al., 2016). The parts of the brain that are normally engaged are the default setting when the individual is not paying attention to their external environment: when they are more inward focused. With all psychedelic medicines, research demonstrates that the connection between these normally linked structures is interrupted and uncoupled, creating novel connections (Gattuso, et al., 2023). The areas that are most affected by psychedelics involve the processing of emotions and the logic and reasoning centers (Gattuso et al., 2023). In support of this perspective, Nutt and Carhart-Harris (2020) have stated that neuroimaging provides evidence that psychedelics may function by creating disorder in the neural pathways that are involved with reoccurring thoughts and behaviours. They act upon the link between the reasoning and emotional centers in the brain.

**A Brief Word about Set, Setting and Protocols**

In order to comprehend the process of psychedelic therapy and how to best support the journeyer, one must understand the crucial elements of set and setting (Fadiman, 2011). Set relates to the client's internal environment at the time of the session; how they are thinking, their physical state, and what they expect or intend to happen within the session (Pollan, 2018). By contrast, setting relates to the client's external experience, the context within which the experience takes place and who is present during the psychedelic session.

Poor set and setting are often the precursors to emotionally and psychologically uncomfortable experiences, fondly referred to as bad trips. These tend to occur more so in ill-prepared recreational experiences. However, even so-called bad trips can lead to insight and growth if these experiences are properly integrated with an experienced therapist or guide (Read & Papaspyrou, 2021). Well-designed psychedelic-assisted therapy programs pay particular attention to set and setting, including the clinical space where the medicine is administered. Historically, when working with psilocybin, and most psychedelics in a clinical setting, the protocol follows a preparation phase, followed by administration of the psychedelic and then post-experience integration; the details of which are beyond the scope of this paper (Christie, 2024)**.** Generally, methods of support in psychedelic therapies are not connected to specific therapeutic modalities, nor specific disorders, however they do provide safety, containment, and protocols to navigate the psychedelic experience (Sloshower et al., 2020). That being said, MDMA and psilocybin are demonstrating positive outcomes in treating PTSD and treatment-resistant depression respectively (Carhart-Harris et al., 2018; Gorman et al., 2020; Gukasyan et al., 2022; Krediet et al., 2020).

**Psychedelic-Assisted Therapy with Adolescents**

Mental health challenges are quickly becoming one of the primary disabilities globally, and more than 50% of these conditions have their initial onset in adolescence (Kessler et al., 2007). How are we faring with adolescent mental health since that study? The fact is that young people aged 15-24 are more likely than any other population to have challenges with their mental health (Pearson et al., 2013). This has certainly worsened since COVID-19 and the explosion of social media (Haidt, 2024).

It is becoming increasingly evident, especially for those who work with youth in clinical settings, that adolescents are using psychoactive drugs to cope and experiment at an ever-increasing rate, including psychedelics (Bates & Trujillo, 2021). Adolescents are increasingly experiencing mental health issues as well. It has been estimated that approximately one in twenty-five 10–14-year-olds and one in twenty 15–19-year-olds experience an anxiety disorder, and depression is estimated to occur among over 1% of adolescents aged 10–14 years, and almost 3% of 15–19-year-olds (WHO, 2023).

Rajwani (2022), states emphatically that adolescents need to be included in psychedelic research as the growing impact of mental illness and substance use is increasingly insinuating itself deeper into this vulnerable population. Rajwani also argues that psychedelic medicines demonstrate a lower risk to adolescents than many of the current psychopharmacological treatments that are currently being administered to this population, such as benzodiazepines and anti-psychotic medications (BC Mental Health and Addiction Services, 2013; Dinnissin et al., 2020). Furthermore, adolescents are currently using psychedelics recreationally at an increasing rate without the benefit of proper set, setting, protocols or properly trained clinical guides (Killion et al., 2021). It is crucial that adolescents and healthcare professionals become educated

about psychedelics and psychedelic-assisted therapies and that research into psychedelic-assisted therapies becomes available to adolescents who have the capacity to give informed consent.

Izmi et al. (2024) recently found that adolescents demonstrated substantial amelioration of mental well-being and other aspects of mental health in a qualitative study involving self-administration of psychedelic medicine. This is in line with previous findings related to adult populations and bodes well for the future implementation of psychedelic medicines in adolescent populations. Substances of use included psilocybin, DMT, ayahuasca, LSD and mescaline. The adolescents in this study did however experience greater challenges than the adults with ego-dissolution while navigating the psychedelic medicines. Conversely, Jones et al., (2022) determined from a sample of 12–17-year-olds, that while long-term psilocybin use demonstrated a decrease in the potential for suicidal ideation and risks of successful suicide, LSD showed increased potential for the same phenomena. MDMA and mescaline did not demonstrate a relationship with increased suicidality. More research is required to ascertain the relationship of various psychedelic medicines to suicidal thoughts and behaviors (Jones et al., 2022).

Adolescents experience many of the same mental health issues as adults and current research into adult populations and PAT demonstrates amelioration of symptoms related to depression, PTSD, anxiety, suicidality and substance use (Rajwani, 2022). Rajwani believes that these outcomes can likely be expected for adolescents as well however the existing dearth of research with adolescents precludes an understanding of the potential developmental risks for this younger population (2022).

**Psychedelic-Assisted Therapy for the Treatment of Mental Health Conditions**

Psychedelic medicines, both synthetic and naturally-occurring, are increasingly being administered to those seeking relief from debilitating psychiatric conditions and the collateral

impact of life-threatening illness (Reiff & McDonald, 2021; Varley, 2019). These medicines include MDMA, psilocybin mushrooms, ketamine and LSD. We will explore ketamine and LSD cursorily and take a deeper dive into the application of MDMA and psilocybin to treat PTSD and treatment-resistant depression respectively. Additionally, we will explore current research into the effectiveness of psychedelic-assisted therapy in the treatment of Alzheimer's disease and its concomitant challenges.

### *Contraindications*

There are various mental health presentations that can exclude participants from engaging in clinical trials or private therapy with psychedelics. These include Bipolar 1 disorder, past or present psychosis, borderline personality disorder or an eating disorder where the individual is actively purging, and schizophrenia. They do not however tend to exclude for anxiety or depression (Mithoefer et al., 2019). Conversely, La Torre et al. (2024) found that PAT may not necessarily be ruled out for persons with previous psychosis as long as highly supportive psychedelic-assisted therapy is provided. Additionally, those with body weight under 48 kg, women who are pregnant or lactating, those with cardiovascular or cerebrovascular disease and other significant medical issues, are frequently screened out.

### *Ketamine*

Ketamine, which was first introduced in the early 1960s as a dissociative anaesthetic, has been predominantly used as an individual medicine for PTSD therapy (Krediet et al., 2020). It has demonstrated the capacity to reduce symptoms for up to one week, and when multiple infusions are given or when combined with psychotherapy, long-term relief from symptoms can be attained (Pradhan et al., 2017; Albott et al., 2018). Ketamine has also been found to demonstrate rapid diminishment of depression symptoms and a decrease in suicidal ideation in those with treatment-resistant depression (Matveychuk et al., 2020).

As with most psychoactive substances, there are caveats and dynamics one must be aware of when working with ketamine. Halstead et al., (2021) looked at the efficacy of ketamine-assisted therapy for treating PTSD (given a Breakthrough Designation by the FDA) brought on by childhood sexual abuse and racial discrimination and found that it was an effective alternative to the relatively ineffective use of selective serotonin reuptake inhibitors (SSRIs). It appeared to exert its influence by decreasing ruminating traumatic thoughts. Unfortunatley, most studies were conducted with non-Hispanic whites (82%) and so do not provide a representative sample that includes non-dominant and more marginalized populations. Furthermore, Drozdz et al., (2022) point out that while ketamine-assisted therapy is employed for numerous uses including the treatment of substance use, anxiety, depression and PTSD, there is no established and agreed upon clinical standard for routes of administration which are generally comprised of sub-lingual, intravenous, intramuscular and intranasal.

There is also a need that has been identified for protocols for culturally-appropriate de-escalation methods that can support a variety of diverse ethnic backgrounds when the psychedelic medicine experience becomes intense due to trauma-activating experiences (Halstead et al., 2021). It can be extremely challenging for a therapist to remain present and navigate the therapeutic process when a client is experiencing trauma related to suicidal ideation or suicide attempts. Therefore, it is imperative that the client has a strong support system to help integrate their experience post session (Aixalá, 2022). A thorough risk assessment and opportunities for follow-up sessions must also be afforded to provide safety and to support the full integration of the client's experience (Halstead et al., 2021).

***LSD***

One of the main functions believed to be a vital element in the transformative effects of psychedelics, of which LSD is an exemplar, is psychedelic medicine's ability to create states of

conscious that transcend normal experiences of consensus reality (Richards, 2016). This phenomenon has been shown to have great therapeutic benefit in the treatment of addictions and end-of-life related anxiety and depression.

In the 1950s up until the 1970s, LSD was being researched for the treatment of anxiety and depression as well as more serious psychiatric conditions, including addiction (Fuentes et al., 2020). In more contemporary studies, LSD has been shown to reduce concomitant mental health symptoms, particularly with respect to alcoholism. LSD has also demonstrated antidepressant, anti-anxiety, and antiaddictive properties by way of binding to 5-$HT_{2A}$ serotonin receptors when administered in well-designed clinical trials (dos Santos et al., 2016). Conscious attention to set, setting and safe protocols continues to be the hallmark of high-quality research studies.

From a subjective perspective, psychedelic medicines including psilocybin and LSD seem to exert their effects by altering one's sense of consciousness to create a more profound healing experience in comparison to standard methodologies and protocols that are administered under more mundane and commonplace states of consciousness (Bogenschutz et al., 2018). Gasser et al., (2015) found that with ingestion of two administrations of 200µg of LSD, clients experienced greater insight, deeper processing of emotional experiences and an augmented sense of their quality of life. However, a strong limitation for including LSD in psychotherapy research and clinical trials is its longer-lasting effects than most other psychedelic medicines, up to 10-12 hours (Nutt, 2004). This is excessively taxing on both the facilitators and the journeyer.

### *MDMA and PTSD*

Mental health issues deeply affect the biopsychosocial function of adults, children and adolescents. PTSD is a particularly detrimental illness that disproportionately affects first responders, military personnel, fire fighters, police officers, victims of violence, and survivors of vehicle accidents and natural disasters (Mithoefer et al., 2019). It is characterized by symptoms

related to anxiety, panic and dissociation and can induce psychological distress and flashbacks (Thal & Lommen, 2018). PTSD is more commonplace than one might think. While the general population shows a lifetime prevalence of 8% for PTSD, first responders and military personnel are vastly overrepresented regarding this condition; average occurrences of 20% and 17% respectively.

The individual with PTSD is challenged to discern between what is truly dangerous and what is simply a triggering of the original trauma. Unfortunately, many who are afflicted with PTSD do not respond well to standard psychiatric treatments. Few if any medications (which are often laden with side-effects) are efficient at treating PTSD, which generally becomes chronic and is associated with other psychiatric complications (Krediet et al., 2020). With the advent of rigorous psychedelic research over the last two decades, psychedelic medicines such as MDMA have come to the forefront as likely candidates for diminishing and alleviating the deleterious effects of PTSD (Barber & Aaronson, 2022).

MDMA that is used for clinical trials is a pure compound without the adulterants that are often found in street derivatives such as ecstasy or molly which often contain substances that increase toxicity and the possibility of fatal overdose (Saleemi et al., 2017). In the psychedelic research and culture, MDMA is characterized as an *empathogen,* a substance that can elicit connectedness, compassion and empathy—ideal attributes for working with the challenging symptoms of PTSD (Barber & Aaronson, 2022). One study by Gorman et al. (2020), found that MDMA-assisted psychotherapy occasioned posttraumatic growth and substantial symptom reduction. Posttraumatic growth (PTG) occurs as the result of facing and moving through the emotions and challenges associated with PTSD. It is distinct from resilience (implying that the individual is not as deeply affected) in that it involves processes such as finding and exploring

new possibilities in recovery, and tapping into one's personal strengths (Tedeschi & Moore, 2020).

Recently, MDMA has shown much promise as an adjunct to psychotherapy for PTSD. In a study pooling a longitudinal analysis of six phase 2 trials, Jerome et al. (2020) found that at 1-2 months post-treatment, PTSD symptoms were noticeably reduced and participants reported symptom improvement for a subsequent 12 months. In a later study by Mitchell et al. (2021), MDMA was shown to be safe and effective for the treatment of PTSD. A significantly higher mean change in CAPS-5 score (Clinician Administered PTSD Scale for DSM-5) was noted for the MDMA vs control group. MDMA was also well- tolerated and effective even in the presence of existing comorbidities (Mitchell et al., 2021).

MDMA-assisted psychotherapy studies focusing on marginalized populations are a scarcity. However, things are slowly changing. A recent study by Stauffer et al. (2022) looked at ways of serving underrepresented people who are transgender and gender diverse. The paper outlines transgender persons' experiences with the health care system and possible protocols to create inclusion and access to psychedelic medicines for the treatment of PTSD. Future research needs to be inclusive and equitable to all populations.

PTSD can often be accompanied by comorbid alcohol use disorder as a means to self-medicate traumatic symptoms. MDMA has also shown recent potential for the treatment of alcohol use disorder. In an 8-week recovery-based therapy one study demonstrated that MDMA is well-tolerated and MDMA-assisted therapy resulted in lower average units of alcohol consumption per week and an improvement in psychosocial behaviour (Sessa et al., 2021). Research of MDMA applications for substance use disorders is still in its infancy.

**Training for MDMA-Assisted Therapy.** MAPS offers extensive training in the theory, skills and practice of MDMA-assisted Therapy. They believe in one's intrinsic wisdom and innate ability to heal. Their training program is currently not accepting applicants as they are updating their protocols. Additionally, Numinus is offering training in MDMA-assisted therapy through their Certification Pathway. Ideally, to support clinical trials, one must possess at least a Masters degree in counselling or psychology or a similar health science and have extensive experience working with trauma. It is also highly recommended to have a medical doctor or nurse practitioner on-site in the event of any medical complications (D. Silvers, personal communication, May 3, 2024).

### *Psilocybin, MDD and Treatment-Resistant Depression*

The use of psilocybin as an adjunct in treating treatment-resistant depression and the effects of end-of-life related anxiety and depression have been a prominent focus of many clinical trials (Carhart-Harris et al., 2018). There is strong evidence to support the efficacy of psilocybin to augment the reduction of PTSD associated symptoms like severe anxiety and depression, and its ability to weaken old belief-systems allowing new beliefs to enter consciousness and foster the development of new ways of perceiving life (Barber & Aaronson, 2022).

Interestingly, in clinical trials, psilocybin has demonstrated the ability to support long-term reduction in depressive symptoms without eliciting tolerance and dependence. According to Podrebarac et al. (2021), psilocybin is classified as a serotonergic hallucinogenic that has the capacity to induce profound spiritual experiences, including when it is administered in a research setting. Another study by Gukasyan et al. (2022), strongly suggests that psilocybin-assisted therapy for Major Depressive Disorder (MDD) induces stable and substantial antidepressant effects for at least 12 months post-treatment.

In research conducted by Watts et al., (2017) they concluded that psilocybin supported a general shift from relational disconnection (from self and others) to connection, and from emotional avoidance to acceptance based on qualitative results and participant self-reports. Some of these outcomes continued for months after dosing sessions. Participants also reported a sense of beginning over and an expansion in their perception of their inner and outer worlds. Another study by Lyons and Carhart-Harris (2018) supports the suggestion that psilocybin can reduce negative personal bias when used with appropriate psychological treatment. This may lead to a decrease in depressive symptoms. The authors believe that this result is due to the participant gaining greater clarity and congruence regarding their perspectives on their life through the ingestion of psychedelic medicine coupled with effective interventions. They all so point out the need for more definitive controlled studies to ascertain the mechanisms of action and the long-term outcomes of treatment.

Agin-Liebes and Davis (2022) reviewed the findings of a small group of clinical trials using psilocybin to treat MDD and treatment-resistant depression. Early research showed promise for the treatment of depression with large effect sizes. Additionally, fMRI (functional magnetic resonance imaging that shows real time activity in specific brain regions) supported a notable decrease in cerebral blood flow (including the amygdala) that coincided with reductions in depressive symptoms. However, as is often the case, the majority of participants were White non-Hispanic which restricts the pertinence of the findings to more diverse populations.

The quality of the psychedelic experience has also been linked to therapy outcomes. Roseman et al. (2018) found a positive correlation between the depth of participant experience when engaging in psychedelic-assisted therapy, and the durability of their perceived benefits from the process. This is in part due to the occurrence of mystical experiences or oceanic

boundlessness experienced while in the therapeutic process and the mitigation of anxiety or dread of ego dissolution, an experience of not being anchored or connected to anything.

**A Brief Word about Alzheimer's Disease**

Although this paper will primarily be focusing on the viability of psychedelic-assisted therapy for adolescents, it is important to recognize research that is focused on atypical clinical trials. It provides a view into the exploration of other clinical applications besides standard adult studies. Alzheimer's disease is a devastating condition that deteriorates and destroys the physical and cognitive function of those who are afflicted. Despite much focused research, it is still without a viable cure. The need for suitable remedies to alleviate the underlying causes and symptoms of this disease has become paramount, as increasing numbers of elderly are being touched by its deadly effects (Winkelman et al., 2023). It is believed that serotonergic psychedelics like psilocybin and LSD can exert their effects by inducing structural and functional neuroplasticity (creating new neural pathways to bypass the damaging tau proteins and neuro fibrillary tangles), and by impeding or irradicating the phenomenon of comorbid brain atrophy or wasting.

**The Impact of Spiritual or Mystical Experiences**

In the pioneering days of psychedelic therapy, Griffiths et al., (2006) conducted a study using methylphenidate hydrochloride as a control wherein participants encountered mystical experiences (some might call spiritual) under the influence of psilocybin. This experience had a profound effect on their perspectives on personal meaning and internal experiences of spiritual significance. Participants were new to hallucinogen use and were already involved in spiritual or religious practices. A 32-question mysticism scale (well-established in religious psychology) among other tests, was used to rate participant experiences and has a demonstrated evidence-

basis for its cross-cultural applicability. Over two-thirds of volunteers rated the experience as either the most meaningful experience they have had or in their top five meaningful experiences.

**Psychedelic-Assisted Therapy for the Treatment of Substance Use**

Addiction, or substance use and abuse are a stark reality for both adult and adolescent populations. Addiction is a medical disorder characterized by chronic relapse for the many individuals who are afflicted. It is a phenomenon found throughout all countries of the world and to date there has been moderate success and limited viable options among the current treatment methods that are available; psychotherapy and pharmacotherapy (Zafar et al., 2023). The projected number of people that are currently suffering from substance-related issues in the western hemisphere alone is approximately 5-6%. That equates to about 1 in 20 to 1 in 16 people who are affected. The situation is getting progressively worse especially given the ravaging effects of the current opioid crisis (Fischer et al., 2018).

The evidence for the efficacy of psychedelics as a viable treatment for addictions has been steadily growing since the mid 1950s. These psychedelic substances include LSD, psilocybin, ayahuasca which contains DMT, mescaline, and Iboga from Africa. Research has evolved from the use of case studies to observations in natural settings, and more recently, more robust randomized double-blind controlled experiments (Zafar et al., 2023). LSD has been one of the most studied psychedelics with respect to substance use and addiction. Studies were being conducted by Grof and others in the 1950s and 1960s (Richards, 2016). However, by the 1970s research was virtually shut down due to public and governmental pressures (Barber & Aaronson, 2022).

There are number of theories regarding the mechanism of action for psychedelic-assisted therapies for substance use and abuse. These theories include the psychedelic medicine’s effects

on neuroplasticity, shifts in connections between brain structures, the processing of emotions and reward systems, enhanced social connection and insight, and profound experiences of a mystical or spiritual nature (Rieser et al., 2022). The authors point to the importance of elucidating the mechanisms of action for psychedelic therapy, and the development of effective and meaningful psychotherapeutic models to support the use of psychedelic medicines in substance use treatment.

### *LSD*

In functional magnetic resonance imaging (fMRI) studies, LSD has demonstrated the capacity to decrease activity in areas of the default mode network (DMN). This correlates to more openness and connection to others and the environment (DiVito & Leger, 2020). It also suggests that LSD, by acting on the serotonin 5-HT2A receptors, increases psychological flexibility in contrast to the psychological rigidity that is often found with persons addicted to substances. LSD has also been shown to enhance emotionally empathetic behavior and amplify prosocial interaction in two comparably designed placebo-controlled double-blind studies (Dolder et al., 2016). Early studies also point to the effectiveness of LSD to alleviate end-of-life associated anxiety (Wheeler and Dyer, 2020). Decreased anxiety and greater drive towards social connection could enhance one's ability to be successful in overcoming crippling addiction.

### *Psilocybin*

A study by Bogenschutz et al., (2022) explored the effects of psilocybin-assisted therapy on the change in the percentage of heavy drinking days of participants versus a placebo in adults with alcohol use disorder. The participants were previously naïve to psychedelics and hallucinogens. Researchers found marked decreases in heavy drinking days in addition to results for the placebo group who were administered diphenhydramine as a control. These findings warrant further randomized-controlled studies for the treatment of adults with alcohol use

disorder using psilocybin-assisted treatment. Psilocybin has also demonstrated great promise with supporting abstinence from alcohol when used in conjunction with motivational enhancement therapy (DiVito & Leger, 2020). Moreover, psilocybin has been shown to reduce symptoms in the treatment of addiction (Wheeler & Dyer, 2020)

### *Ayahuasca and DMT*

Ayahuasca is derived by the process of combining a bush and a vine that are indigenous to South America, particularly Peru, Brazil, Colombia and Ecuador. The process releases the psychoactive compound N, N-dimethyltryptamine (DMT), a hallucinogenic compound that elicits visions and non-ordinary states of reality to foster healing (Sharma et al., 2023). A recent qualitative study with the psychedelic medicine ayahuasca, was conducted in an Indigenous community in British Columbia, Canada. Researchers utilized qualitative and semi-structured interviews during and following treatment in a retreat setting and found substantial decreases in self-reported cocaine use among participants (Argento et al., 2019). These results may be due in part to enhanced connectedness to self, others and the spirit realm through imbibing the plant medicine. Additionally, the identification of negative thought patterns and barriers to successful treatment may foster a decrease in harmful substance use.

### *San Pedro, Peyote, and Mescaline*

San Pedro or Huachuma is a cactus that is indigenous to the Andes region of South America. Its use has been westernized and appropriated from a long-standing indigenous relationship with the peoples of the Andean traditions since time immemorial (Bohn et al., 2023). It achieves its healing effects through the induction of altered states of consciousness that foster growth, development and personal insights that guide transformation and change. The medicine requires intentional integration in order to root and retain the teachings that have transpired during ceremony (J. Acosta, personal communication, August 26, 2024). As with other

psychedelic medicines, ceremonial set and setting as well as traditional protocols are vital to the journeyer's experience and any resultant healing that may occur (Bohn et al., 2023). Additionally, intentional integration of the psychedelic experience is essential for the journeyer to make sense of, and internalize what they have undergone.

Behavioral addictions such as gambling disorder have also been on the radar of researchers with respect to the use of psychedelic-assisted therapies to treat non-substance related addictions. The hypothesis is that since gambling disorder is subject to the same psychosocial and neurobiological processes as substance-based addictions, psychedelic-assisted therapy would likely be an effective alternative to 12-step or psychopharmacological approaches (Romero et al., 2024). However, the authors warn that more research is needed to assess the safety, efficacy and pertinence of this type of therapy for gambling addiction.

### *Effects of Microdosing Psychedelics*

Microdosing is the act of administering low doses of psychedelic medicines that elicit sub-threshold effects (below the psychoactive level) that are not perceived by the research participant (Pilozzi et al., 2023). Regular microdoses versus single administrations can alleviate the potential negative experience or bad trip that can occur with higher psychoactive doses.

In a review of the literature regarding the use of low (micro) doses of LSD and/or psilocybin to treat depression, Kuypers (2020) found that despite the onset of anxiety and at times depressive moods elicited by the psychedelic medicines, microdosing treatments can provide flexibility in cognitive thinking processes and augment affective experience. This provides an environment where deeper therapeutic work can be conducted. These substances were shown to be safe and well-tolerated at low doses. The cognitive flexibility and enhanced affective processing may act as a mitigating factor with depressive symptoms.

## Adolescents and Psychedelic-Assisted Therapy

For the purposes of this research project, adolescence will be defined according to Siegel (2015) as ranging between ages twelve and twenty-four. Adolescence is a critical and challenging phase in one's gradual evolution from childhood into adulthood. They experience cognitive developmental changes consisting of increased reasoning ability including an augmented desire for exploration; the movement from solely concrete perspectives to more abstract thinking and the appreciation of abstract concepts and; increased ego-centrism with an inflated sense of self and more prominent risk-taking behaviors (Sanders, 2013). Although risk-taking is often seen as dangerous to some well-meaning parents, it is a crucial aspect of adolescent cognitive development as it facilitates exploration of new ideas, concepts and possible interests for the young risk-taker (Siegel, 2015). Unfortunately, this also the time of experimentation with increased sexual activity, initiation into substance use, and the onset of some forms of psychopathology (Murty et al., 2016). Education within schools and within the home is extremely important at this time, including communicating concerns around the recreational and therapeutic use of psychedelic medicines. This includes cannabis use which is considered by some to act as a psychedelic at higher doses (Gray, 2017). Movement through the stages of puberty can also be quite challenging at this time, augmenting misunderstandings experienced between parents and adolescents, and the seeming shut down of communication by adolescents who are struggling with their own internal emotional and cognitive experiences (Siegel, 2015).

### *Adolescent Cognitive Development*

A crucial issue when considering the use of psychedelic-assisted therapy with adolescent populations is the potential effects of psychedelic medicines on adolescent cognitive development. Neurocognitively, during adolescence executive function networks are being refined from their rudimentary but mature state that was cultivated in childhood (Murty et al., 2016). The authors postulate that adolescent experiences support neuroplasticity and the

formation of neuronal pathways to facilitate integrative processes such as executive functioning and memory consolidation. Rajwani (2022) points out that although the adolescent brain is still developing until age 25, there is virtually little research at this time that explores the effects of psychedelic substances on cognitive development.

**Effects of Synaptic Pruning on the Adolescent Brain.** Another factor that must be considered is adolescent pruning of neural networks. As one moves through adolescence, the brain begins to support the specialization of processing certain information. This means that the adolescent brain undergoes a phenomenon called synaptic pruning. In his seminal work on adolescent development entitled Brainstorm, Siegel (2015) states that essentially, like pruning trees, the brain begins cropping out neural pathways that are less used to foster the processing and storage of more developmentally mature information. This intense activity may also account for behaviors that are often passed off as being solely due to the effects of hormones during puberty.

### *Effects of Psychedelic Medicines on Adolescent Cognition and Development*

What are the risks and caveats when using these methods with this developmentally distinct group of young people? Morin et al., (2019) report that adolescent alcohol use has downstream neurotoxic effects on working memory and control of inhibitory processes. By contrast, the deleterious effects of cannabis, which is considered by some to be a psychedelic or hallucinogenic substance, are more substantial and pronounced with respect to cognitive function than observations found with alcohol use. They also found evidence of delays in recalling of memories and reasoning ability with adolescent cannabis use.

Appallingly, there is evidence of use of psychedelics such as LSD in the early 1950s with children as young as 5 and 8 to treat behavioral difficulties and bed-wetting respectively (Edelsohn & Sisti, 2023). It begs the question whether this is an honorable and ethical use of

such powerful medicine and whether children of that age can come away from treatment with positive and beneficial outcomes without causing deleterious cognitive and physical complications. In adolescent mice studies, Harris-Blum et al., (2024) found that multiple LSD exposures correlated with functional and developmental changes in the brain. Alterations in gray matter structures were found and evidence of neuroplasticity was observed. Gray matter functions is involved in speech, cognition, feeling of sensations, learning and perception (Cleveland Clinic, 2023). The downstream effects of these changes are as yet unknown.

Izmi et al., (2024) found that in a study of adolescents age 16-24, based on self-reports of various types of psychedelic use (primarily LSD and psilocybin), factors of psychological well-being showed significant improvement, congruent with findings from previous adult studies. They did however report that adolescents reported more difficult experiences and more occurrences of ego-dissolution with only one adolescent reporting distress as a result of their experience. The occurrence of ego-dissolution with the ingestion of psychedelic substances is described as a loss of sense of self in time and space as outlined in James Fadiman's seminal work (2011).

As suicide is an ongoing concern for adolescents and is a leading cause of death for this population, Jones et al., (2022) sought to determine the influence of adolescent psychedelic use on this tragic epidemic. They found that lifetime use of psilocybin was correlated to a decreased risk of lifetime suicidality however LSD use was strongly associated with an increased risk of suicidality. The authors outlined that one mitigating factor could be accessibility to social and school supports which generally reduces the risk of suicidal thoughts and behaviors. Additionally, co-occurring substance use could also be a confounding factor in determining the correlation between psychedelic use and suicidality.

**Ethical Considerations and Issues of Informed Consent**

Professional ethics, according to Truscott & Crook (2021), is the practice of utilizing a set of predetermined values to ascertain how a group of professionals should act in conducting their respective clinical practices, such that the safety and protection of the client is deemed to be of the utmost importance. Nowhere is this more essential than when working with vulnerable adolescent populations, youth who are often suffering from mental health issues, harmful substance use, or both.

Along with ethical practice is the equally vital element of informed consent. Informed consent is grounded in the principle of autonomy which assures that individuals are not coerced into or misinformed regarding the risks and benefits of research practices and clinical interventions in which they are about to participate (Truscott & Crook, 2021). Ethical practice as it pertains to psychedelic-assisted therapy involves the use of protocols that safeguard the well-being of psychedelic journeyers as a top priority by utilizing proper preparation, administration and subsequent integration of these powerful medicines (Christie, 2024). It also adheres to the main guiding principles of appropriate set and setting as previously discussed. The latter supports a more effective and constructive outcome from therapy. It does not however negate the possibility of a challenging experience (Fadiman, 2011; Strassman, 2022). Participants of psychedelic-assisted therapy must be informed of the benefits and risks of therapy, as well any possible experiences that may arise, and how to navigate them should they occur. For this reason, a well-trained sitter or guide for the experience is also essential.

Inevitably, informed consent serves as a means of reducing harm to the participant, safeguarding one's dignity and autonomy (Sathappan & Yudkoff, 2024). Although psychedelic substances have been used by traditional cultures over thousands of years, the context of this use

would have been within the realm of indigenous practices and protocols (Barber & Dike, 2023), to safeguard the participants and honor the spirits of the psychedelic medicines. Without proper context, like set and setting, in the hands of novices these practices can be more harmful than beneficial. All the more reason for obtaining appropriate informed consent, particularly from adolescents.

Children under 19 in British Columbia can give consent if they are deemed a mature minor (HealthLinkBC, 2024). Under the Infants Act which focuses on children under 19, if a medical care practitioner deems the procedure in the child's best interests and they are certain that the child understands the associated risks and benefits, then the child is deemed appropriately mature to give consent. With respect to psychedelic research Edelsohn & Sisti (2023) caution that young clients may undergo changes in personality and personal values and there is a potential for re-exposure to disturbing memories from past trauma. They also make several recommendations when considering children and youth for psychedelic research and therapy. This would include stringent observance of inclusion criteria and an extensive familial psychiatric, substance use and trauma history. Additionally, they point to the importance of specific criteria for giving assent to therapeutic touch so that the child or youth maintains a sense of sovereignty during the process. Overall goals of research and clinical use must be guided by the principles of safety, protection and equitable treatment of this young population.

Rajwani (2022) refers to issues of consent for adolescents as complex. He points to the need for appropriate assessment of an adolescent's appropriateness for psychedelic therapy from a cognitive and emotionally mature perspective. Parents also need to be highly informed about procedures, risks and benefits, and possible outcomes so that they can best support the therapeutic integration of their child's experience. Moreover, he posits that while autonomy is a

crucial issue with providing consent, these circumstances are trumped by the need for safety above all, particularly because changes in personality and one's assumptive worldview can shift as a result of undergoing psychedelic-assisted therapy. One ethical framework by Kristof & Peter (2019) that outlines key ethical issues regarding psychedelic-assisted therapy using LSD with adults, points to the importance of seven guiding principles that one would do well to apply to adolescent populations. These principles are comprised of assessing: 1) contribution of the research to society; 2) its scientific validity; 3) fair distribution of participants; 4) ratio of risks to benefits; 5) review by someone not affiliated with the study; 6) informed consent; and 7) observance of respect for the participants. These seem to be ideal boundaries and contingencies that would also benefit and support adolescent population studies with psychedelic medicines.

In a medical or clinical context, informed consent involves sharing the various options for treatment and their inherent risks and benefits, as well as possible alternative treatments (Appelbaum, 2024). Due to the increased frequency in mental health issues with adolescent populations, coupled with the increasing prevalence of treatment resistance challenges, substances such as ketamine, a dissociative anesthetic, are being considered for clinical use with adolescents (Sathappan & Yudkoff, 2024). In adults, ketamine is already being utilized for its anti-suicide and antidepressant effects however as yet there are no protocols in place for obtaining appropriate informed consent. This treatment may also prove useful for adolescents. The authors raise awareness about issues such as assent (verbal agreement to a procedure by an adolescent or a minor who does not meet the requirements for giving informed consent) versus consent, and the dynamics of parents giving consent to treatment when the adolescent does not. Ketamine, although not a classic psychedelic, can induce psychedelic states. Forcing adloescents into psychedelic treatment without assent, which goes against the notion of proper set and setting

for treatment, would likely lead to poor outcomes of therapy since the young person's orientation to the therapeutic process would be skewed due to parental duress.

In a bioethical perspective from New Zealand by Otterman (2023), the author points to challenges in securing informed consent from those afflicted with anorexia nervosa. She argues that trite explanations of the type of experiences one might encounter in psychedelic therapy fall short of the impactful occurrences that have been reported over the decades regarding psychedelic-assisted therapy. Therefore, full and thorough informed consent may be more difficult to obtain than one might imagine. If the journeyer cannot envision the full realm of possible experiences that can occur under the influence of psychedelic medicines, then they are not in a position to give full informed consent. Such is the case with all psychedelic-assisted therapies for the novice participant. Additionally, is an adolescent, lacking depth of experience and wisdom that stems from lived experience, capable of making meaning of their psychedelic experience and therefore able to integrate it into their daily living? More randomized control trials with this population are required in order to shed light on this crucial aspect of treatment and healing.

Another issue that is at the core of ethical practice with respect to psychedelic-assisted therapy is equitable access to the medicines (Barber & Dike, 2023). Based on an historically limited access to these novel treatments, particularly for marginalized populations, it is paramount that equitable distribution of these therapies to those in need is adhered to and maintained. This issue is equally important for adult and adolescent populations alike. Psychedelic medicines are slowly proving to be viable sources of relief from various conditions including mental health and substance use. Adolescents are at a high risk for succumbing to these conditions and are therefore a population in need of more clinical research with psychedelic-

assisted therapy. More research is required to design studies and protocols for this diverse, and neurodiverse population seeking relief from suffering.

## Chapter Three: Discussion and Applied Practices

While psychedelic-assisted therapy finds its roots in ancient ceremonies and rituals conducted by Indigenous peoples over millennia, there is still much to learn in order to work with plant medicines in a safe and respectful way (Pollan, 2018; Reiff et al., 2020; Richards, 2016; Yaden et al., 2022). The case is becoming stronger for the utilization of psychedelic medicines to support growth and healing from mental health and substance use challenges. The processing of difficult experiences with the administration of MDMA for the treatment of PTSD or employing psilocybin to decrease the debilitating symptoms of treatment-resistant depression, are exemplars of applications that have become more commonplace in the past decade or so (Riaz, et al., 2023). This research paper sought to explore the realms of psychedelic-assisted therapy and the conjoint maladies that it is purported to remedy.

### Research Questions Revisited

Specifically, this research project looked at the efficacy of psychedelic-assisted therapy for adult populations, exploring the use of psychedelic medicines for ameliorating substance use and mental health issues. Research then focused on findings surrounding the viability of psychedelic medicines for the treatment of psychiatric conditions and addictions in adolescent populations. The research questions were explicitly, “Is psychedelic-assisted therapy a viable option for adolescents with mental health and substance use issues? What are the inherent risks and benefits and how do we foster informed consent?” There remains a scarcity of clinical studies that have researched the safety and efficacy of benzodiazepine use with adolescent populations (demonstrating a high potential for abuse and addiction), and yet doctors still continue to prescribe these medications to our youth (Witek et al., 2005). Would psychedelics,

which demonstrate little to no evidence of physical or psychological addiction not be a better alternative than benzodiazepines, assuming safety, efficacy and informed consent?

From the research, it would appear that psychedelic therapy is often safe and effective, with relatively few negative outcomes when conducted in a respectful and intentional manner (Pollan, 2018). This includes adherence to the principles of set, setting and integration. Experienced facilitators are a must, to support the effective and enduring integration of key experiences (Fadiman, 2011). Respect for the medicine is also key. This manifests in the way in which one prepares for the ceremony and brings a clear and conscious intention (Aixalá, 2022).

One might conclude from the extensive research that has been conducted with adult participants that psychedelic-assisted therapy should be safe and effective for an adolescent population since it appears to be beneficial in an older population. However, this view does not consider the potential impact of ingesting psychedelic medicines on cognitive and personality development and the possible experiential challenges that can occur that are related to a participant's level of emotional maturity (Rajwani, 2022). Moreover, the principles of set, setting and integration would need to be modified to adapt to a younger population's needs and their requirements for a felt-sense of safety and support. Adolescents may have a hard time trusting adults, especially if they are seeking treatment for trauma that resulted from abuse at the hands of parents, caregivers etc. Much time should be focused on establishing a therapeutic alliance especially during the preparation and integration phases of treatment (Aixalá, 2022). This can support a felt-sense of safety and connection which can provide a safe container for the work.

The issue of informed consent for adolescents wishing to participate in psychedelic-assisted therapy is at the heart of the debate about administering psychedelic medicines to youth (Rajwani, 2022). Most certainly, within the framing of the appropriate procedures to follow, one

must highlight the importance of gaining assent from the youth. An overzealous but well-meaning parent may wish for their severely depressed adolescent to work with psilocybin or ketamine in therapy however, the youth should retain the right to decide whether they receive this treatment (Sathappan & Yudkoff, 2024). Care must be taken to provide adequate information about the process, including the risks and benefits, so the adolescent can make an informed choice about whether to proceed or not. Moreover, adolescents are at the epicenter of their cognitive development including identity and personality formation, and lack a solidly structured ego, so psychedelic-assisted therapy may be contraindicated as psychedelic experiences may thwart healthy growth and maturity (Rajwani, 2022).

**Findings, Learnings and Appreciations**

The issue of whether psychedelic-assisted therapy is suitable and viable for use with adolescents is rife with pitfalls and obstacles. At the commencement of this research project, I couldn't see many valid reasons to exclude this population from the current influx of clinical research. However, upon examination it appears that issues such as healthy cognitive development, the capacity to make meaning of one's experience following the psychedelic session, and the facility to give not only assent, but also informed consent, are all held within the complex admixture that encompasses safe, effective and ethical therapy.

I have found that psychedelic-assisted therapy is about more than just sitting in a dark room with an eye cover, taking some psychedelic medicine, and coming out six to eight hours later feeling changed, rejuvenated and more consciously aware. There is a whole process that must be undertaken to ensure the best possible outcomes from such an endeavour. Proper and respectful preparation is vital to ready the participant for the coming challenges when under the influence of the medicine (Aixalá, 2022, Fadiman, 2011). Appropriate dosage must be

considered as well as a thorough intake and psychiatric screening to ascertain the suitability of the client for the medicine and the impending healing process. As previously mentioned, set, setting and integration are other key components of a properly prepared and organized journey. An in-depth readiness is essential since once the journeyer is under the effects of the medicine, there is very little control that can be exercised to guide or direct the process. They must simply, let go into the experience (Pollan, 2018).

To achieve this preparedness for adolescents, existing protocols and practices must be modified to account for differences in cognition, emotional maturity, meaning-making ability, and the capacity to effectively integrate the experience and bring its teachings into everyday life. It is quite likely that some learning and healing elements of the psychedelic therapy experience may be lost on adolescent minds and bodies with less lived-experience and wisdom.

**Limitations, Power Dynamics, and Gaps in the Research**

The current research on using psychedelic medicines with adolescents is relegated to studies on potential risks and benefits, possible cognitive effects and the influence of cognitive development on the therapeutic process. It seems that at this point, no one is undertaking solid clinical research with participants that can yield informed consent to therapy (Rajwani, 2022; Sathappan & Yudkoff, 2024), although it possible underground research is taking place, hopefully safely and ethically. More studies into how to design and implement safe, effective and informed therapy for this younger population are required. Moreover, as a younger population, they can be considered marginalized to the extent that they would not likely be given the same considerations for access to novel treatments as would adults.

Power dynamics could play themselves out with psychedelic therapy for this population. As adults administering the medicine, we must be clear about our intentions and honor the

intention that the adolescent client is bringing into therapy. As facilitators we must ensure that our personal agenda for a young client remains in the background and that ethics, trauma-informed practice and informed consent are respected and held at the forefront of the therapeutic alliance. The autonomy, agency and decision-making power of the young client need to be the primary foci throughout the process of preparation, administration and integration of the psychedelic journey.

**Application**

I would like to outline two approaches here with the goal of disseminating information to others regarding adolescents and psychedelic-assisted therapy and its concomitant concerns of risk, benefit and informed consent. One approach would be a psychoeducation/experiential workshop for clinicians, health care providers and caregivers. This would probably be delivered in two streams: health care and caregiver as two distinct groups, to recruit people for each group that are similarly situated and who can relate to one another. Participants would be exposed to the current research on psychedelic therapy, safety and effectiveness in adults, and applications to specific conditions such as mental health issues, substance use and end-of life-crises. Next would be an overview of the current state of adolescent mental health (such as anxiety, depression and trauma) and addiction, and the general ineffectiveness of current psychopharmacological and psychotherapeutic interventions. This would open minds to the need for novel treatments.

Once a solid foundation is laid, I would invite participants to engage in some brief breathwork with a trained breath worker to provide an opportunity to experience an altered state similar to that experienced with psychedelics (Grof, 2024). For caregivers and clinicians, having a felt-sense lived experience akin to a psychedelic medicine journey can help facilitate an

understanding of the allure for adolescents to engage in recreational use, and the plausibility for healing and growth to occur with appropriate set, setting and integration. Although this process won't expose participants to the full psychedelic experience, it will give them a taste of what is possible, and possibly break down the barriers to understanding and accepting how these substances work.

However, I must admit a personal agenda here. I would be delivering these talks and rituals to support the advocacy for evidence-based research as well as research-based evidence in the planning and development of safe protocols for adolescents. I would teach caregivers, clinicians and health-care providers the importance of understanding the associated negative and positive outcomes of the therapy as well as the requirements for informed consent and the essential need for assent from participants.

The second endeavour would involve a closed group for adolescents to discuss their recreational experiences with psychedelics; psilocybin, LSD, and MDMA being the more common medicines used in recreational contexts. They would be supported to share their stories and receive guidance on making their own meaning from their psychedelic experience. Most important, they would be provided with an opportunity to integrate their process and apply what they have learned into their everyday lives. Some psychoeducation would be provided around other substances, particularly cannabis and its possible harmful effects on developing cognition. As psychedelics may have an impact on personality formation, cognitive development and the degree to which one experiences psychological flexibility, it is important to provide a safe and contained space for young individuals to process, digest and integrate the oftentimes challenging encounters with the psychedelic realms. All this preparation is in the spirit of supporting youth to make informed decisions about what they put into their bodies and minds.

## Final Thoughts

Psychedelic-assisted therapy continues to be a hot topic in the psychological and therapeutic realms of clinical research. It is still in its infancy with respect to understanding its appropriateness for certain populations due to issues of safety, efficacy, trauma-informed practice and fundamental ethical considerations. The scarcity of contemporary clinical studies with adolescent populations leaves a void where this population might receive substantial and long-lasting benefit from such therapies. With the seemingly insurmountable impacts of psychiatric illness and substance use on this underserved group of young people, it behooves the scientific community to initiate randomized controlled studies to elucidate the potential for this treatment to serve this population in need of effective remedies for what ails them.

## Personal Reflection

I have learned a considerable amount during this capstone research project process. It has been a long and arduous journey that started in July of 2024. I am the type of person who can work in short bursts of an hour to an hour and a half at a time. I am certainly not a marathoner. This project has opened my eyes to a lot of realities about psychedelic-assisted therapy, particularly for adolescents. My intention was to build a story beginning with the history of traditional psychedelic medicines and their application for adults and then to extrapolate these findings to younger populations. I looked at applications for mental health challenges and substance use, as well as their use for end-of-life crises and the spiritual aspect of such therapies. I was surprised by the dearth of evidence-based clinical research for psychedelic-assisted therapy and adolescent populations. The few papers that I did find looked at the importance of ascertaining the possible risk and benefits for adolescents and the crucial necessity for informed consent for this younger population. But this only feels like a meager start on addressing the

problem of the current relatively ineffective pharmacological and psychological interventions in use.

Coming into this project I could not see any reason why adolescents couldn't be treated with psychedelic medicines augmented by psychotherapy, much like the adult studies indicated. However, there are also issues of possible effects on ongoing cognitive development and the question as to whether adolescents can make meaning from their experiences and integrate this new learning into their daily activities of life. One of the crucial elements of undergoing psychedelic-assisted therapy is the ability to integrate and create meaning from the psychedelic journey, otherwise it becomes just another recreational experience with vivid imagery and fragmented recollections of key insights. Very cool, but of little clinical and therapeutic value. Set, setting and proper preparation have also come to the forefront as key elements of this type of therapy. Facilitators need specific training and need to be able to communicate well with adolescents to support them on their psychedelic journey in an effective and significant way.

I have been working with youth and adolescents for the past three and a half years at an acute unit on the North Shore. I have found that most treatments involve psychopharmacological interventions with very brief therapy which generally seem to create transitory but fleeting results, especially evidenced by the repeated stays of some clients over extended periods of time. One modality that might be beneficial for the processing and integration of psychedelic experiences would be Fosha's (2021) accelerated experiential dynamic psychotherapy (AEDP) which fosters and nurtures the development of secure attachment within the therapeutic relationship. This intervention would support the deep processing of emotional material and cultivate a compassionate and accepting therapeutic alliance.

Going forward, I have been invited by a psychedelic-assisted therapy facilitator to attend a ceremony/session with an adult client using psilocybin in a clinical study to see if this is the type of work I would like to do in the future. I am fascinated by this type of research and look forward to completing my graduate studies so that I can participate in a psychedelic session. I would be interested in engaging in education that would allow me to facilitate psychedelic-assisted therapy sessions with adults and eventually adolescents given that appropriate protocols, practices and therapeutic techniques were being employed for the well-being of the client. My Chapter 3 application section looked at educating health care professionals and caregivers about the risks and benefits of psychedelic-assisted therapy for adolescents. The essential element of informed consent was also explored. I would like to advocate for youth undergoing this treatment to ensure that their rights are being observed in an ethical and compassionate manner. Whether this will be a viable therapy for the future is still yet to be seen however it is quite clear that much research must be conducted before moving ahead with such novel treatments.

I am coming away from this project with mixed feelings about the viability of psychedelic medicine for adolescents. On the one hand, current methodologies and therapies for afflictions such as anxiety, depression, trauma and severe substance use in this population seem to be severely lacking in effectiveness and long-term successful outcomes. On the other hand, much is still left to be learned if we are to employ such therapies in a safe, effective, compassionate and trauma-informed way. What is certainly evident is that these potential adolescent participants in future clinical studies need to be advocated for at all levels of the process, from providing information that can support informed consent, to preparation, administration and subsequent integration. The onus is on us as adults to ensure safety and trauma-informed protocols for youth as many will be coming into this therapy having suffered

deeply from various forms of trauma and adverse childhood experiences. Providing compassion and connection are vital elements of this delicate and necessary process if we are to support the recovery and healing for those suffering from these oftentimes debilitating mental, emotional, physical and spiritual maladies.

## References

Agin-Liebes, G., & Davis, A.K. (2022). Psilocybin for the treatment of depression: A promising new pharmacotherapy approach. *Current Topics in Behavioral Neuroscience, 56*, 125-140. https://doi.org/10.1007/7854_2021_282

Agin-Liebes, G., Nielson, E.M., Zingman, M., Kim, K., Haas, A., Owens, L.T., Rogers, U., & Bogenschutz, M. (2024). Reports of self-compassion and affect regulation in psilocybin-assisted therapy for alcohol use disorder: An interpretive phenomenological analysis. *Psychology of Addictive Behaviors, 38*(1), 101-113. https://doi.org/10.1037/adb0000935

Aixalá, M.B. (2022). *Psychedelic integration: Psychotherapy for non-ordinary states of consciousness*. Synergetic Press.

Albott, C. S., Lim, K. O., Forbes, M. K., Erbes, C., Tye, S. J., Grabowski, J. G., Thuras, P., Batres-y-Carr, T. M., Wels, J., & Shiroma, P. R. (2018). Efficacy, safety, and durability of repeated ketamine infusions for comorbid posttraumatic stress disorder and treatment-resistant depression. *The Journal of Clinical Psychiatry*, *79*(3). https://doi.org/10.4088/jcp.17m11634

Appelbaum, P.S. (2024). Informed consent to psychedelic treatment: A work in progress. *JAMA Psychiatry, 81*(6), 543–4. https://doi.org/10.1001/jamapsychiatry.2024.0124

Argento, E., Capler, R., Thomas, G., Lucas, P., & Tupper, K.W. (2019). Exploring ayahuasca-assisted therapy for addiction: Qualitative analysis of preliminary findings among an Indigenous community in Canada. *Drug and Alcohol Review, 38*, 781-789. https://doi.org/10.1111/dar.12985

Barber, G.S., & Aaronson, S.T. (2022). The emerging field of psychedelic psychotherapy. *Current Psychiatry Reports 24*, 583-590. https://doi.org/10.1007/s11920-022-01363-y

Barber, G.S., & Dike, C.C. (2023). Ethical and practical considerations for the use of psychedelics in psychiatry. *Psychiatric Services, 74*, 838-846. https://doi.org/10.1176.appi.ps.20220525

Bates, M.L.S., & Trujillo, K.A. (2021). Use and abuse of dissociative and psychedelic drugs in adolescence. *Pharmacology, Biochemistry and Behavior*. Journal pre-proof. https://doi.org/10.1016/j.pbb.2021.173129

BC Mental Health and Addiction Services. (2013, May). *Using benzodiazepines in children and adolescents.* https://keltymentalhealth.ca/sites/default/files/documents/benzodiazepines_medication_information_-_may_2013.pdf

Bershad, A.K., Hsu, D.T., & de Wit, H. (2024). MDMA enhances positive affective responses to social feedback. *Journal of Psychopharmacology, 38*(3), 297-304. https://doi.org/10.1177/02698811231224153

Bhatt, S.R., Armstrong, M., Parker, T., Maviglia, M., Kass, R., Leeman, L., Romo, P., & Ziedonis, D. (2022). Psychedelic therapies at the crossroads of trauma and substance use: Historical perspectives and future directions, taking a lead from New Mexico. *Frontiers in Pharmacology, 13*. https://doi.org/10.3389/fphar.2022.905753

Bogenschutz, M.P., Podrebarac, S.K., Duane, J.H., Amegadzie, S.S., Malone, T.C., Owens, L.T., Ross, S., & Mennenga, S.E. (2018). A systematic review of psychedelic-assisted psychotherapy for mental health: An evaluation of the current wave of research and suggestions for the future. *Psychology of Consciousness: Theory, Research, and Practice, 7*(3), 279-315. https://doi.org/10.1037/cns0000237

Bogenschutz, M.P., Ross, S., Bhatt, S., Baron, T., Forcehimes, A.A., Laska, E., Mennenga, S.E., O'Donnell, K., Owens, L.T., Podrebarac, S., Rotrosen, J., Tonigan, J.S., & Worth, L. (2022). Percentage of heavy drinking days following psilocybin-assisted therapy vs placebo in the treatment of adult patients with alcohol use disorder: A randomized clinical trial. *JAMA Psychiatry, 79*(10), 953-962. https://doi.org/10.1001/jamapsychiatry.2022.2096

Bohn, A., Kiggen, M.H.H., Uthaug, M.V., van Oorsouw, K.I.M., Ramaekers, J.G., & van Schie, H.T. (2023). Altered states of consciousness during ceremonial San Pedro use. *The International Journal for the Psychology of Religion, 33*(4), 309-331. https://doi.org/10.1080/10508619.2022.2139502

Boyd, S. (2024, August 27). *History of drug policy in Canada*. Canadian Drug Policy Coalition. https://drugpolicy.ca/about/history/

Canadian Institutes of Health Research. (2023, June 29). *Government of Canada invests nearly $3 million to study the potential benefits of psilocybin-assisted-psychotherapy*. Canada.ca. https://www.canada.ca/en/institutes-health-research/news/2023/06/government-of-canada-invests-nearly-3-million-to-study-the-potential-benefits-of-psilocybin-assisted-psychotherapy.html

Carhart-Harris, R.L., Bolstridge, M., Day, C.M.J., Rucker, J., Watts, R., Erritzoe, D.E., Kaelen, M., Giribaldi, B., Bloomfield, M., Pilling, S., Rickard, J.A., Forbes, B., Feilding, A., Taylor, D., Curran, H.V., & Nutt, D.J. (2018). Psilocybin with psychological support for treatment-resistant depression: six-month follow-up. *Psychopharmacology, 235.* https://doi.org/10.1007/s00213-017-4771-x

Carhart-Harris, R.L., & Friston, K.J. (2010). The default mode, ego-functions and free-energy: A neurobiological account of Freudian ideas. *Brain, 133*(4), 1265-1283. https://doi.org/10.1093/brain/awq010

Carhart-Harris, R.L., & Friston, K.J. (2019). REBUS and the anarchic brain: Toward a unified model of the brain action of psychedelics. *Pharmacological Reviews, 71*(3), 316-344. https://doi.org/10.1124/pr.118.017160

Carhart-Harris, R.L., & Goodwin, G.M. (2017). The therapeutic potential of psychedelic drugs: Past, present and future. *Neuropsychopharmacology, 42,* 2105-2113. https://doi.org/10.1038/npp.2107.84

Carhart-Harris, R.L., Kaelen, M., Whalley, M.G., Bolstridge, M., Feilding, A., & Nutt, D.J. (2015). LSD enhances suggestibility in healthy volunteers. *Psychopharmacology, 232.* Springer. https://doi.org/10.1007/s00213-014-3714-z

Carhart-Harris, R.L., Roseman, L., Haijen, E., Erritzoe, D., Watts, R., Branchi, I., & Kaelen, M. (2018). Psychedelics and the essential importance of context. *Journal of Psychopharmacology, 32*(7), 725-731. https://doi.org/10.1177/0269881118754710

Centre for Addiction and Mental Health (2025). *Mental illness and addiction: Facts and statistics.* Centre for Addiction and Mental Health. Retrieved (January, 13, 2025) from https://www.camh.ca/en/driving-change/the-crisis-is-real/mental-health-statistics

Chiu, M., Gatov E., Fung, K., Kurdyak, P., & Guttmann, A. (2020). Deconstructing the rise in mental health-related ED visits among children and youth in Ontario, Canada. *Health Affairs, 39*(10). https://doi.org/10.1377/hlthaff.2020.00232

Christie, D. (2024). *Introduction to psychedelics*. Numinus. https://training.numinus.com/d2l/le/content/6703/viewContent/3951/View

Cleveland Clinic (2023, March, 18). *Grey Matter.* Cleveland Clinic. https://my.clevelandclinic.org/health/body/24831-grey-matter

Daws, R.E., Timmermann, C., Giribaldi, B., Sexton, J.D., Wall, M.B., Erritzoe, D., Roseman, L., Nutt, D., & Carhart-Harris, R. (2022). Increased global integration in the brain after psilocybin therapy for depression. *Nature Medicine, 28*(4), 844-851. https://doi.org/10.1038/s41591-022-01744-z

de la Salle, S., Gran-Ruaz, S., Davis, D.D., Davis, A.K., & Williams, M.T. (2022). Acute and enduring effects of naturalistic psychedelic use among Indigenous peoples in Canada and the United States. *Canadian Psychology, 63*(4) 589-607. https://doi.org/10.1037/cap0000338

Dent, E. (2023). *In memory of Maria Sabina.* MAPS Canada. https://www.mapscanada.org/2021/01/07/in-memory-of-maria-sabina/

Dinnissin, M., Dietrich, A., van der Molen, J.H., Verhallen, A.M., Buiteveld, Y., Jongejan, S., Troost, P.W., Buitelaar, J.K., Hoekstra, P.J., & van den Hoofdakkar, B.J. (2020), Prescribing antipsychotics in child and adolescent psychiatry: Guideline adherence. *European Child and Adolescent Psychiatry, 29*(12), 1717-1727. https://doi.org/10.1007/s00787-020-01488-6

DiVito, A.J., & Leger, R.F. (2020). Psychedelics as an emerging novel intervention in the treatment of substance use disorder: A review. *Molecular Biology Reports, 47*(12), 9791-9799. https://doi.org/10.1007/s11033-020-06009-x

Dolder, P.C., Schmid, Y., Müller, F., Borgwardt, S., & Liechti, M. (2016). LSD acutely impairs fear recognition and enhances emotional empathy and sociality. *Neuropsychopharmacology, 41*(11), 2638-2646. https://doi.org/10.1038/npp.2016.82

dos Santos, R.G., Osório, F.L., Crippa, J.A.S., Riba, J., Zuardi, A.W., & Hallak, J.E.C. (2016). Antidepressive, anxiolytic, and antiaddictive effects of ayahuasca, psilocybin and lysergic acid diethylamide (LSD): A systematic review of clinical trials published in the last 25 years. *Therapeutic Advances in Psychopharmacology, 6*(3), 193-213. https://doi.org/10.1177/2045125316638008

Drozdz, S.J., Goel, A., McGarr, M.W., Katz, J., Ritvo, R., Mattina, G.F., Bhatt, V., Diep, C., & Ladha, K.S. (2022). Ketamine assisted psychotherapy: A systematic narrative review of the literature. *Journal of Pain Research, 15*, 1691-1706. https://doi.org/10.2147JPR.S360733

Dupuis, D. (2022). The socialization of hallucinations: Cultural priors, social interactions, and contextual factors in the use of psychedelics. *Transcultural Psychiatry, 59*(5), 625-637. https://doi.org/10.1177/13634615211036388

Dyck, E. (2019, July 16). *Psychedelic research in 1950s Saskatchewan*. The Canadian Encyclopedia. https://www.thecanadianencyclopedia.ca/en/article/psychedelic-research-in-1950s-saskatchewan

Edelsohn, G.A., & Sisti, D. (2023). Past is prologue: Ethical issues in pediatric psychedelics research and treatment. *Perspectives in Biology and Medicine, 66*(1), 129-144. https://doi.org/10.1353/pbm.2023.0007

Engel, L., Barratt, M., Ferris J., Puljevic, C., & Winstock A. (2023). Mescaline, peyote and San Pedro: Is sustainability important for cacti consumers? *Journal of Psychedelic Studies, 7*(2), 135-142. https://doi.org/10.1556/2054.2023.00252

Fadiman, J. (2011). *The psychedelic explorer's guide: Safe, therapeutic and sacred journeys*. Ark Street Press.

Fadiman, J., & Korb, S. (2019). Might microdosing psychedelics be safe and beneficial? An initial exploration. *Journal of Psychoactive Drugs*, *51*(2), 118-122. https://doi.org/10.1080/02791072.2019.1593561

Feduccia, A. A., & Mithoefer, M. C. (2018). MDMA-Assisted psychotherapy for PTSD: Are memory reconsolidation and fear extinction underlying mechanisms? *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, *84*, 221–228. https://doi.org/10.1016/j.pnpbp.2018.03.003

Fischer, B., Pang, M., & Tyndall, M. (2018). The opioid death crisis in Canada: Crucial lessons for public health. *The Lancet, 4*(2). https://doi.org/10.1016/S2468-266730232-9

Fosha, D. (Ed.). (2021). *Undoing aloneness and the transformation of suffering into flourishing: AEDP 2.0.* American Psychological Association.

Fuentes, J.J., Fonseca, F., Elices, M., Farré, M., & Torrens, M. (2020). Therapeutic use of LSD in psychiatry: A systematic review of randomized-controlled clinical trials. *Frontiers in Psychiatry, 10*(943). https://doi.org/10.3389/fpsyt.2019.00943

Gale, R.P., Zhang, M., & Lazarus, H, M. (2023). The role of randomized controlled trials, registries, observational databases in evaluating new interventions. *Best Practice and Research Clinical Haematology, 36*(4). https://doi.org/10.1016/j.beha.2023.101523

Gasser, P., Kirchner, K., & Passie, T. (2015). LSD-assisted psychotherapy for anxiety associated with life-threatening disease: A qualitative study of acute and sustained subjective effects. *Journal of Psychopharmacology, 29*, 57-68. https://doi.org/10.177/0269881114555249

Gattuso, J.J., Perkins, D., Ruffel, S., Lawrence, A.J., Hoyer, D., Jacobson, L.H., Timmermann, C., Castle, D., Rossell, S.L., Downey, L.A., Pagni, B.A., Galvão-Coelho, N.L., Nutt, D., & Sarris, J. (2023). Default mode network modulation by psychedelics: A systematic

review. *International Journal of Neuropsychopharmacology, 26*(3), 155-188. https://doi.org/10.1093/ijnp/pyac074

Gorman, I., Belser, A.B., Jerome, L., Hennigan, C., Shechet, B., Hamilton, S., Yazar-Klosinski, B., Emerson, A., & Feduccia, A.A. (2020). Posttraumatic growth after MDMA-assisted psychotherapy for posttraumatic stress disorder. *Journal of Traumatic Stress, 33,* 161-170. https://doi.org/10.1002/jts.22479

Gray, S. (Ed.). (2017). *Cannabis and spirituality: An explorer's guide to an ancient plant spirit ally*. Park Street Press.

Griffiths, R.R., Richards, W.A., McCann, U., & Jesse, R. (2006). Psilocybin can occasion mystical-type experiences having substantial and sustained personal meaning and spiritual significance. *Psychopharmacology, 187*(3), 284-292. https://doi.org.10.1007/s00213-006-0457-5

Grof, P. (2024). Oscillatory components of psychedelic experience. *Journal of Humanistic Psychology, 64*(4), 723-740. https://doi.org/10.1177/00221678211041836

Gukasyan, N., Davis, A.K., Barrett, F.S., Cosimano, M.P., Sepeda, N.D., Johnson, M.W. Griffiths, R.R. (2022). Efficacy and safety of psilocybin-assisted treatment for major depressive disorder: prospective 12-month follow-up. *Journal of Psychopharmacology, 26*(2). Sage Journals. https://doi.org/10.1177/02698811211073759

Haidt, J. (2024). *The anxious generation: How the great rewiring of childhood is causing an epidemic of mental illness.* Penguin Press.

Halstead, M., Reed, S., Krause, R., & Williams, M.T. (2021). Ketamine-assisted psychotherapy for PTSD related to racial discrimination. *Clinical Case Studies, 20*(4), 310-330. https://doi.org/10.1177/1534650121990894

Harris-Blum, L., Smith, Z., Ortiz, R.J., Athreya, D., Chang, A., Kulkarni, P.P., & Ferris, C.F. (2024). *Scientific Reports, 14*. https://doi.org/10.1038/s41598-024-69597-9

Heal, D.J., Gosden, J., & Smith, S.L. (2018). Evaluating the abuse potential of psychedelic drugs as part of the safety pharmacology assessment for medical use in humans. *Neuropharmacology*, *142*, 89-115. https://doi.org/10.1016/j.neuropharm.2018.01.049

HealthLinkBC (2024, October, 08). *The Infants Act, mature minor consent and immunization*. HealthLinkBC Files. https://www.healthlinkbc.ca/healthlinkbc-files/infants-act-mature-minor-consent-and-immunization

Hendricks, P.S., Johnson, M.W., & Griffiths, R.R. (2015). Psilocybin, psychological distress, and suicidality. *Journal of Psychopharmacology, 29*(9). https://doi.org/10.1177/0269881115598338

Hoener, S., Aaron, W., Nissan, D., & Howe, E. (2024). Ethical considerations for psychedelic-assisted therapy in military clinical settings. *Journal of Medical Ethics, 50*(4), 258-262. https://doi.org/10.1136/jme-2023-108943

Izmi, N., Carhart-Harris, R.L., & Kettner, H. (2024). Psychological effects of psychedelics in adolescents. *Frontiers in Child and Adolescent Psychiatry, 3*. https://doi.org/10.3389/frcha.2024.1364617

Jardim, A.V., Jardim, D.V., Chaves, B.R., Steglich, M., Ot'alora G.M., Mithoefer, M.C., da Silveira, D.X., Tófoli, L.F., Ribeiro, S., Matthews, R., Doblin, R., & Schenberg, E.E. (2021). 3,4-Methylenedioxymethamphetamine (MDMA)-assisted psychotherapy for victims of sexual abuse with severe post-traumatic stress disorder: An open label pilot study in Brazil. *Brazilian Journal of Psychiatry, 43*(2), 181-185. https://doi.org/10.1590/1516-4446-2020-0980

Jerome, L., Feduccia, A.A., Wang, J.B., Hamilton, S., Yazar-Klosinski, B., Emerson, A., Mithoefer, M.C., & Doblin, R. (2020). Long-term follow-up outcomes of MDMA-assisted psychotherapy for treatment of PTSD: A longitudinal pooled analysis of six phase 2 trials. *Psychopharmacology, 237,* 2485-2497. https://doi.org/10.1007/s00213-020-05548-2

Johnson, M.W., Griffiths, R.R., Hendricks, P.S., & Henningfield, J.E. (2018). The abuse potential of medical psilocybin according to the 8 factors of the Controlled Substances Act. *Neuropharmacology, 142*, 143-166. https://doi.org/10.1016/j.neuropharm.2018.05.012

Jones, G., Arias, D., & Nock, M. (2022). Associations between MDMA/ecstasy, classic psychedelics, and suicidal thoughts and behaviors in a sample of U.S. adolescents. *Scientific Reports, 12*. https://doi.org/10.1038/s41598-022-25658-5

Kangaslampi, S., & Zijlmans, J. (2023). MDMA-assisted psychotherapy for PTSD in adolescents: rationale, potential, risks, and considerations. *European Child and Adolescent Psychiatry, 33*(11), 3753-3764. https://doi.org/10.1007/s00787-023-02310-9

Kessler, R. C., Angermeyer, M., Anthony, J. C., DE Graaf, R., Demyttenaere, K., Gasquet, I., DE Girolamo, G., Gluzman, S., Gureje, O., Haro, J. M., Kawakami, N., Karam, A., Levinson, D., Medina Mora, M. E., Oakley Browne, M. A., Posada-Villa, J., Stein, D. J., Adley Tsang, C. H., Aguilar-Gaxiola, S., Alonso, J., … Ustün, T. B. (2007). Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey Initiative. *World psychiatry: official journal of the World Psychiatric Association (WPA)*, *6*(3), 168–176. https://pubmed.ncbi.nlm.nih.gov/18188442/

Killion, B., Hai, A.H., Alsolami, A., Vaughn, M.G., Sehun, O.P., & Salas-Wright, C.P. (2021). LSD use in the United States: Trends, correlates, and a typology of us. *Drug and Alcohol Dependence, 223*. https://doi.org/10.1016/j.drugalcdep.2021.108715

Krebs, T.S., & Johansen, P. (2012). Lysergic acid diethylamide (LSD) for alcoholism: Meta-analysis of randomized controlled trials. *Journal of Psychopharmacology, 26*(7). https://doi.org/10.1177/0269881112439253

Krediet, E., Bostoen, T., Breeksema, J., van Schagen, A., Passie, T., & Vermetten, E. (2020). Reviewing the potential of psychedelics for the treatment of PTSD. *International Journal of Neuropsychopharmacology, 23*(6), 385-400. https://doi.org/10.1093/ijnp/pyaa018

Kristof, B. J., & Peter, K. (2019). Research ethics aspects of experimentation with LSD on human subjects: A historical and ethical review. *Medicine, Health Care and Philosophy, 22*(2), 327–37. https://doi.org/10.1007/s11019-018-9871-9

Kucsera, A., Suppes, T., & Haug, N.A. (2023). Psychologists' and psychotherapists, knowledge, attitudes and clinical practices regarding the therapeutic use of psychedelics. *Clinical Psychology and Psychotherapy*, *30*(6), 1369-1379. https://doi.org/10.1002/cpp.2880

Kuypers, K.P.C. (2020). The therapeutic potential of microdosing psychedelics in depression. *Therapeutic Advances in Psychopharmacology, 10*, 1-15. https://doi.org/10.1177/2045125320950567

La Torre, J.T., Mahammadli, M., Faber, S.C., Greenway, K.T., & Williams, M.T. (2024). Expert opinion on psychedelic-assisted therapy for people with psychopathological psychotic experiences and psychotic disorders. *International Journal of Mental Health and Addiction, 22*(2), 913-937. https://doi.org/10.1007/s11469-023-01149-0

Lowe, H., Ngeh, T., Steele, B., Henkel, V., Grant, J., Amza, A., Ngwa, W., & Gordon, L. (2021). The therapeutic potential of psilocybin. *Molecules, 26*(10). https://doi.org/10.3390/molecules26102948

Lyons, T., & Carhart-Harris, R.L. (2018). More realistic forecasting of future life events after psilocybin for treatment-resistant depression. *Frontiers in Psychology, 9*. https://doi.org/10.3389/fpsyg,2018.01721

Matveychuk, D., Thomas, R.K., Swainson, J., Kullar, A., MacKay, M., Baker, G.B., & Dursun, S.M. (2020). Ketamine as an antidepressant: Overview of its mechanisms of action and potential predictive biomarkers. *Therapeutic Advances in Psychopharmacology, 10*, 1-21. https://doi.org/10.1177/2045125320916657

Merikangas, K.R., Nakamura, E.F., & Kessler, R.C. (2009). Epidemiology of mental disorders in children and adolescents. *Dialogues in Clinical Neuroscience, 11*(1), 7-20. https://doi.org/10.31887/DCNS.2009.11.1/krmerikangas

Merriam-Webster. (n.d.). Functional magnetic resonance imaging. In *Merriam-Webster.com dictionary*. Retrieved March 5, 2025, from https://www.merriam-webster.com/dictionary/functional%20magnetic%20resonance%20imaging

Merriam-Webster. (n.d.). Psychedelic. In *Merriam-Webster.com dictionary*. Retrieved November 1, 2023, from https://www.merriam-webster.com/dictionary/psychedelic

Merriam-Webster. (n.d.). Randomized controlled trial. In *Merriam-Webster.com dictionary*. Retrieved January 20, 2025, from https://www.merriam-webster.com/medical/randomized%20controlled%20trial

Mitchell, J.M., Bogenschutz, M., Lilienstein, A., Harrison, C., Kleiman, S., Parker-Guilbert, K., Ot'alora, G.M., Garas, W., Paleos, C., Gorman, I., Nicholas, C., Mithoefer, M., Carlin, S.,

Poulter, B., Mithoefer, A., Quevedo, S., Wells, G., Klaire, S.S., van der Kolk, B., **…** & Doblin, R. (2021). MDMA-assisted therapy for severe PTSD: A randomized, double-blind, placebo-controlled phase 3 study. *Nature Medicine, 27.* https://doi.org/10.1038/s41591-021-01336-3

Mithoefer, M.C., Feduccia, A.A., Jerome, L., Mithoefer, A., Wagner, M., Walsh, Z., Hamilton, S., Yazar-Klosinski, B., Emerson, A., & Doblin, R. (2019). Retracted Article: MDMA-assisted psychotherapy for treatment of PTSD: Study design and rationale for phase 3 trials based on pooled analysis of six phase 2 randomized controlled trials. *Psychopharmacology, 236*(9), 2735-2745. https://doi.org/10.1007/s00213-019-05249-5

Morin, J.G., Afzali, M.H., Bourque, J., Stewart, S.H., Séguin, J.R., O'Leary-Barrett, M., & Conrod, P.J. (2019). a population-based analysis of the relationship between substance use and adolescent cognitive development. *American Journal of Psychiatry, 176*(2). https://doi.org/10.1176/appi.ajp.2018.18020202

Multidisciplinary Association for Psychedelic Studies. (2024, August 8). *Take a trip down memory lane.* Maps.org. https://maps.org/about-maps/#history

Murty, V., Calabro, F., & Luna, B. (2016). The role of experience in adolescent cognitive development: Integration of executive, memory and mesolimbic systems. *Neuroscience and Behavioral Reviews, 70*, 46-58. https://doi.org/10.1016/j.neubiorev.2016.07.034

Nielson, E.M., & Guss, J. (2018). The influence of therapists' first-hand experience with psychedelics on psychedelic-assisted psychotherapy research and therapist training. *Journal of Psychedelic Studies, 2*(2), 64-73. https://doi.org/10.1556/2054.2018.009

Nutt, D.E. (2004). Hallucinogens. *Pharmacology and Therapeutics, 101*(2), 131-181. https://doi.org/10.1016/j.pharmthera.2003.11.002

Nutt, D., & Carhart-Harris, R. (2020). The current status of psychedelics in psychiatry. *Journal of the JAMA Psychiatry, 78*(2), 121-122. https://doi.org/10.1001/jamapsychiatry.2020.2171

Otterman, L.S. (2023). Research into psychedelic-assisted psychotherapy for anorexia nervosa should be funded. *Journal of Bioethical Inquiry, 20*(1), 31-39. https://doi.org/10.1007/s11673-022-10220-9

Pearson, C., Janz, T., & Ali, J. (2013, September). *Health at a glance: Mental and substance use disorders in Canada*. Statistics Canada. https://www150.statcan.gc.ca/n1/en/pub/82-624-x/2013001/article/11855-eng.pdf?st=7xbHc355

Pilecki, B., Luoma, J.B., Bathje, G.F., Rhea, J., & Narloch, V.F. (2021), Ethical and legal issues in psychedelic harm reduction and integration therapy. *Harm Reduction Journal, 18*(40). https://doi.org/10.1186/s12954-021-00489-1

Pilozzi, A., Foster, S.; Mischoulon, D., Fava, M., Huang, X. (2023). A brief review on the potential of psychedelics for treating Alzheimer's disease and related depression. *International Journal of Molecular Sciences, 24*(15), 12513. https://doi.org/10.3390/ijms241512513

Podrebarac, S.K., O'Donnell, K.C., Mennenga, S., Owens, L.T., Malone, T.C., Duane, J.H., & Bogenschutz, M.P. (2021). Spiritual experiences in psychedelic-assisted psychotherapy: Case reports of the communion with the divine, the departed, and saints in research using psilocybin for the treatment of alcohol dependence. *Spirituality in Clinical Practice, 8*(3), 177-187. https://doi.org/10.1037/scp0000242

Pollan, M. (2018). *How to change your mind: What the new science of psychedelics teaches us about consciousness, dying, addiction, depression and transcendence*. Penguin Books.

Pradhan, B., Wainer, I., Moaddel, R., Torjman, M., Goldberg, M., & Sabia, M. (2017). Trauma Interventions using Mindfulness Based Extinction and Reconsolidation (TIMBER) psychotherapy prolong the therapeutic effects of single ketamine infusion on post-traumatic stress disorder and comorbid depression: A pilot randomized, placebo-controlled, crossover clinical trial. *Asia Pacific Journal of Clinical Trials: Nervous System Diseases, 2*(3). https://doi.org/10.4103/2542-3932.211589

Racine, N., McArthur, B.A., Cooke, J.E., Eirich, R., Zhu, J., & Madigan, S. (2021). Global prevalence of depressive and anxiety symptoms in children and adolescents during COVID-19: A meta-analysis. *JAMA Pediatrics, 175*(11), 1142-1150. https://doi.org/10.1001/jamapediatrics.2021.2482

Rajwani, K. (2022). Should adolescents be included in emerging psychedelic research? *Canadian Journal of Bioethics, 5*(2), 36-43. https://doi.org/10.7202/1089784ar

Read, T., & Papaspyrou, M. (Eds.). (2021). *Psychedelics and psychotherapy: The healing potential of expanded states*. Park Street Press.

Reiff, C.M., & McDonald, W.M. (2021). MDMA-assisted psychotherapy for the treatment of PTSD. *Brazilian Journal of Psychiatry, 43*(2), 123-124. https://doi.org/10.1590/1516-4446-2020-0020

Reiff, C. M., Richman, E.E., Nemeroff, C.B., Carpenter, L.L., Widge, A.S., Rodriguez, C. I., Kalin, N.H., & McDonald, W.M. (2020). Psychedelics and psychedelic-assisted psychotherapy. *American Journal of Psychiatry, 177*(2). https://doi.org/10.1176/appi.ajp.2019.19010035

Riaz, K., Suneel, S., Bin Abdul Malik, M.H., Kashif, T., Ullah, I., Waris, A., Di Nicola, M., Mazza, M., Sani, G., Martinotti, G., & Di Berardis, D. (2023). MDMA-based

psychotherapy in treatment-resistant post-traumatic stress disorder (PTSD): A brief narrative overview of current evidence. *Diseases, 11*(4), 159. https://doi.org/10.3390/diseases11040159

Richards, W.A. (2016). Psychedelic psychotherapy: Insights from 25 years of research. *Journal of Humanistic Psychology 57*(4), 323-337. https://doi.org/10.1177/0022167816670996

Rieser, N.M., Herdener, M., & Preller, K.H. (2022). Psychedelic-assisted therapy for substance use disorders and potential mechanisms of action. *Current Topics in Behavioral Neurosciences, 56*, 187-211. http://doi.org/10.1007/7854_2021_284

Rochester, J., Vallely, A., Grof, P., Williams, M.T., Chang, H., & Caldwell, K. (2022). Entheogens and psychedelics in Canada: Proposal for a new paradigm. *Canadian Psychology, 63*(3) 413-430. https://doi.org/10.1037/cap0000285

Romero, P., Czakó, A., van den Brink, W., & Demetrovics, Z. (2024). Psychedelic-assisted therapy for people with gambling disorder? *Journal of Behavioral Addictions, 13*(1), 6-11. https://doi.org/10.1556/2006.2024.00004

Roseman, L., Nutt, D.J., & Carhart-Harris, R.L. (2018). Quality of acute psychedelic experience predicts therapeutic efficacy of psilocybin for treatment-resistant depression. *Frontiers in Pharmacology, 8.* https://doi.org/10.3389/fphar.2017.00974

Ross, S., Agrawal, M., Griffiths, R.R., Grob, C., Berger, A., & Henningfield, J.E. (2022). Psychedelic-assisted therapy to treat psychiatric and existential distress in life-threatening medical illness and palliative care. *Neuropharmacology, 216*. https://doi.org/10.1016/neuropharm.2022.109174

Saleemi, S., Pennybaker, S.J., Wooldridge, M., & Johnson, M.W. (2017). Who is 'Molly'? MDMA adulterants by product name and the impact of harm-reduction services at raves.

*Journal of Psychopharmacology, 31*(8), 1056-1060. https://doi.org/10.1177/0269881117715596

Sanders, R.A. (2013). Adolescent psychosocial, social, and cognitive development. *Pediatrics in Review, 34*(8), 354-359. https://doi.org/10.1542/pir.34-8-354

Sathappan, A., & Yudkoff, B. (2024). Empowering understanding: Navigating consent to ketamine treatment in adolescent mental health. *Frontiers in Psychiatry, 15*. https://doi.org/10.3389/fpsyt.2024.1433348

Sessa, B., Higbed, L., O'Brien, S., Durant, C., Sakal, C., Titherage, D., Williams, T.M., Rose-Morris, A., Brew-Girard, E., Burrows, S., Wiseman, C., Wilson, S., Rickard, J., & Nutt, D.J. (2021). First study of safety and tolerability of 3,4-methylenedioxymethamphetamine-assisted psychotherapy in patients with alcohol use disorder. *Journal of Psychopharmacology, 35*(4), 375-383. https://doi.org/10.1177/0269881121991792

Sharma, R., Batchelor, R., & Sin, J. (2023). Psychedelic treatments for substance use disorder and substance misuse: A mixed methods systematic review. *Journal of Psychoactive Drugs, 55*(5), 621-630. https://doi.org/10.1080./02791072.2023.2190319

Siegel, D. (2015). *Brainstorm: The power and purpose of the teenage brain*. Tarcher Perigree.

Sloshower, J., Guss, J., Krause, R., Wallace, R.M., Williams, M.T., Reed, S., & Skinta, M.D. (2020). Psilocybin-assisted therapy of major depressive disorder using Acceptance and Commitment Therapy as a therapeutic frame. *Journal of Contextual Behavioural Science, 15*, 12-19. https://doi.org/10.1016/j.jcbs.2019.11.002

Smith, K.W., Sicignano, D.J., Hernandez, A.V., & White, C.M. (2021). MDMA-Assisted Psychotherapy for treatment of posttraumatic stress disorder: A systematic review with

meta-analysis. *Journal of Clinical Pharmacology, 62*(4). https://doi.org/10.1002/jcph.1995

Spiers, N., Labate, B.C., Ermakova, A.O., Farrell, P., Romero, O.S.G., Gabriell, I., & Olvera, N. (2024). Indigenous psilocybin mushroom practices: An annotated bibliography. *Journal of Psychedelic Studies, 8*(1), 3-25. https://doi.org/10.1556/2054.2023.00297

Stauffer, C.S., Brown, M.R., Adams, D., Cassity, M., & Sevelius, J. (2022). MDMA-assisted psychotherapy: Inclusion of transgender and gender diverse people in the frontiers of PTSD treatment trials. *Frontiers in Psychiatry, 13.* https://doi.org/10.3389/fpyst.2022.932605

Strassman, R. (2000). *DMT: spirit molecule. A doctor's revolutionary research into near-death and mystical experiences.* Park Street Press.

Strassman, R. (2022). *The psychedelic handbook*: *A practical guide to psilocybin, LSD, ketamine, MDMA, and DMT/ayahuasca*. Ulysses Press. Berkely, California.

Strika-Bruneau, L., Fauvel, B., & Benyamina, A. (2023). Case study: Acceptance and commitment therapy plus psychedelics in treating sexual and cannabis addiction. *Practice Innovations*, *9*(2), 132-146. https://doi.org/10.1037/pri0000227

Sutherland, I., Ming-Fen, H & Croarkin, P.E. (2025). Psychedelic treatments in adolescent psychopharmacology: Considering safety, ethics and scientific rigor. *Journal of Child and Adolescent Psychopharmacology.* https://doi.org/10.1089/cap.2024.0082

Tedeschi, R.G., & Moore, B.A. (2020). *Transformed by trauma: Stories of posttraumatic growth*. Boulder Crest.

Thal, S.B., & Lommen, M.J.J. (2018). Current perspective on MDMA-assisted psychotherapy for posttraumatic stress disorder. *Journal of Contemporary Psychotherapy, 48*, 99-108.

https://doi.org/10.1007/s10879-017-9379-2

Truscott, D., & Crook, K.H. (2021). *Ethics for the practice of psychology in Canada* (3rd ed.). Pica Pica Press, an imprint of University of Alberta Press.

Turn on, tune in, drop out. (2024, July 22). In *Wikipedia.* https://en.wikipedia.org/wiki/Turn_on,_tune_in,_drop_out

United Nations Population Fund. (2023, November 16). *Adolescent and youth demographics: A brief overview.* UNFPA.org. https://www.unfpa.org/sites/default/files/resource-pdf/One%20pager%20on%20youth%20demographics%20GF.pdf

Varley, J. (2019). Psychedelic-assisted therapy for anxiety and depression in the face of death: A critical review with an anthropological lens. *Journal of Psychedelic Studies*, *3*(1), 14–18. https://doi.org/10.1556/2054.2019.005

Watts, R., Day, C., Krzanowski, J., Nutt, D., & Carhart-Harris, R. (2017). Patient's accounts of increased "connectedness" and "acceptance" after psilocybin for treatment-resistant depression. *Journal of Humanistic Psychology, 57*(5), 520-564. https://doi.org/10.1177/0022167817709585

Wheeler, S. W., & Dyer, N. L. (2020). A systematic review of psychedelic-assisted psychotherapy for mental health: An evaluation of the current wave of research and suggestions for the future. *Psychology of Consciousness: Theory, Research, and Practic*e, 7(3), 279-315. http://dx.doi.org/10.1037/cns0000237

Winkelman, M.J., Szabo, A., & Frecska, E. (2023). The potential of psychedelics for the treatment of Alzheimer's disease and related dementias. *European Neuropsychopharmacology, 76*, 3-16. https://doi.org/10.1016/j.euroneuro.2023.07.003

Witek, M.W., Rojas, V., Alonso, C., Minami, H., & Silva, R.R. (2005). Review of benzodiazepine use in children and adolescents. *Psychiatric Quarterly, 76*(3). https://doi.org/10.1007/s11126-005-2982-5

World Health Organization (2023, November 12*). Mental health of adolescents.* World Health Organization. https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health

Xu, X., Yuan, H., & Lei, X. (2016). Activation and connectivity within the default mode network contribute independently to future-oriented thought. *Scientific Reports, 6.* https://doi.org/10.1038/srep21001

Yaden, D.B., Earp, D., Graziosi, M., Friedman-Wheeler, D., Luoma, J.B., & Johnson, M.W. (2022). Psychedelics and psychotherapy: Cognitive-behavioural approaches as default. *Frontiers in Psychology, 13.* https://doi.org/10.3389/fpsyg.2022.873279

Zafar, R., Siegel, M., Harding, R., Barba, T., Agnorelli, C., Suseelan, S., Roseman, L., Wall, M., Nutt, D.J., & Erritzoe, D. (2023). Psychedelic therapy in the treatment of addiction: The past, present and future. *Frontiers in Psychiatry, 14,* 1-24. https://doi.org/10.3389/fpsyt.2023.1183740