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Psilocybin Psychotherapy with Acceptance and Commitment Therapy: A Potential Treatment for Social Anxiety Disorder

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Abstract

Individuals diagnosed with social anxiety disorder are in need of a more effective therapeutic intervention. Due to the nature of SAD, individuals tend to not seek care for their treatment, leading to the continuation of avoidance behaviors that significantly impact their daily existence. Psilocybin psychotherapy has the potential to lead to significant changes in the personality structure of individuals as well as reducing anxious responses to their environment in a relatively short period of time. Acceptance and commitment therapy can serve as the ideal therapeutic backing to psilocybin as it emphasizes mindfulness and psychological flexibility, both of which aid in the therapeutic mechanisms of psilocybin. This paper serves as a review of existing literature surrounding ACT and psilocybin, centering around the potential benefits of a psilocybin psychotherapy program with ACT as a therapeutic base for individuals with SAD. A description of a potential psilocybin psychotherapy program is included.

Keywords: psilocybin, acceptance and commitment therapy, social anxiety disorder, mindfulness

Psilocybin Psychotherapy with Acceptance and Commitment Therapy:

A Potential Treatment for Social Anxiety Disorder

Psychedelics are experiencing an explosion in recognition. In recent years, psychedelics, and psilocybin in particular, have been legalized and accepted in various cities, states, and countries across the world. In 2019 in the United States, Denver, Colorado decriminalized possession of psilocybin mushrooms. A review panel of the policy found no significant public health or safety threats occurring from decriminalization, opening the possibility of the further ease of restrictions of the drug to support therapeutic aims (Hernandez, 2021). In 2020, the state of Oregon legalized psilocybin psychotherapy, as well as decriminalizing possession of the substance and legalizing the sale of the substance beginning in 2023 (Oregon Health Authority, 2021). Canada recently approved psilocybin psychotherapy on a case-by-case basis for patients who have not found success with conventional therapies (Canada Gazette, 2022). The global community is beginning to recognize the potential beneficial nature of psilocybin psychotherapy, thus demonstrating the potential application of psilocybin psychotherapy for individuals with social anxiety disorder.

Individuals with social anxiety disorder (SAD) require effective treatments for their condition. SAD is an anxiety disorder marked by fears of public interaction resulting in avoidance behaviors, such as avoiding doctor's appointments or refusing to leave their home. SAD is a major public health concern, with a lifetime prevalence of 12% (Scheiner, 2006). Due to the nature of the illness, treatment can be difficult to implement effectively, as patients with SAD are less likely to seek treatment and they make fewer repeat visits to receive help (Gross et al., 2005). Psilocybin offers an opportunity for therapeutic change within a relatively small number of sessions, reducing the mental distress of patients and providing an opportunity for

change through a greater understanding of internal deficits and the opportunity for patients to strengthen their own mental skills through therapeutic guidance.

Previous research has been conducted on the impact of psilocybin on patients with general anxiety disorder (Griffiths et al., 2016; Ross et al., 2016;), but none have uniquely studied the potential benefits of psilocybin psychotherapy for individuals with social anxiety disorder. As psilocybin research continues to be heavily regulated, most studies conducted to date are relatively small-scale (ex: Mertens et al., 2020) and focus on populations with serious, potentially life-threatening, diseases such as terminal cancer patients (Agin-Lebines et al., 2020) or individuals with addictions (Garcia-Romeau et al., 2015). However, it is possible that individuals with social anxiety disorder could benefit significantly from psilocybin-backed psychotherapy.

Individuals with social anxiety view themselves as unable to function socially. They have a concrete view of the world, often seeing themselves as having little control over their actions and relying on a variety of coping mechanisms in order to avoid distressing situations, rather than seeking to change their own behavior (Spinhoven et al., 2014). This negative concrete model impacts subsequent behavior, as the individual does not want to change from the pattern of behavior that is comfortable to them, even when that pattern of behavior is detrimental to their mental health. The prospect of changing these concrete ways of thinking then become an overwhelming task for those with social anxiety disorder.

The use of psilocybin requires a therapeutic backing to both improve the quality of the therapy and to ensure the safety of the individual. Acceptance and commitment therapy (ACT) serves as an ideal backing to investigate the potential benefits of psilocybin, as ACT emphasizes mindfulness techniques and acceptance of the self (Guss et al., 2020). Differing from traditional

therapeutic modalities, ACT aims to increase the acceptance of the individual towards their disorder, rather than viewing their condition as a problem that needs to be solved (Hayes et al., 2006). These aims are accomplished through mindfulness and cognitive defusion practices, as well as social skill training and other techniques. ACT can be beneficial for those with anxiety disorders, as they can learn to accept who they are and then focus on ways to improve their behavior rather than attempting to solve something that they are told is wrong with them. The synergistic effects of ACT and psilocybin can provide a unique opportunity for inward reflection to a degree that is not typical in daily life. In the therapeutic design, a psychologist specifically trained to work with individuals undergoing hallucinogenic experiences accompanies the participant at all times during the experience, ensuring individuals remain focused and directing their attention to areas that may cause discomfort in daily life. In studies involving psilocybin psychotherapy with cognitive behavioral therapy (CBT), participants reported feelings of increased interconnectivity, personal esteem, and a weakening of ego boundaries following treatment, lending support to the potential benefits of psychotherapy with ACT as the therapeutic base (Erritzoe et al., 2018; Masden et al., 2020). The psychedelic nature of psilocybin provides a level of psychological openness and honesty that is difficult to produce in typical interactions, and these benefits have been shown to last for several months post-treatment.

The aim of this thesis is twofold. First, to **examine the potential efficacy and synergistic effects of combining psilocybin and acceptance and commitment therapy for those with social anxiety disorder.** Second, to **provide literary support for further research on psilocybin and acceptance and commitment therapy as a combined therapeutic intervention for individuals with social anxiety disorder.** Several constraints exist in a potential study design with psilocybin. Presently, psilocybin remains classified as a Schedule 1

drug (Belouin & Henningfield, 2018), and there is a significant cost of treatment and the necessity for trained support staff. Therefore, this thesis will not involve any active trials. The central aim of this thesis will be to provide support for further research on psilocybin assisted psychotherapy paired with acceptance and commitment therapy as a therapeutic base for individuals with social anxiety disorder, thereby expanding the knowledge base of both acceptance and commitment therapy and psilocybin.

Due to the historical nature of popular opinion on psychedelics such as psilocybin, the benefits of such drugs are relatively unexplored. There are risks involved using any medication, and psilocybin is no exception. However, when the set and setting of the environment and the individual are controlled, the risks are largely mitigated and the benefits increased. The future of therapy may rest in substances that serve to supplement therapy, and further research should be conducted to provide additional opportunities for healing. No original research will be conducted, as this thesis aims to demonstrate the potential benefits that could be possible through further research, as well as contributing to the psychotherapy literature surrounding psilocybin.

<center>**Review of Psilocybin Literature**</center>

Historical Nature of Psychedelics

Psychedelics have been used around the world for thousands of years, predating recorded history. Dried peyote buttons, which contain the psychoactive compound mescaline, have been found in Native American cave dwellings. These buttons, once carbon dated, were estimated to have been picked nearly 5,000 years ago, lending support to the awareness of Native Americans to psychoactive compounds for at least that period of time (El-Seedi et al., 2005). Various cultures worldwide have a history of psychedelic use for both recreational and medicinal purposes. Mesoamerica civilizations, in particular, have a rich history of psychedelic use, with archaeological, ethnohistorical, and ethnographic evidence demonstrating the use of psychedelics in religious ceremonies across several cultures (Carod-Artal, 2011). Mayan cultures consumed psilocybe cubensis mushrooms, known in their culture as teonanacatl. The consumption of psychedelics was primarily conducted by religious shamans, who were seen as the link between the physical and the spiritual world. Religious ceremonies involving psilocybin continue to occur among the Mayatec people today with rituals that blend the Catholic faith and traditional shamans (Carod-Artal, 2011). Shamans use these rituals as an attempt to diagnose and treat participants' illnesses, an early example of the therapeutic properties of hallucinogens.

The Western world was introduced to psychedelic compounds in 1897, when Arthur Heffter isolated mescaline from the peyote cactus (Heffter, 1897). Psychedelic research did not begin in earnest until Albert Hofmann synthesized LSD-25 as part of an investigation into compounds derived from ergot alkaloids in 1943 (Rucker, Illiff, & Nutt, 2017). Ergot is a

substance produced by the parasitic fungus Claviceps Purpure and has been named responsible for multiple episodes of mass poisoning throughout history, with some scholars believing that ergot poisoning may have resulted in the mass hysteria and strange behaviors demonstrated during the Salem Witch Trials in 1692 (Woolf, 2000). Lysergic acid diethylamide (LSD) was initially believed to be ineffective, as few results were demonstrated in animal studies. During a reexamination of the substance, Hoffmann accidentally contaminated himself with a small dose. Noting unusual psychic effects, Hofmann purposely consumed 250 mcg of LSD three days later in the first instance of a psychedelic experience from LSD, thus beginning the modern era of psychedelics.

Since few drugs were available for use alongside the treatment of mental conditions, psychedelics offered unprecedented insight into the mind. LSD was viewed as a potential path for change in a variety of mental conditions (Grinspoon & Bakalar, 1997). Psilocybin was first synthesized in 1959 by Albert Hoffman, the same researcher who synthesized LSD 16 years previously. This synthesis opened the scientific community to another psychedelic compound that was both shorter in duration and found in natural fungi (Tylš et al., 2013). The psychedelic experience resembled some of the symptoms of acute psychosis, including ego-dissolution, thought disorders, and visual misperceptions, giving researchers insight into the condition that could not have been obtained otherwise (Rucker et al., 2017). As well, psychedelic intoxication resulted in increased connection to the unconscious, leading to therapeutic improvements as individuals came to terms with repressed memories and other elements of the unconscious.

Psychedelic drugs subsequently gained popularity, both in the research field and in popular culture. Studies were published demonstrating support for the efficacy of psilocybin and other hallucinogenic drugs on a wide variety of mental conditions. By the end of the 1960s,

hundreds of papers had been published detailing the effects of psychedelic substances such as mescaline, LSD, and psilocybin (Tylš et al., 2013). Psychotherapy had begun to be conducted using psychedelics, with therapists offering sessions aided by hallucinogenic experiences. Psychedelics were considered safe in comparison with known barbiturates, with few lasting medical effects and low toxicity, even with an overdose amount (Nutt, 2019). However, as the substances gained popularity, they also came to be associated with a growing counterculture movement. Led by former Harvard psychology professor Timothy Leary's cries to "turn on, tune in, drop out," the use of psychedelic drugs became popularized as a method to challenge the popular culture through the creation of a "hippie" subculture. Leary rose to prominence following his own psychedelic experience; believing the experience to be transformative, he returned to Harvard and began conducting psychedelic research on graduate students, eventually leading to his expulsion following the discovery of underclassmen who were given psychedelic drugs (Rucker et al., 2018). Following his dismissal from Harvand, O'Leary became the face of the psychedelic movement, appearing in public debates and frequently inviting others to intake psychedelics with him. As the movement gained popularity, psychedelics began to be viewed as a threat to public safety.

The "War on Drugs" in the 1970s and 1980s transformed the culture of the United States and changed the ways that drugs are viewed in American society (Belouin and Henningfield, 2018). Research opportunities for psychedelic substances were significantly impacted, regardless of the potential benefits these substances may have provided. Reports of harmful psychedelic "trips" helped to encourage the DEA to classify psilocybin as a Schedule I drug in 1970, significantly limiting access to the substance and any subsequent research opportunities (Oram, 2014). Schedule I drugs are defined by the DEA as "drugs with no currently accepted medical

use and a high potential for abuse" (2021). With this classification, the research potential of hallucinogenic substances was further inhibited, as funding for studies shifted primarily to private sources, and access to these substances became strictly controlled and expensive to acquire (Nutt, King, & Nichols, 2013). From the peak of 1,000 clinical papers published between 1950's and 60's, research largely died out in the United States and abroad during the 1970's and 1980's.

A renewed interest into psychedelic research began in the 1990s, as a "new generation of behavioral health researchers began an in-depth reexamination and rediscovery of the potential uses of these [psychedelic] substances by applying the latest approaches in clinical research development, methods, and procedures" (Belouin and Henningfield, 2018, p. 10). New research over the next three decades has revived the search for therapeutic benefits, with several studies centered around use in populations with OCD, terminal diseases, and major depressive disorder (Moreno et al., 2006; Griffiths et al., 2016; Watts et al. 2017). Within these therapeutic environments, psilocybin is ingested in a pill-like capsule, with the dosage determined by the participants body weight, and monitored by trained support staff in a controlled environment. Such controlled psilocybin usage has led to long-term improvements in various facets of life, indicating the presence of changes beyond that of a drug experience (Agin-Liebes et al., 2020; Masden et al., 2020; Erritzoe et al., 2018; Griffiths et al., 2016).

The Psilocybin Experience

The hallucinogenic experience offered by psilocybin can be difficult to understand without context. Reality is the most constant state of the human experience, and it can be challenging to think of reality as something that can be altered and changed by experiences. A useful analogy for the psychedelic experience is that of a dream, where time, space, and self can

become altered in perception. However, unlike a dream, the process is somewhat controlled, as the psychedelic experience is influenced by the individual's mindset and the intentions behind the experience. The individual's perception of the nature of the hallucinogenic experience impacts the subsequent psychedelic experience (Beker, 1967). In a study investigating patient experiences of psilocybin-assisted psychotherapy, participants reported experiencing "widely disparate emotions quickly evolving from one into another;" for example, feelings of sadness quickly followed by feelings of elation (Belser et al., 2017, pg. 366). Highly individualized, the events of the hallucinogenic experience differ considerably between subjects.

Past research has been conducted on the effects of psilocybin on different groups of people. Animal studies have been conducted but are outside of the scope of the current paper, as the primary methods for determining anxiety responses are not applicable to investigating social anxiety and are principally used as markers of psychedelic potential in humans (Hanks and González-Maeso, 2013). As previously stated, the most apparent consequence of ingesting psilocybin is the impact the drug has on the individual's view of reality. More than a simple experience, psilocybin provokes deep introspection and personal meaningfulness. In a study of hallucinogen-naive adults, psilocybin produced mystic-level experiences that ranked in the top five of the most significant experiences of the majority of the participants' lives (Griffiths et al., 2006). The positive effects of psilocybin are not short-lived, with anxiolytic effects persisting for eight months and six and a half months post-treatment in two separate studies (Griffiths et al., 2016; Agin-Liebes et al., 2020). The effects last far beyond when psilocybin should be eliminated from the body, as the half-life of psilocybin is approximately three hours (Passie et al., 2002). These studies suggest that there is promise for patients with social anxiety disorder to

likewise experience long-lasting reduction of anxious symptoms following psilocybin psychotherapy.

With any drug, a major concern is the abuse potential of the drug and the safety of treatment. Given the past public outcry against psychedelics, it is important to understand how the substance may impact people who ingest it. With psilocybin, there is a low risk of toxicity (Johnson et al., 2018). In a study of 89 individuals, no detrimental long or short-term effects of psilocybin on cognitive functioning or emotional processes were revealed (Rucker et al., 2022). An individual may experience anxiety or confusion during the period of psychedelic intoxication, but these feelings tend not to last (Studerus et al., 2012). The drug exhibits little reinforcing behavior (such as cravings or withdrawals), and may have positive punishment attributes (such as feelings of anxiety or confusion) due to the challenging experiences that may occur during use (Johnson et al., 2018). The main concern for adverse reactions is the presence of preexisting conditions, such as significant heart problems or a family history of schizophrenia. Psilocybin intoxication is marked by a period of increased blood pressure, which could cause issues with underlying cardiovascular conditions in patients (Hasler et al., 2003). The only reported fatal overdose from psilocybin occurred in a 24-year-old female who had a heart transplant 10 years prior, indicating the need to exclude any patients with severe cardiac vulnerability (Johnson et al., 2018). Aspects of the psilocybin experience can resemble psychosis, potentially causing adverse reactions for those with schizophrenia or with schizophrenia in their family (Vollenweider et al., 1998). These conditions can and should be screened for in the population of any study in order to prevent such adverse effects from occurring during the process of therapy.

The effects of psilocybin are largely subjective, impacted by the so-called "set and setting" of the surrounding environment. First coined by Timothy Leary in 1963, set and setting refers to the mental state of the individual at the time of the hallucinogenic experience, as well as the physical location of the individual during the experience (Leary, Litwin, and Metzner, 1963). The current mood state and psychological distress of the participant in the previous four weeks was more important for predicting psilocybin response in a meta-analysis of current literature, lending support to the importance of set and setting for psychedelic experiences (Studerus et al., 2013). It is important to control as much as possible the comfort level of the participant, as the experience can become frightening or overwhelming if some aspect of either the individual or the environment is perceived to be negative. With this in mind, psychedelic-assisted therapy typically begins with integration sessions focused on educating the patient about the experience that they will have, communicating about expectations and desires for the session, and developing therapeutic rapport between the patient and the therapist (Guss, Krauss, & Slowshower, 2020). These sessions are aimed to relieve any anxieties about the experience and about the therapeutic process, reducing the potential for any further anxieties to arise during the psychedelic experience. During therapeutic research sessions, the environment is closely controlled to ensure there are no external distractions that may cause distress in the patient. For example, in a study by Griffiths et al. investigating mystical-type experiences during the course of a dose of psilocybin, participants conducted their drug sessions in an "aesthetic living-room type environment designed specifically for the study" (2006, p. 270). The purpose is to make the patient as comfortable as possible, as they will be spending a significant amount of time in the room they are in during the sessions.

The Effect of Psilocybin on the Brain

The psychedelic effects of psilocybin are theorized to occur due to the antagonist effect the substance has on 5-HT$_{2a}$ receptors inside of the brain. Serotonin, or 5-HT, is a substance involved in a variety of physiological functions in the body through acting as a hormone or a neurotransmitter (Lopez-Gimenez and Gonzalez-Maeso, 2019). Serotonin impacts the body through binding to cell membrane receptors. Fourteen different 5-HT receptors have been identified through molecular biology techniques. Of the different serotonin receptors, the receptor 5-HT$_{2a}$ is believed to be associated with the hallucinogenic properties of psilocybin, as several different lines of evidence support the involvement of the receptor in the hallucinogenic process. Prior studies have observed a strong correlation between 5-HT$_{2a}$ receptor affinity and human hallucinogenic potency (Titeler, Lyon, & Glennon, 1988; Sadzot et al., 1989, Gonzalez-Maeso 2007). As well, the hallucinogenic properties of psilocybin have been shown to be blocked following the consumption of a 5-HT$_{2a}$ antagonist, lending support to the importance of the receptor inside of the hallucinogenic process (Kometer et al., 2013). In a separate study, the consumption of the 5-HT$_{2a}$ antagonist ketanserin inhibited LSD-induced attribution of personal relevance to otherwise meaningless stimuli, suggesting the importance of the receptor in the hallucinogenic process of gaining meaning from otherwise ordinary situations (Preller et al., 2017).

The Default Mode Network (DMN) is a large-scale network in the brain hypothesized to have a significant role in the creation of ego-identity and the concept of the self, although the precise function of the network is still not completely understood (Gusnard et al., 2001). The DMN includes several high-level cognitive areas, including the medial prefrontal cortex, the posterior cingulate cortex, and the parietal regions. The DMN is named as a result of the activation of the network during states of rest, or the "default" mode of the brain when no other

task is being performed by the participants, and subsequent deactivation during cognitive task performance (Fox and Raichle, 2007). The DMN shows strong activation during metacognition tasks, such as retrieving autobiographical memories, envisioning the future, or thinking of the perspectives of other people (Buckner et al., 2008). Furthermore, the DMN and other functional networks in the brain have exhibited "inverse coupling," where one network deactivates as the other activates and vice versa (Fox and Raichle, 2007). Decreased inverse coupling of the DMN and functional networks of the brain has been observed in patients with schizophrenia, but it is not known how the decoupling relates to the symptomatology of schizophrenia (Salvador et al., 2010). The functioning of the DMN is related to the perception of the self, which can be modified during the consumption of psilocybin (Carhart-Harris et al., 2014).

Changes in functional connectivity between brain areas inside the DMN are associated with behavioral changes in participants during psilocybin intoxication. In a study investigating the efficacy of a psilocybin-assisted mindfulness training program, following a psilocybin dose a decoupling of the medial prefrontal cortex and the posterior cingulate cortex was observed. Furthermore, the decoupling of the two brain areas was associated with the subjective ego dissolution effect during the psilocybin-assisted mindfulness program (Smigielski et al., 2019). The posterior cingulate cortex and the medial prefrontal cortex demonstrated decreased coupling during psilocybin states, which were associated with the intensity of the hallucinogenic effects of psilocybin (Carhartt-Harris et al., 2012) In a separate study, participants with strongest psilocybin-induced decoupling in associative networks also demonstrated highest psilocybin-induced coupling in sensory networks, lending support to the idea that psilocybin induces system-wide changes in the brain through the DMN and other neural networks (Preller et al., 2020). Using magnetoencephalography (MEG), large decreases in oscillatory power was

observed in areas of the DMN during psilocybin intoxication, lending additional evidence to the change in functioning of the DMN during psychedelic use (Muthukumaraswamy et al., 2013). These findings underscore the critical role that the DMN plays in the change in functioning that is reported during psychedelic use.

Studies have demonstrated changes in functional connectivity between separate areas of the brain following psilocybin ingestion. Functional connectivity refers to the shared activation of separate brain areas that share functional properties (Biswal, Van Kylen, & Hyde, 1999). One significant area of the brain that integrates sensory information into a cohesive experience is the claustrum. Perhaps unsurprisingly, given the nature of the hallucinogenic experience, psilocybin impacts the functioning of the claustrum during periods of intoxication. In a study by Barrett et al (2020), psilocybin decreased claustrum connectivity with the auditory cortex, which could be the root cause of sensory changes that occur during hallucinations. As well, psilocybin resulted in decreased functional connectivity of the right claustrum with the DMN and auditory networks. This change in connectivity is theorized to result in alterations of executive function, which could explain the therapeutic benefits of psilocybin psychotherapy (Barrett et al., 2020).

Aside from focusing on the DMN, the brain exhibits system-wide desynchronization of oscillatory rhythms in the cortex during psilocybin intoxication (Muthukumaraswamy et al., 2013; Preller et al., 2020). This desynchronization results in dramatic changes to the brain's functional patterns. Petri et al. (2014) through the use of MEG analysis created a map of the internal connections of the brain during normal consciousness and during a state of psilocybin ingestion. The functional patterns in the brain demonstrated increased integration between cortical regions during psilocybin state. This was interpreted as neural networks becoming less specialized and more globally connected in terms of connections between separate areas of the

brain (Petri et al., 2014). These new connections that occur between separate areas can explain the synesthesia, or experiencing one sense through another sense, that some individuals experience during psychedelic experiences, as well as the range of emotions and memories that can be recalled. Furthermore, the investigation by Petri revealed homological scaffolding of networks that only appear during the hallucinogenic state. Homological scaffolding refers to the structures that support global brain organization. This unique scaffolding supports the hypothesis that "psilocybin disrupts the normal organization of the brain with the emergence of strong, topologically long-range functional connections that are not present in a normal state" (Petri et al., 2014, pg. 7). It is theorized that through the profound disruption of typical brain activity, detrimental patterns of activity can be broken and new more beneficial patterns can be constructed by the individual.

<div align="center">**Review of Social Anxiety Disorder**</div>

Symptoms of Social Anxiety Disorder

In order to understand the potential benefits of psilocybin psychotherapy in the treatment of social anxiety disorder (SAD), it is important to have an understanding of the specific mechanisms of the disorder. SAD is characterized by an extreme fear of social situations and interactions (Schneier, 2006). Individuals who experience the disorder often believe that their own social abilities are significantly deficient when compared to the average individual, leading to fears of embarrassment or reproach from others in the event of social interaction. In social settings, individuals may appear to be interacting normally, but they often experience intense emotional or physical symptoms, including sweating, elevated heart rate, or trouble concentrating, among other symptoms. These perceived fears can lead to avoidance behaviors, which in many cases can lead to the avoidance of most interpersonal encounters (Stein & Stein, 2008). Such avoidance behaviors can be extremely disruptive to daily life, creating challenges whenever public interactions are required. Individuals may skip meetings that require communication, avoid making connections with others, and believe that they are not capable of interacting normally. As a result, those with social anxiety disorder earn less wages, are less likely to be married, and are more likely to be diagnosed with comorbid depression than their peers (Katzelnick et al., 2001). Additionally, individuals with SAD may be less likely to seek primary care due to their anxiety, and even in the event that they do seek care, they make fewer visits and likely receive less care than individuals with other afflictions (Gross et al., 2005). Thus, effective interventions are crucial in the lives of those with SAD, with the potential to create long-lasting behavioral change.

A concrete model of interactions, which refers to the lack of variance in behavior, forms throughout the lifetime of those with SAD. This behavior can become difficult to change, as a routine develops that protects the individual from the detrimental effects of social interactions. Cognitive factors help to maintain and encourage avoidant behavior. Dr. Stefan Hofmann, one of the most prominent researchers of SAD, developed a theoretical model of socially anxious behavior consisting of a ruminative cycle of social interaction. The individual wants to interact with others, but is apprehensive "in part because they perceive the social standard (i.e. expectations and social goals) as being high." (2007). The individual may hope to convey a certain image, but are unsure how to do so due to a lack of planning or behavioral strategies. In turn, this leads to increased apprehension and self-focused attention. Individuals with SAD feel that they have no control over their anxious responses in social situations (Hofmann, 2005). The information processing of those with social anxiety interferes with social goals, as they feel helpless to stop the increasing anxiety they are feeling. Individuals with SAD fear social situations in part because they fear a lack of internal control over their emotions when confronted with a socially threatening situation, which then provokes their avoidance behaviors (Hoffman et al., 2005). Following a social interaction, the individual ruminates on the event, which causes distorted negative assumptions that become more concrete over time, leading to increased avoidance behaviors. A positive feedback loop is then established, where the individual experiences less anxiety when avoiding behaviors entirely (Hofmann, 2007). This ruminative cycle feeds on itself, ensuring that without some sort of intervention, the avoidant and detrimental behaviors will continue to severely impact the individual in their daily interactions.

Individuals with social anxiety disorder exhibit abnormal brain activity in response to threatening situations. The brains of individuals diagnosed with SAD demonstrate increased

activity in the amygdala, which is integral to fear learning and memory, and in the insula, where perceptual, emotional, and cognitive information is integrated with subjective experiences (Burklund et al., 2017). The increased neural activity suggests heightened fear and threat detection systems in individuals with social anxiety when in situations deemed threatening. This heightened activity likely results in hypersensitivity to social situations as the individual is threatened by these contexts. Avoidance behaviors then engage to avoid provoking these threatened responses in the brain, leading to a cycle of avoidant behaviors that can become difficult to break.

Traditional treatments for SAD

Most commonly, individuals undergo Cognitive Behavioral Therapy (CBT) to help reduce avoidance behaviors and increase positive reactions with their surroundings. CBT remains one of the most researched therapeutic techniques, and many studies have confirmed the effectiveness of CBT in the reduction of symptoms related to anxious behaviors (Butler et al., 2006). CBT aims to help those with SAD reduce their personal distress by changing their cognitive and behavioral responses to anxiety (Craske et al., 2014). The aim of therapy is to develop a new network of thoughts and experiences that challenge the old fear-based networks and memories. These goals are accomplished through various mechanisms, such as exposure therapy, where the individual is subjected to intentionally disconcerting videos or situations, or through cognitive restructuring, where the way the individual thinks is challenged by the therapist and a new system of thought is developed (Arch & Craske, 2008).

Two other popular treatment mechanisms for CBT are social skill training and desensitization. Social skill training teaches skills for social interactions (Hofmann, 2007), an aspect that individuals with SAD often lack. The training can take the form of conversation

practices, where the therapist demonstrates proper conversation skills and engages in practice

conversations with the patient. Desensitization aims to remove fear that the individual may feel

in situations by simulating threatening situations in a non-threatening atmosphere (Niles et al.,

2014). Typically, the patient will develop a rank-ordered list of anxiety-provoking situations with

their therapist. Beginning with the least feared situation, the therapist and the patient will

simulate an encounter through role play, imagination, or engaging in the feared situation outside

of session (Heimberg, 2001). Through the contrived exposure, the patient will face a feared

situation in a safe place, aiding the development of the natural conditioning processes of

habituation and extinction.

Although CBT for SAD has been shown to be effective, most patients continue to

demonstrate residual symptoms and impairments after treatment, and a significant percentage do

not respond to treatment at all (Heimburg et al., 2002). In an examination of the effect of CBT on

quality of life (QOL) scores, the scores for the anxious population improved, but still did not

reach the scores of non-anxious individuals (Eng et al., 2001). A separate study involving QOL

scores after 12 weeks of CBT demonstrated improvements in interpersonal domains, but not in

domains like personal growth (Eng et al., 2005). Therefore, different treatments such as ACT

should be considered, as they may improve quality of life and functioning beyond what CBT

may offer.

Biological changes following CBT

Research has been conducted to identify potential biological bases for the symptom

change that occurs following CBT for individuals with social anxiety disorder. In a resting state

functional magnetic resonance imaging (fMRI) study, clinical improvement following CBT was

predicted by greater amygdala connectivity with the anterior cingulate cortex (AAC) and the

medial prefrontal cortex (mPFC) (Klumpp et al., 2014). The AAC and mPFC are members of a circuit involved in controlling emotion, supporting the notion that connectivity between these brain areas can be used as a predictor of therapeutic success with CBT. In a separate study, resting-state regional EEG activity was measured at rest before and after 12 weeks of CBT therapeutic sessions (Moscovitch et al., 2011). Symptom reduction following treatment was associated with a change in the frontal alpha EEG asymmetry from greater right asymmetry pretreatment to greater left symmetry posttreatment. Greater pretreatment left asymmetry was also associated with greater improvements in symptom change following treatment. This result supports prior EEG asymmetry-emotion models which stipulate that in the development of emotions, the brain either chooses to approach or withdraw (Fox, 1991). More complex emotions are then built upon the choice to either approach or withdraw, which then leads to the development of different psychopathologies. The shift in asymmetry from pretreatment to posttreatment supports the notion that therapeutic interventions result in changes to brain structure.

Aside from changes in the brain's electrical systems, therapeutic interventions were also associated with changes to biological markers in the brain. Regional cerebral blood flow was assessed through positron emission tomography (PET) in 18 previously untreated patients with social anxiety disorder during a public speaking task before and after nine weeks of CBT sessions (Furmark et al., 2002). Improvements in patients was associated with a decreased blood flow response bilaterally in the amygdala, hippocampus, and periamygdaloid, rhinal, and parahippocampal cortices. These brain regions were associated with bodily defense reactions to threat, demonstrating a biological change that occurs following CBT. In a separate study, the association between dopamine receptor binding and social anxiety symptom reduction following

CBT was investigated (Cervenka et al., 2012). Patients who demonstrated a significant reduction in social anxiety symptoms demonstrated an increase in dopamine binding following treatment, signifying a change in brain neurotransmission following a therapeutic intervention.

Psychotropic Drug Treatments

In addition to strictly psychological interventions, individuals with social anxiety disorder may be prescribed other psychotropic medications. Of the psychotropic drugs, selective serotonin reuptake inhibitors (SSRIs) such as escitalopram are most commonly prescribed to patients with social anxiety disorder (Blanco et al., 2003). Baldwin et al. conducted a meta-analysis of 1615 patients from Japan, North America, and Europe who took part in a double-blind randomized clinical trial involving escitalopram and a placebo (2016). Escitalopram showed superiority in efficacy over the placebo, demonstrating a mean decrease from baseline of 41% for the escitalopram and 27.8% for placebo on the individuals' responses to the Liebowitz Social Anxiety Scale from pretrial to posttrial. However, some researchers suggest that the design of double-blind placebo studies increases beneficial effects unrelated to the specific treatment of escitalopram due to the treatment expectations induced by perceived side effects (Moncrieff et al., 2004). Similarly, a study by Faria et al. demonstrated that the anxiolytic effects of escitalopram were susceptible to verbal suggestions provided before the treatment was given (2017). Members of the population who were given overt messages about the efficacy of their treatment demonstrated better clinical outcomes, with tripled response rate, greater treatment satisfaction, and superior improvement in outcome measures. SSRIs appear to have some use to some populations, but not demonstrably better than a placebo alone.

Acceptance and Commitment Therapy Review

With psilocybin psychotherapy, the accompanying therapeutic modality is an important aspect of the experience, as the therapy guides and informs the psychedelic experience through the therapeutic intentions. Acceptance and commitment therapy is an alternative to CBT that emphasizes mindfulness and psychological flexibility (Hayes et al., 2006). It is a third wave therapy, based on Relational Frame Theory (RFT) which emphasizes the arbitrary nature of the relations of events in the minds of individuals and the ability to change the functions of events in relation to other events (Hayes, Barnes-Holmes, & Roche, 2001). Culturally, a focus exists on avoiding negative emotions and pain. This naturally leads to experiential avoidance of anxiety inducing situations, perpetuating the avoidance processes in anxiety disorders. Essentially, RFT entails that the relations that people make between two distinct events, such as the feeling of anxiety and the action of going out in public, are arbitrary and can be changed when the individual is able to understand the role of language in their lives.

The ACT model views the source of psychopathology as a fusion between the individual and their distressing thoughts and the resulting struggle to control their experiences, otherwise referred to as psychological inflexibility (Hayes et al., 1999). The individual will begin to reduce contact with the present moment as their attention will primarily be turned towards the avoidance of anxiety-inducing situations. ACT aims to change the focus of the individual back to the present moment through reorienting their thinking towards a psychological flexible model of thoughts and behaviors. ACT focuses on retraining the individual to change their meta-thinking, or their thinking about their own thoughts. This is accomplished by promoting acceptance towards what they feel and mindfulness in understanding why their thoughts or actions may be occurring (Hayes et al., 2006). The therapist works with the individual to acknowledge the

arbitrary connections they have made in their own life and change these connections to promote

mindfulness and acceptance. Through these changes, the individual can learn how to experience

distressing thoughts fully while not being defensive, thereby allowing for the achievement of

personally valued goals (Herbert et al., 2018).

Therapeutic Objectives of Acceptance and Commitment Therapy

The core processes of ACT can be divided into two areas: mindfulness and

acceptance, and commitment and behavior change. Mindfulness and acceptance both involve

acceptance of emotions, diffusion of harmful thoughts, and contact with the present moment.

Commitment and behavior change involves self as context, values, and committed action (Hayes

et al., 2006). The end goal is to live a life fully in-the-moment, with acceptance and

understanding towards any emotion or experience that occurs. This goal is accomplished through

increasing cognitive defusion skills, psychoeducation, and values-guided exposure therapy.

Cognitive defusion aims to change the way individuals interact with their thoughts,

thereby reducing the negative cognitive load that may have become associated with the thought

or behavior (Niles et al., 2014). Cognitive defusion can take the form of a variety of practices,

examples of which include repetition of a word until it loses its meaning, thinking of thoughts as

separate from the person, or labeling the process of thinking to detach from the emotional

process (Hayes et al., 1999). Semantic satiation, or the process of repeating a word until it loses

meaning, likely has occurred in most people's daily lives (Arch & Craske, 2008). In ACT, the

individual would repeat anxiety, for instance, until the word has lost its meaning and thus its

personal meaning for the individual. Psychoeducation is the process of educating about

psychological processes, such as where anxieties arise from and strategies to deal with these

anxieties. Values-guided exposure therapy in ACT occurs when individuals are exposed to

threatening situations, but are tasked with dealing with those feelings in a way that aligns with values for life. For example, someone who is undergoing anxious feelings in the ACT framework embraces the feeling of anxiety without defense, allowing for the moment to pass in line with the overall value of acceptance. Rather than living a life guided by relief from psychological pain, ACT emphasizes the importance of a value-guided approach where the individual is motivated by their internal values to achieve their goals and be able to fully live life.

The type of therapy offered is an important consideration when designing any therapeutic intervention. For individuals with SAD, CBT is perhaps the most commonly used therapy, while ACT was developed more recently but is growing in popularity (Landy et al., 2015). CBT and ACT are both behavior-based therapies but have key differences in their broader intentions for the therapeutic process. CBT focuses on developing a new associative network of thoughts and behaviors in order to challenge the fear-based networks that may have developed in the individual (Herbert et al., 2018). ACT focuses more on increasing the mindfulness, acceptance, and cognitive defusion skills in order to promote a lifestyle guided by values (Arch and Craske, 2008). Critiques of CBT suggest that treating mental processes as a problem that needs a solution can cause an internal battle between the individual and their thoughts (Sloshower et al., 2020). There is less active engagement of the client in the process of change in CBT, as opposed to ACT where the individual may be actively engaged in accepting themselves and their thoughts. Acceptance and commitment therapy has been shown to be a viable alternative to traditional CBT. In a randomized trial of individuals with SAD, both CBT and ACT groups outperformed the waitlist group on all outcome measures (Craske et al., 2014). A meta-analysis of 16 studies comparing the effectiveness of ACT compared to CBT revealed that mean effect sizes on primary outcomes significantly favored ACT (Ruiz 2012). Although engaging in different

processes, both therapies offer patients an opportunity for improvement in SAD symptoms, such as distress in social situations or increased conversation skills.

Psilocybin Psychotherapy for Individuals with SAD

Although psilocybin has demonstrated intriguing results in studies across different areas of behavior, it should not be seen as a "magic-bullet," with the ability to cure any disorder. The pattern of behavior in individuals with social anxiety disorder is deeply rooted, and to combat these behaviors, psilocybin is most effective when accompanied by a therapeutic aid, guiding the individual through the therapeutic processes and ways of thinking. Psychedelic-assisted therapy can combine the separate experiences of education on neural mechanisms with lived experiences, informing and deepening the experiences of both (Sloshower et al., 2020). Furthermore, the hallucinogenic experience offered by psilocybin causes increased activation of autobiographical memories, or memory of personal events. Participants who consumed psilocybin in a fMRI memory cue task demonstrated a switch in autobiographical memory activations in visual and other sensory regions from a pattern of deactivation to activation (Carhart-Harris et al., 2012). Participants reported feeling that the memories recalled during psilocybin ingestion were more vivid or 'real' than recalled memories in the control condition, which may be explained by this increased activation of sensory areas. With the combined therapeutic process of ACT and psilocybin, an individual can become actively engaged in the process of interrupting deeply-held patterns of thought, which may lead to life-long improvements in their quality of life.

Synergizing Features of ACT with Psilocybin Psychotherapy

As there has been no research directly assessing the impact of psilocybin and acceptance and commitment therapy on individuals with social anxiety disorder, the purpose of this paper is to lend support for the further research of the therapeutic intervention. ACT therapy provides an ideal backing to psilocybin, as the therapy is focused on increasing mindfulness and psychological flexibility. Psychological flexibility is the capacity to change aspects of the

psyche, a process that may seem impossible to those with SAD. In an analysis of 972 students, self-reported psychological inflexibility scores were significantly related to both current and lifetime anxiety disorder diagnoses, providing support to the functionally important role of psychological inflexibility in the development of anxiety disorders (Levin et al., 2014). Furthermore, a separate study found that psychological flexibility scores mediated the effect of insightful experiences on subsequent decreases in depression and anxiety following psychedelic consumption (Davis, Barrett, & Griffiths, 2020). ACT has been shown to increase psychological flexibility, with the increases in psychological flexibility mediating changes in outcome (Hayes et al., 2006) As ACT enhances psychological flexibility and the anxiolytic effect of psilocybin is impacted by psychological flexibility, it is likely that combining the two will provide synergistic benefits leading to greater decreases in social anxiety symptoms in the individual than either treatment on its own.

Personality Changes Following Psilocybin Dose

Change in personality has a definitive impact on the behavior of an individual. One of the main tenets of individuals with social anxiety disorder is a tendency to be too internally focused, criticizing their own performance and in turn not interacting with their environment. A single dose of psilocybin was associated with long-term, statistically significant increases in openness and mindfulness (Madsen et al., 2019). Psilocybin was also correlated with a decrease in neuroticism and an increase in extraversion and openness to experience in a population of people with major depression (Erritzoe et al., 2018). Neuroticism represents the degree of anxiety, insecurity, and emotionality in the personality structure of the individual (Erritzoe et al,. 2018). Extraversion represents how social, optimistic, and talkative individuals are in daily life (Craske et al., 2014). A survey of 893 subjects demonstrated a positive correlation between lifetime

psychedelic-use and openness, nature-relatedness, and liberal political views, while negatively

predicting authoritarian political views (Nour et al., 2017) Psilocybin can provide long-term

benefits to individuals through impacting personality traits, challenging old assumptions about

life and leading to new ways of thinking.

The contentious nature of psilocybin research necessitates that most current studies are

conducted with smaller sample sizes and focus on elements of the psilocybin experience

(Schmidt et al., 2013; Mertens et al., 2020; Kraehenmann et al., 2016; Mason et al., 2020;

Masden et al., 2019; Kraehenmann et al., 2015), as well as on populations with serious,

potentially life-threatening diseases such as terminal cancer (Agin-Lebines et al., 2020) or

individuals with addictions (Garcia-Romeau et al., 2015). However, there has been some

research indicating the possible benefits of psilocybin treatment for individuals with social

anxiety. One study demonstrated a reduction in social pain processing following a social

exclusion task in a population that had ingested psilocybin (Preller et al., 2016). Psilocybin was

also correlated with a decrease in neuroticism and an increase in extraversion and openness to

experience in a population of people with major depression (Erritzoe et al., 2018).

Prior studies have demonstrated the ability of psilocybin psychotherapy to provide an

anxiolytic response in patients that lasts beyond the psychedelic experience. In a population of

patients with life-threatening cancer, psilocybin produced substantial and sustained decreases in

depression and anxiety that remained consistent up to eight months post-treatment (Griffiths et

al., 2016). The effects last far beyond when psilocybin should be eliminated from the body, as

the half-life of psilocybin is approximately three hours (Passie et al., 2002). In separate studies, a

majority of patients with life-threatening cancers continued to meet criteria for clinically

significant antidepressant or anxiolytic responses at three months post-treatment (Grob et al.,

2013) and six and a half months post-treatment (Agin-Liebes et al., 2020). There is promise for patients with social anxiety disorder to likewise experience long-lasting reduction of anxious symptoms following psilocybin psychotherapy.

In general, these changes in personality are theorized to result from the unique ability of the psychedelic process to compromise the effectiveness of the avoidance strategies of the individual for reducing aversive states (Wolff et al., 2020). Due to the nature of the psychedelic experience, individuals are unable to avoid experiencing their emotions, thus enabling psilocybin to facilitate acceptance-promoting learning processes that can be further bolstered by including acceptance and commitment therapy as the therapeutic base. As more preliminary research lends support to the beneficial nature of psilocybin in the treatment of socially anxious individuals, a larger scale study on the impact of psilocybin-assisted therapy can be conducted.

Therapeutic benefits for SAD

The therapeutic benefits of psilocybin psychotherapy are strengthened through the biological changes that are induced following the consumption of psilocybin. Two key areas that relate to the pathology of anxiety disorders are the amygdala and the serotonin receptor system.

The amygdala is a key structure in emotion-processing circuits in the brain, as it plays a crucial role in the perception and generation of emotions (Phelps and LeDoux, 2005). Hyperactivity of the amygdala in response to social threat is consistently observed in individuals with social anxiety disorder (Phan et al., 2006). Psilocybin impacts the functioning of the amygdala, thereby modifying the way that individuals respond to emotional situations. In a population of healthy volunteers (mean age 24.2), a psilocybin dose decreased amygdala reactivity compared to a control group. Participants completed a modified version of an

amygdala reactivity task where they were tasked with discriminating alternating blocks of emotional picture tasks. Shape discrimination tasks served as a baseline task to return amygdala responses to baseline. Additionally, those showing decreased amygdala activity during the task also revealed enhanced positive moods (Kraehenmann, 2015). Research with patients with treatment-resistant major depression revealed a change in the connectivity between the amygdala and prefrontal cortex following a psilocybin treatment, with decreased prefrontal cortex-right amygdala connectivity during face processing post-treatment (Mertens et al., 2020). This decrease was associated with decreased levels of rumination in the individuals. As hyperactivity of the amygdala is a symptom of social anxiety disorder, this result lends support to the potential beneficial effect psilocybin may have for individuals with social anxiety disorder.

Serotonin receptors are implicated in the pathology of anxiety disorders. In patients diagnosed with social anxiety disorder, PET imaging revealed significantly lower $5\text{-}HT_{1a}$ receptor binding potential in the amygdala, insula, and anterior cingulate cortex (Akimova et al., 2009) The biological differences in serotonin receptors could be a contributing factor to the negative emotional biases surrounding anxiety disorders. With the ingestion of psilocybin, whose effects are due in large part to serotonin receptors, changes in the limbic circuits implicated in anxiety disorders can result in long-term anxiolytic effects in individuals (Vollenweider and Kometer, 2010; Agin-Liebes et al., 2020; Grob et al., 2011). The anxiolytic effects of psilocybin are theorized to occur due to a shift in emotional processing through the activation of $5\text{-}HT_{2a}$ and $5\text{-}HT_{1a}$ receptors. Psilocybin intoxication shifted the negative processing biases of emotional faces in structural encoding tasks (Schmidt et al., 2013). In a population of healthy participants, psilocybin enhanced positive mood states, decreased recognition of negative facial expressions, and increased behavior towards positive relative to negative cues in emotional go/nogo tasks

(Kometer et al., 2012). These effects were not demonstrated after the ingestion of 5-HT$_{2a}$ antagonist ketanserin, lending support to the importance of the receptor in the anxiolytic effects of psilocybin. Furthermore, in a double-blind study of participants' reactions to a social exclusion task, individuals who ingested psilocybin reported reduced feelings of social exclusion. These reported reduced feelings of social exclusion were accompanied by decreased neural responses to the social exclusion in the dorsal anterior cingulate cortex and the middle frontal gyrus, two key areas for social pain processing (Preller et al., 2016).

The psilocybin experience can involve intense emotions, memories, and mystical experiences that can result in changes to the personality structure of the individual as well as changing aspects of the brain's biological system. Another key attribute of the psychedelic experience is the ability of psychedelics to induce neuroplasticity in the brain. Neuroplasticity is defined as the brain's ability to modify, change, and adapt structure and function throughout life through the modification of cellular and molecular functioning (Voss et al., 2017). In a review of studies (n=20) concerning the biological impact that result in the anxiolytic effects of psychedelics, de Vos concluded that a single administration of a psychedelic resulted in rapid changes in plasticity mechanisms of the brain on a molecular, neuronal, sypmatic, and dendritic level (2021). Among these mechanisms, the increased dendritic complexity of the brain outlasted the acute effects of the psychedelic. These changes in neuroplasticity are potentially thought to underlie elements of the clinical effects of psychedelics, including the anxiolytic response to psychotherapy.

Therapeutic Design of Psilocybin Therapy with ACT

As no actual research involving psilocybin psychotherapy was conducted for this paper, a potential schedule of treatment in a psilocybin therapy program will be described. The Yale

Manual for Psilocybin-Assisted Therapy of Depression will serve as a backing for the description of the psilocybin sessions (Guss, Krauss, & Slowshower, 2020). The manual is the first to provide a guide for psilocybin psychotherapy treatments for those with major depression. As social anxiety disorder occurs through vastly different processes than major depression, the therapeutic process for SAD will emphasize different aims of treatment than the Yale manual, but would follow a similar schedule of programming.

The beginning of the therapeutic process should begin with education on the effects of psilocybin. As Griffiths et al. demonstrated, proper preparation and interpersonal support decreased the adverse effects suffered by participants in previous psychedelic-based experiences (2006). In the first information session, the therapist and the patient should focus on the experience the patient will undergo. The therapeutic bases of acceptance and commitment therapy will be discussed, with an emphasis on understanding the role of psychological flexibility and ways to recognize inflexibility in their own behavior. The first session is also important for the development of rapport between the therapist and the client. The therapist-client relationship is particularly important in psilocybin-assisted therapy. Hallucinogenic experiences have the potential to be confusing and anxiety-inducing, as aspects of reality that were thought to be concrete may become more fluid. The therapist acts as the stable base for the individual while they are going through a tumultuous event, so it is crucial that the client is able to trust the therapist and confide in them when they may be undergoing uncomfortable experiences (Johnson et al., 2008). With anxious populations, it is important that the client and therapist relationship is developed to the point where the individual will feel comfortable undergoing the psychedelic experience with the therapist. In order to ensure the most optimal experience, the therapist may desire having a preexisting relationship with the client before

beginning the psychedelic therapeutic process. If a relationship does not exist, it is up to the therapist to use their clinical judgment to decide when the relationship between therapist and client is stable enough to support psychedelic therapy.

A second information session before the first psilocybin session will then occur approximately a week following the initial session, to ensure the patient is fully comfortable with the therapist, as well as to ensure the therapist is well acquainted with details of the individual's life. Although differing from the proposed schedule in the Yale Manual, the second information session ensures that the patient is fully comfortable. The manual itself states that the amount of content in the first information session "may be covered more effectively over the course of several preparatory sessions" (2020). In the second session, the therapist can introduce grounding techniques such as controlled breathing for dealing with challenging experiences during the psychedelic process. The therapist will gain a better understanding of the client's aims in completing therapy and what experiences may be important in the development of their pathology. Furthermore, the ACT model can be better understood by the patient, allowing for deeper introspection in the initial psilocybin session.

Only once the individual feels comfortable with the environment and their therapist should the first psilocybin session be conducted. The patient should fully understand the process of a psilocybin dose, as well as the underlying acceptance and commitment model and processes that are desired through the prior psychoeducation sessions. During the session, the therapist should note instances where the individual is exhibiting signs of psychological inflexibility, as well as developing a sense of the model of interactions that the individual may hold in-regards to social interactions.

The following session will serve as an integration session, where the therapist and the client work together to analyze the process of the psychedelic experiences and note places where processes of experiential avoidance or inflexibility could be taking place. Here, the therapist could begin using acceptance and commitment exercises aimed at decreasing avoidance behaviors, such as teaching defusion skills and practicing situations where anxiety may arise. These integration sessions aim to allow the individual to examine the lessons and feelings that were aroused during the psilocybin sessions and begin integrating what they felt into their daily lives. The goal is to create lasting change, and this in part results from a daily commitment to improving. A second integration session will allow the therapist to determine if practices are being applied to the client's daily lives, as well as furthering education on the role of mindfulness and acceptance in the patient's own experience.

Following the second integration session, the patient will undergo a second sequence of psychoeducation sessions, psilocybin sessions, and integration sessions. Through these sessions, the therapist and the patient will be able to delve deeper into the root cause of the social anxiety, develop strategies for continual change in behavior, and continue education on necessary components of acceptance and commitment therapy. After the last integration session, the patient and the therapist will have an exit session where goals and standards are created to ensure that behavior change will remain beyond the psilocybin sessions. The patient will have the option of continuing therapy sessions to encourage the change in mindset that may result from the psilocybin experience. In the additional therapy sessions, the therapist can continue to use elements of the psychedelic experience to guide the individual to keep living their life in a way guided by their personal values.

Conclusion

The field of psychedelic-aided psychotherapy continues to expand, with new studies being published across the world. Individuals with social anxiety disorder are in need of more effective treatment, as the nature of the illness entails that those with SAD are less likely to seek treatment and make fewer return visits to receive aid (Gross et al., 2005). Psilocybin psychotherapy has the ability to create lasting change in anxiety and personality traits in a small number of sessions through inducing neuroplasticity in the brain and through the challenging psychedelic experience of the drug (Agin-Lebines et al., 2020; Madsen et al., 2019; Erritzoe et al., 2018; Griffiths et al., 2016; de Vos et al., 2021). Acceptance and commitment therapy is an ideal therapeutic backing for psilocybin psychotherapy as the therapy promotes mindfulness and psychological flexibility, which are beneficial to increasing the anxiolytic effect of psilocybin (Davis, Barrett, & Griffiths, 2020). The combined attributes of ACT and psilocybin have the potential to have beneficial anxiolytic effects for populations with SAD. Further research is needed to support the application of the treatment to individuals, but initial evidence is promising for the potential efficacy of the treatment.

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