Attachment and the Psychedelic Experience:

An Exploration of the Relationship between Attachment Style, Mystical Experience, Emotional Breakthrough, Communitas and Changes in Subsequent Wellbeing.

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Thesis declaration form

I confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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Overview

Research into psychedelic substances has significantly increased over the past two decades. Due to it being a relatively new area of study, there is still much to be learned regarding how psychedelics work, particularly regarding predicting positive and therapeutic outcomes. This is important in minimising harm and maximising therapeutic potential. This study aimed to understand whether adult attachment predicts beneficial acute psychedelic experiences and changes in wellbeing following the experience. This was a joint project with other students.

This volume includes three parts. Part One is a literature review in the form of a conceptual introduction. It will review broader literature, define key concepts, and explain how hypotheses for Part Two were arrived at. It will also provide a more thorough justification for the design of the study in Part Two,

Part Two describes a naturalistic, observational, retrospective, cross-sectional study using an online survey with a large sample of psychedelic users. The study explored the association between attachment style prior to the experience and mystical experience, emotional breakthrough, communitas and wellbeing following the experience.

The final section will be a critical appraisal of the work and the process of conducting research. This includes reflections on the study of psychedelics and learning gained from the process of this research.

Impact Statement

The study of psychedelic substances has been greatly increasing in momentum. There is still much to be understood regarding how they work and why some users benefit from the psychedelic experience more than others. This study hopes to contribute towards the expanding field of literature on predictors of the psychedelic experience. Several psychedelic states are well researched at being predictive of beneficial outcomes following the psychedelic experience. Therefore, this study aimed to see whether individuals' adult attachment style is predictive of these outcomes. Understanding the underlying patterns that predict peoples' experiences is crucial in minimising harm and maximising benefit for recreational users and in therapeutic settings. It is essential that these areas are researched so that practises of psychedelic-assisted psychotherapy are well grounded in research to keep people from harm. This study used a naturalistic sample that mostly consisted of recreational users, so the findings cannot be applied to the clinical populations in psychedelic-assisted therapy research. However, we hope these findings will draw attention to the fact that attachment seems to be predictive of aspects of the psychedelic experience, thus welcoming more research. This is an important distinction since most clinical populations will frequently have underlying attachment insecurities.

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Part 2: Empirical Paper

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Part 1 : Literature Review:

Attachment Styles and the Psychedelic Experience. Acute Experiences of Communitas, Mystical Experience and Subsequent Wellbeing.

Abstract

This literature review aims to provide an overview of previous research in the area and to provide background and justification on how the hypotheses were constructed. It will take the shape of a conceptual introduction. The review will start with orienting the reader to the history and recent clinical findings in psychedelic studies. It will then review relevant literature and provide a theoretical basis to the hypotheses tested in the empirical paper (part 2). Finally, it will provide an overview and justification of methodology, study design and measures which will be used.

Introduction

This project aims to explore how individuals' attachment styles interact with the quality of the acute psychedelic experience and changes in wellbeing since the psychedelic experience. Much research has focussed on how individual differences (i.e. personality, ability to surrender) can predict the quality and therapeutic potential of peoples' psychedelic experiences (Aday et al., 2021). However, few studies have examined the role of prior attachment in this area and how it may colour peoples' short and long-term experiences (Stauffer et al., 2021). Additionally, few studies have explored the effect of the group setting on psychedelic experiences (Kettner et al., 2021). By addressing this gap in the literature, we can further our understanding of the "set and setting" aspect of the psychedelic experience, thus shedding light on individual differences in response to psychedelic drugs. Therefore, this study aims to explore whether attachment styles (anxious and avoidant) will have different relationships with a) mystical experience b) communitas (social connection) in the acute psychedelic phase and c) changes in wellbeing following the experience. Mystical experience and communitas are established in the literature as leading to increased wellbeing following the experience (Haijen et al., 2018; Kettner et al., 2021). Therefore, this research will help to determine whether attachment styles are an appropriate predictor for mystical experience and communitas, thus, subsequent wellbeing. This could provide an interesting model in which to understand factors related to psychedelics. Whilst this study is unlikely to directly inform the practice of so-called 'psychedelic-assisted psychotherapy', it may prompt future research into an individual's suitability for

psychedelic-assisted psychotherapy based on their attachment style, to maximise therapeutic effects and minimise potential harmful effects of these substances.

Psychedelics

Serotonergic or 'classic' psychedelics such as psilocybin ('Magic mushrooms'), Lysergic Acid Diethylamide (LSD), Dimethyltryptamine (DMT), ayahuasca, 5-methoxy-N,N-dimethyltryptamine (5-MeO-DMT), mescaline and analogues, all exert their effects primarily through serotonergic (5-HT) agonism on the 2A receptor (George et al., 2019). The prefrontal cortex and thalamus have a high density of 2A receptors. These areas are associated with emotion, perception, learning and cognition (Vollenweider & Kometer, 2010). Therefore, by binding to these receptors, psychedelic compounds cause changes in neuronal activity which elicit some of the typical psychedelic effects. This results in changes in mood, cognition, visual and auditory perception (I.e. hallucinations and synaesthesia), perception of time and perception of both physical and mental self (Nutt, 2023). People can experience more extreme emotions, gain psychological insights, feel closer to others, have greater creativity, and have mystical or spiritual experiences (Nutt, 2023). However, adverse effects include paranoia, panic attacks, sickness and vomiting, extreme anxiety, changes in temperature, confusion, and lack of concentration (Nutt, 2023).

The current study will exclude drugs which may have similar effects (I.e. hallucinations, changes in thought processes, mental state and perceptions) but different neural processes (Nutt, 2023). For example, ketamine acts on N-methyl-D-aspartate receptors; and cannabis acts mostly on endocannabinoid receptors (George et al., 2019).

Overview of Previous Research

Interest and research into psychedelics have grown rapidly in recent years in what has been described as a 'psychedelic renaissance' (Sessa, 2012). While history begins

with indigenous communities, who have been using psychedelics for healing purposes for millennia, western recreational use and scientific interest started in the 1950s (George et al., 2019). Studies showed promising results with LSD in treating depression, anxiety, addiction and psychosomatic diseases (Fuentes et al., 2020). However, as this was the beginning of what was to become psychopharmacology, some studies and practices were questionable due to few restrictions. Studies often had ethical and safety concerns, significant methodological flaws, and no control group (Strassman, 1991). Studies typically did not consider 'set and setting' – the contextual factors known to affect a psychedelic experience. Some are known to have been abusive and exploitative, especially with people of colour and vulnerable populations (Strauss et al., 2021). Recreational use was similarly unrestricted, which led to problems, particularly when these substances were associated with the protest movements of the 1960s/70s America (Belouin & Henningfield, 2018). These poor scientific practices and political factors led to a media popularity downturn, one that eventually led to many psychedelics becoming Schedule I controlled and research coming to a halt (George et al., 2019).

Whilst still being heavily regulated, research into psychedelics picked up again in the 2000s and has continued to grow since then, with researchers taking more care with experimental design (George et al., 2019). Promising gains into the therapeutic potential of psychedelics have since been discovered in clinical trials for depression (esp. Treatment-resistant depression), anxiety, addiction, and end-of-life anxiety (Reiff et al., 2020). A systematic review of 16 psychedelic-assisted psychotherapy trials showed significant therapeutic effects after a single treatment of psychedelics for anxiety, depression, OCD and substance use disorders. These effects were observed to be maintained for weeks or months afterwards (Anderson et al., 2021). Psilocybin has been found to be particularly effective with treatment-resistant depression, where a significant

reduction in symptoms was maintained up to three months after the treatment session (Carhart-Harris et al., 2016). Furthermore, compared with antidepressant treatment, those who received psilocybin showed a greater reduction in depressive symptoms and higher remission rates (Carhart-Harris et al., 2021). Ayahuasca has been shown to reduce anxiety and depression in participants suffering from major depression with sustained effects at 21-day follow-up (Osório et al., 2015; Sanches et al., 2016) Furthermore, in multiple studies, psilocybin and LSD have been shown to reduce cancer anxiety and end-of-life anxiety with sustained benefits at 6-month and 12-month follow-up (Griffiths et al., 2016; Ross et al., 2016; Gasser et al., 2014). Finally, interesting gains have been observed with substance use disorders where treatment with psilocybin led to significant changes in decreased alcohol consumption, abstinence, and cravings, sustained up to 36-week follow-up (Bogenschutz et al., 2015). Similarly, compared to an active placebo group, those who received psilocybin reported significantly less heavy consumption of alcohol days at the 32-week follow-up (Bogenschutz et al., 2022). Psilocybin has also been indicated for efficacy with smoking addictions, with 67% of participants being laboratory-verified as abstinent after a year and 75% at 2.5 year follow-up (Johnson et al., 2017).

Despite encouraging evidence of clinical trials of psychedelic-assisted therapy, Haijen et al. (2018) purported that research is still in its infancy in terms of predicting individual responses to psychedelics more generally (i.e. including naturalistic settings). This could be partly due to individual responses being difficult to predict (Russ et al., 2019). The importance of this is twofold, according to Russ et al. (2018); a) being able to reduce challenging experiences and subsequent harm and; b) to increase the likelihood of a mystical experience and long-term wellbeing. Hartogsohn (2017) adds that understanding predicting factors would also allow for harm reduction and inform drug

policy in further reducing harm. Additionally, understanding contextual set and setting factors is necessary before psychedelic-assisted therapy should start taking place. Hayes et al. (2022) discuss a need for more knowledge about the long-term effects of these substances before using them clinically. Furthermore, a greater evidence base on individual responses to psychedelics can assist in creating a balanced view, incorporating the strengths and limitations of using them therapeutically. It is important to nurture realistic expectations around psychedelic use, especially given that the media has 'hyped' up their therapeutic potential to future patients (Hayes et al., 2022). Yaden et al. (2022) support this in warning about the psychedelic 'hype bubble' being due to pop after much recent positive press coverage. They warn of a repeat of this positivity being replaced with the stigma and prohibition reminiscent of the 1950s and 1960s. Yaden et al. (2022) suggest this could be prevented by researchers promoting a more realistic view, with less of a 'wonderdrug' narrative on psychedelics (Yaden et al., 2022). Therefore, this study also aims to add to the research base by looking at whether the contextual, 'set' of attachment style could predict the acute and long-term effects.

A commonly used framework for predicting individual response to psychedelics is to explore factors related to the 'set and setting'. 'Set' encapsulates both trait and state factors such as personality, psychology, mood, preparation, intention, and expectation of the individual. 'Setting' involves factors related to the environment in which it takes place, such as physical, cultural, social and societal factors (Hartogsohn, 2017). These contextual factors are non-pharmacological in nature yet can significantly influence the effects of the drug (Hartogsohn, 2017). The key here is finding aspects of the 'set and setting' that predict the acute psychedelic experience (i.e., state factors and experiences whilst on psychedelics). This is crucial as these acute psychedelic states have been well

documented, resulting in long-term therapeutic benefits (Aday et al., 2021; Roseman et al., 2018).

Acute Psychedelic 'State' Predictors of Long-Term Benefits and Harm

It has been widely shown in the literature that having a mystical experience during the acute psychedelic experience is one of the strongest predictors of changes in long-term well-being (Griffiths et al., 2011; Haijen et al., 2018; Russ et al., 2019) Mystical experience involves a sense of unity, interconnectedness, and transcendence that goes beyond ordinary sensory perception and understanding. The most widely used definition came from Stace (1960), which formed the constructs for the Mystical Experiences Questionnaire (MEQ) and is defined by Barrett et al. (2015, p.1182) as:

> The experience of profound unity with all that exists, a felt sense of sacredness, a sense of the experience of truth and reality at a fundamental level (noetic quality), deeply felt positive mood, transcendence of time and space, and difficulty explaining the experience in words (ineffability).

Another state factor predictive of long-term benefits is communitas, which is experienced in *group* psychedelic experiences (Kettner et al., 2021). Communitas is most helpfully defined by Turner (1969) to describe an experience of deep connection and common humanity which briefly transcends societal norms and social structures. Turner talks about it occurring during rites of passage in order to make way for new identities and hierarchies to be established. Kettner et al. (2021) was the first study to apply it to the practice of psychedelics within a ceremony setting and developed a scale to measure psychedelic-specific communitas. This is important as the social dimension had thus far been mostly neglected in modern psychedelic research. Feeling connected to others is transdiagnostically one of the most important factors in mental health recovery (Leamy et

al., 2011). Kettner et al. (2021) looked at the acute and long-term effects of psychedelics taken in a group setting whilst on ceremonial retreats. They found that communitas in the acute phase predicted long-term wellbeing, fewer depression and anxiety symptoms, interpersonal tolerance and feelings of social connectedness. Higher levels of acute communitas most strongly predicted long-term social connectedness, showing the importance of the group experience and connection on long term outcomes.

Further studies have looked at the effects of acute psychedelic feelings of connection on long-term benefits. A small-scale qualitative study found that psilocybin administration alongside group psychedelic-assisted psychotherapy reduced trauma symptoms and increased feelings of connectedness and cohesion with fellow group members and their existing social network (Agin-Liebes et al., 2021). Another study found that group psychedelic-assisted psychotherapy was beneficial in decreasing feelings of demoralisation in older long-term AIDS surviving men (Anderson et al., 2020). In a qualitative study with participants with treatment-resistant depression, Watts et al. (2017) found that participants attributed the treatment's effectiveness firstly to a move from disconnection to connection, and secondly from a state of emotional avoidance to acceptance. In a naturalistic setting, Forstmann et al. (2020) found that feelings of connectedness to others enhanced the positive mood effects of psychedelics. Watts et al. (2022) extend their definition of connectedness to include connection to the self, others, and the world. They found that long term changes in this composite form of connectedness was predicted by acute experiences of communitas, mystical experience and emotional breakthrough (Watts et al., 2022).

Conversely, people can also experience more challenging experiences during the acute psychedelic phase which have shown long-term benefits and harm (Carbonaro et al., 2016). The authors analysed survey data of 1,993 mostly experienced psychedelic

users' experiences of 'bad trips'. They found that most users described the experience as the most challenging of their lives. However, it is important to delineate between a negative acute psychedelic experience and ongoing persistent harm. Seventy-six per cent of participants said that the experience had resulted in long-term wellbeing. They found that the degree of psychological difficulty experienced was associated with greater wellbeing outcomes. However, longer duration of challenges during the experience were associated with more negative outcomes. Another study found that 25 out of the 60 subjects studied in DMT trials (the most potent psychedelic) experienced frightening hallucinations (Strassman, 2001). Strassman (2001) found that only a couple of his participants went on to feel affected by what had happened to them. Furthermore, having a challenging experience often leads to long-term wellbeing, particularly when taken in a therapeutic setting. Nutt (2023) states persistent adverse effects (i.e., suicidality, flashbacks, or psychosis) are extremely rare. Similarly, Carbonaro et al (2016) found within his sample of recreational users that 11% put themselves or others at risk of physical harm, and 2.6% reported behaving aggressively or violently. However, these experiences were associated with a socially unsupportive set and setting as opposed to the direct effects of the drugs. Carbonaro et al (2016) reported that 3% sought medical help afterwards due to enduring effects of psychotic symptoms or suicidality. However, in clinical trials or with psychedelic-assisted therapy, challenging experiences can be part of the process as people relive painful memories or traumas (Nutt, 2023). It has been found that harms are minimal when taken in supportive, therapeutic environments where the set and setting are controlled (Carbonaro et al., 2016; Nutt, 2023). The harms of psychedelics are perhaps more common when people use them recreationally and within an unsupportive or unsafe set and setting (Nutt, 2023).

Set and Setting as Predictors of Acute Psychedelic States

Having observed the importance of acute psychedelic states in predicting long-term outcomes, it would make sense to explore set and setting factors which have been shown to predict these acute psychedelic states. Haijen et al. (2018) found that having a more positive mind 'set' prior to the experience (low anxiety, good mood, readiness and openness) decreased the likelihood of having a challenging experience. The trait of 'absorption', (which refers to how easily and intensely someone tends to become immersed in experiences), prior to ingestion increased many aspects of the *acute* experience, including both mystical and challenging experiences. Studerus et al. (2012) concur these findings with 'set' factors such as absorption, emotional excitability and few psychological difficulties in the past week, predicting positive and mystical experience. They also found an effect for 'setting' where being in an experimental/lab environment predicted more challenging experiences. Aday et al. (2021) found trait 'set' variables of personality such as absorption, openness to experience and acceptance was predictive of mystical experiences and fewer unpleasant experiences. They also found that a positive mindset predicted more positive and mystical experiences, whereas a negative or anxious mindset predicted more negative experiences and lower rates of mystical experience. Interestingly, they also found that a state of surrender predicted greater mystical experiences and fewer adverse experiences. This state of being able to 'let go' and engage fully with the experience fits in well with the personality traits of absorption, acceptance, and openness. The authors suggest that individuals with these 'set' traits could be good participants for psychedelic assisted therapy (Aday et al., 2021).

Attachment as a Predictor of Psychedelic States and Changes in Long-Term Wellbeing

Set and setting, use of psychedelics in a group context and connectedness are all important areas that need more research (Carhart-Harris et al., 2018; Kettner et al., 2021; Murphy et al., 2022). In bringing this together, attachment theory is a 'set' factor which

could predict elements of the acute experience, especially connectedness. Attachment theory (Bowlby, 1969) proposes that how we interact relationally and emotionally is based on our earliest relationships with our caregivers. Attachment styles develop as a response to how distress was responded to as an infant and act as a blueprint for their adult relationships, emotional regulation and beliefs about self and others. Attachment is classed as 'secure' or 'insecure'. Insecurely attached individuals can be 'avoidant', 'anxious' or 'disordered anxious/avoidant'. Infants may learn a 'secure' attachment style if caregivers are available and accurately attuned to their needs. The caregiver acts as a secure base, somewhere the infant learns they can reliably return to after autonomous exploration. The caregiver also serves as a 'safe haven' for the infant to approach and be soothed by when distressed or afraid. Adults who have been raised in this way usually view others as dependable. They typically see themselves and their emotions as acceptable due to learning that emotional expression elicits reliable and effective care (Wallin, 2007). Individuals with attachment security tend to have positive views of self and other, can build trusting relationships and can express and regulate their emotions (Wallin, 2007). Conversely, 'insecure' attachment styles can develop as an adaptive response to an unpredictable, misattuned, controlling or frightening caregiver. These can best be explained as two dimensions of attachment anxiety and avoidance, with those low in both seen as being securely attached (Wei et al., 2007). Both insecure attachment styles crave love and security but may deal with this in opposing ways. Those who are anxiously attached tend to *over express* this need, whilst those with attachment avoidance may *suppress* this need to both themselves and others (Wallin, 2007). Those high in attachment anxiety are said to respond to distress using hyperactivating strategies. This involves an 'over-activation' of emotional responses, dependency on others and poor emotional regulation skills. Those high in attachment avoidance typically respond to

distress using deactivating strategies, such as suppressing their emotions and need for others, avoiding emotionally charged situations and being excessively self-reliant. The goal of hyperactivation is to bring people closer, the goal of deactivation is to create distance from others. Lastly, it is worth mentioning 'disorganised insecure attachment'. This is the attachment style most related to psychopathology in adulthood. It usually stems from childhood experiences of abuse, or where the caregiver was perceived as frightening or frightened (Wallin, 2007). The paradox of being frightened by the main provider of comfort creates a disorganised and unpredictable expression of anxious and avoidant cognitions and behaviours. Whilst disorganised attachment is important to remember, we will not be exploring it in this study. Association with psychopathology and low prevalence means it is unlikely to appear significantly in our sample (Van Ijzendoorn et al., 1999; Wallin, 2007). Furthermore, it is not captured by the Experiences in Close Relationships Short form (ECR-S) which is the attachment measure we are using (Wei et al., 2007). Please refer to pg. 32 for further details on this measure.

Owing to these ways mentioned above of relating and experiencing the self and others, it would follow that the different attachment dimensions could experience psychedelics differently, particularly in a group setting. In non-psychedelic studies, attachment style has been shown to affect how individuals respond to group experiences. Rom & Mikulincer (2003) found that attachment security was related to having more positive memories and appraisals of group interaction and a higher degree of functioning in group tasks. Rom & Mikulincer (2003) also found that group cohesion improved anxiously attached individuals' ability to engage in group tasks as there was a sense of attachment security. Conversely, they found that those with attachment avoidance struggled more with group tasks when cohesion was high, suggesting a threat of interdependence on functioning. This suggests that attachment style may influence how

individuals relate to group situations, especially when a sense of attachment security is offered. Whilst these findings are not directly relevant to psychedelic studies, they might suggest that the individual difference of attachment style could play a part in how people experience taking psychedelics with others.

At the time of writing, there is only one study which has investigated the role of attachment style on psychedelics. Stauffer et al. (2021) found that higher attachment anxiety was associated with stronger mystical experience. The authors express surprise at this finding and suggest it could be related to anxiously attached individuals' preoccupation for closeness acting as a primer for interconnectedness which in turn increases mystical experience. Secure attachment was associated with milder mystical experience and less challenging experiences. In addition, attachment avoidance had a negative, non-significant relationship with mystical experiences. However, attachment avoidance predicted challenging experiences. The same study observed a decrease in attachment anxiety following group psychedelic-assisted therapy, but no significant reduction in attachment avoidance. This could imply that group psychedelic-assisted therapy could be more beneficial for those with anxious attachment compared to avoidance. The authors explain that the lack of benefit seen for avoidant attachment is consistent with previous literature, whereby attachment anxiety but not avoidance decreases following psychotherapy. Furthermore, they suggest the reduction could have been due to the fact that the intervention targeted symptoms which overlapped more with attachment anxiety. A paper by Cherniak et al. (2022) hypothesises that individuals with secure and anxious attachment styles may be more likely to surrender to the experience, meaning they would be more likely to benefit from positive and mystical aspects of the experience (Aday et al., 2021). They attribute this to securely attached individuals' felt sense of security and anxiously attached individuals' desire for an 'external

rescuer'. However, they hypothesised that those with avoidant attachment would have more difficulty surrendering due to a tendency to suppress feelings. Stauffer et al. (2021) supports this, hypothesising that those with attachment avoidance could have difficultly surrendering to the experience as it would require them to rely on their therapists when facing increased vulnerability due to psychedelics. Both authors talk about the potential for psychedelic-assisted psychotherapy to lead to increased attachment security, which could in-part explain the mechanism into their efficacy with long-term wellbeing (Stauffer et al., 2021; Cherniak et al., 2022). Stauffer et al. (2021) provides an interesting start to the study of attachment styles with psychedelics. However, the study is limited by a homogeneous and small sample size n=18.

Therefore, this current study aims to build on the minimal previous research, by looking at the influence of baseline attachment style on acute, state psychedelic measures of mystical experience and communitas (communitas only for subsample when taken with others). We will also explore whether baseline attachment predicts changes in wellbeing following the experience. Since mystical experiences and communitas are predictive of changes in wellbeing following the experience, we will also be exploring this. This will contribute to the growing research base on predicting responses to psychedelics and help address previously overlooked areas, such as the group psychedelic experience and connection (Carhart-Harris et al., 2018; Kettner et al., 2021).

The Neurobiology of Psychedelics and Attachment

The 'Relaxed Beliefs Under Psychedelics' (REBUS) model proposes a predominant view of psychedelic effects on the brain that brings together neuronal level systems and global brain function (Carhart-Harris & Friston, 2019). In doing so, it attempts to explain how psychedelic drugs' action on 5-HT2AR receptors leads to heightened plasticity and brain entropy. The model suggests that this allows for ingrained

unhealthy thought patterns and beliefs which underlie mental health difficulties to be relaxed – thus providing an optimal state for therapeutic intervention of mental health difficulties. Memory usually drives perception during what is known as 'top down processing' which results in beliefs altering perception of reality. REBUS proposes that psychedelics liberate 'bottom-up processing', allowing for perceptions and sensory input to shape and revise higher-level belief systems (Carhart-Harris & Friston, 2019).

Attachment is theorised to form from early neuronal pathways associated with experiences with the child's caregiver. The brain starts with undifferentiated neuronal connections. External stimuli, such as a caregiver's soothing voice, trigger neurons in the baby's brain that start firing together, forming a neural network (Siegel, 1999). This neural network then becomes established with that stimuli or similar soothing stimuli, to create feelings of safety. Therefore, relational stimuli form neural networks which underpin experience of self, other and associated emotions (Wallin, 2007). Therefore, a lack of relational stimuli can result in a lack of neural connections, limiting these feelings of safety or understanding of emotions. However, they may be revised with corrective, therapeutic and healthy attachment experiences across the lifespan (Wallin, 2007).

The relevance of this current piece of work is that the REBUS model could be hypothesised to relax Internal Working Models (IWM), in other words, the blueprint of early attachment (Cherniak et al., 2022). This could mean that under psychedelics, people are not constrained by the attachment-related neural networks and their associated cognitions and beliefs, thus leaving them open to revision. However, the model overlooks the more subjective and individual differences experienced by psychedelic users, i.e. whether some individuals are more likely to experience these effects and in what ways (i.e. due to personality, genetics, attachment, set and setting).Whilst observing this in the current study may be limited due to only measuring attachment before, rather than during

the experience, it is an interesting potential interaction to hold in mind when researching attachment and psychedelics.

The Current Study

Attachment and Mystical Experiences

Psychedelic experiences can be powerfully positive and mystical *or* highly challenging and distressing. Secure, anxious, and avoidant attachment styles have different ways of coping with their emotional experience. This is relevant to the psychedelic experiences because some coping strategies employed by participants during psychedelic experiences have been shown to either enhance or worsen the experience (Wolff et al., 2020). In particular, an ability to "surrender" to the experience has been shown to predict state factors of the experience. Those who can surrender to the experience are more likely to have mystical experiences compared to challenging ones (Aday et al., 2021; Russ et al., 2018). Those who were unable to surrender had more challenging experiences. As different attachment styles have different ways of coping, it is therefore likely they will differ in their ability to surrender to the experience which research has shown leads to more mystical or challenging experiences (Aday et al., 2021).

H1: Attachment Anxiety will have a Positive association with Mystical Experience

We hypothesise that greater attachment anxiety will predict stronger mystical experiences. Stauffer et al. (2021) found that higher baseline attachment anxiety was related to stronger mystical experiences in a psychedelic-assisted therapy group. This seems counterintuitive as low anxiety (i.e. security) would make more sense due to their ease with novel situations and ability to regulate their emotions (Wallin, 2007). Individuals high in attachment anxiety tend to over-express their anxiety and rely largely on others for support. This could be viewed as a beneficial way of coping with emotions

during the psychedelic experience as it has been found that not suppressing the experience leads to a better quality of experience (Wolff et al., 2020). Similarly, a strong reliance on others to regulate their distress, a desire to be loved and a weaker sense of self could result in a good ability to surrender to the experience (Cherniak et al., 2022.), thus leading to stronger mystical experiences. In parallel to relying on others and having a weaker sense of self, Zhang Labouvie-Vief (2004) spoke about a propensity for those with attachment anxiety to use 'passive' coping strategies and 'enmesh' themselves within situations. These potential qualities of passivity and enmeshment could suggest an embeddedness in the situation, therefore, perhaps a willingness to let go of themselves. This quality of giving oneself up to a situation or being embedded in it could therefore resemble a surrender to psychedelic experience. Furthermore, an intense desire for connection could mean that anxiously attached individuals could be more open to the 'unity' component of a mystical experience (Barrett et al., 2015).

H2: Attachment Avoidance will have a negative association with Mystical Experience

We hypothesise that greater attachment avoidance will result in weaker mystical experiences. Stauffer et al. (2021) found that attachment avoidance strongly correlated with challenging rather than mystical experiences. People with avoidant attachment styles typically suppress or minimise emotions which is potentially maladaptive when taking psychedelics (Frymann et al., 2022). In a psychedelic setting, avoiding distressing emotional material has been shown to make the experience more distressing (Wolff et al., 2020). An overall more distressing experience could limit their ability to experience the positive effects of mystical experience. Furthermore, a characteristic intolerance of novel situations could lead to struggling to surrender to the experience, thus lowering their chances of having a mystical experience (Stauffer et al., 2021).

Attachment and Communitas

Psychedelics often enhance both acute and enduring feelings of interconnectedness with others and the world (Kettner et al., 2021). However, attachment theory would suggest that some are able to connect better than others in everyday life. At the time of writing, the area of attachment styles affecting communitas or connection during psychedelic experiences has not been studied. For this area, we will review how those with different attachment styles generally approach intimacy and how they interact within non-psychedelic studies. By inducing potent affective and regressive states (Grinspoon and Doblin, 2001), psychedelics may activate the attachment system and trigger attachment hyperactivating or deactivating strategies; designed to elicit proximity or distance from others (Wallin, 2007). This could then impact the felt sense of connection during the acute experience.

H3: Attachment Anxiety will have a relationship with Communitas

We hypothesise that anxious attachment will have a relationship with communitas although the direction is unclear. Those with anxious attachment are continuously seeking out connection and tend to use interpersonal relationships to manage their emotions (Gökdağ, 2021). Therefore, a desire for connection and reaching out to others could mean experiencing greater communitas. Similar to secure attachment, those with anxious attachment styles are more likely to self-disclose (Mikulincer & Nachshon, 1991). This is of interest as the therapeutic benefits of communitas following a ceremony was partially mediated by the level of self-disclosure used (Kettner et al., 2021). In non-psychedelic studies, Rom & Mikulincer (2003) studied how different attachment styles related to group interactions. Those with anxious attachment were observed to do worse on the set group tasks, as their main goal was around closeness to other group members. Furthermore, the same study found that if group cohesion was high, then those with anxious attachment did well on group tasks; potentially because their needs for

attachment security were met (Rom & Mikulincer, 2003). Therefore, it could be the case that those with attachment anxiety will have higher communitas, especially when they already have feelings of closeness to the group. Conversely, it could be the case that low anxiety i.e. security positively predicts communitas. Attachment theory proposes that those with secure attachment are comfortable with closeness and support-seeking. In secure attachment, a positive attitude towards seeking care and towards others could facilitate higher levels of communitas and connection. Furthermore, those with attachment security are more likely to use self-disclosure (Mikulincer et al., 1991). Therefore, this ability to self-disclose could lead to higher levels of communitas. Kettner et al. (2021) also found that psychedelic communitas was indirectly mediated by perceived level of emotional support. Those who are securely attached, having learned to view others as emotionally available and supportive, are potentially more likely to perceive greater emotional support; so perhaps more communitas.

H4: Attachment Avoidance will have a negative relationship with Communitas

We predict that attachment avoidance will have a negative relationship with communitas. Those scoring highly on attachment avoidance tend to avoid intimacy with others, suppress emotional expression and be excessively self-reliant. Therefore, a group situation whilst on a psychedelic substance that increases emotional vulnerability could be threatening for individuals with avoidant attachment. Furthermore, a learned desire to keep a distance from others would appear counterproductive to achieving psychedelic communitas. Contrary to the other attachment styles, those with avoidant attachment are less likely to self-disclose in a group setting (Mikulincer & Nachshon, 1991). This could be detrimental to their levels of communitas as self-disclosure predicts communitas (Kettner et al., 2021). A non-psychedelic study of group dynamics showed that those with attachment avoidance displayed negative views of others, were dismissing of the benefits

of group interactions, prioritised self-reliance and distance, and showed a lack of interest in group closeness and cohesion (Rom & Mikulincer (2003). The same study also found that when group cohesion was high, persons with avoidant attachment tended to do worse on tasks. The researchers concluded that attachment security increased, rather than decreased distress. An avoidance of positive and secure attachment figures seemed to maintain their negative cognitions of others, even within a supportive group environment. Therefore, it is possible to predict that those with attachment avoidance could find the idea of intense togetherness threatening and distressing, resulting in a need to distance themselves and experience less communitas.

Attachment and Change in Wellbeing

Overall, studies have shown that psychedelics lead to increased wellbeing following the experience (Griffiths et al., 2008). Given this, we would expect to see that people of all attachment styles would benefit, but perhaps to varying degrees. It is possible that their experiences could be integrated differently due to having different relationships to their emotions, cognition, self and other perceptions. Whilst little research has been done in this area, psychedelic integration is being widely practised within psychedelic-assisted psychotherapy to sustain the beneficial effects (Wilkinson, 2017). In non-psychedelic settings, integrating learned experiences from therapy into day to day life is commonly practised to maintain therapeutic gains (Wilkinson, 2017). Furthermore, non-psychedelic studies have shown that attachment style plays a part in recovery following psychotherapy (Shechtman & Rybko, 2004; Tasca et al., 2004).

H5: Attachment Anxiety will have a relationship with Change in Wellbeing

The relationship with anxious attachment and change in wellbeing is likely to be more nuanced. Whilst those with attachment anxiety tend to have better outcomes of group therapy compared to those with avoidant attachment (Shechtman & Rybko, 2004),

it is difficult to ascertain the direction of the relationship with wellbeing. In non-psychedelic therapeutic group settings, Tasca et al. (2004) found that those with anxious attachment styles were more likely to have positive therapeutic outcomes due to their good engagement with a full course of treatment. However, it has been found that those with attachment anxiety were more likely to experience distress at the end of therapy, perhaps due to the loss of the therapeutic relationship (Sauer et al., 2010). Additionally, those with anxious attachment may at times struggle to reflect effectively on an experience due to overwhelming feelings (Wallin, 2007). This could potentially impair their ability to integrate the experience and obtain sustained wellbeing benefits. Furthermore, it is more likely that securely attached individuals (i.e. low in anxiety and avoidance) will have increased changes in wellbeing following the psychedelic experience. In a non-psychedelic setting, securely attached individuals tend to benefit most from group therapy (Shechtman & Rybko, 2004). Cherniak et al. (2022) hypothesises that securely attached peoples' ability to reflect, connect and understand their emotions could lead to them being better able to integrate the experience and bring about meaningful changes in their lives.

H6: Attachment Avoidance will have a negative relationship with change in Wellbeing

We expect to see a negative relationship between attachment avoidance and change in wellbeing. In the literature, those with avoidant attachment tend to benefit less from group psychotherapy compared to the other attachment styles (Shechtman & Rybko, 2004; Sachse et al, 2002). Horowitz et al. (1993) found that avoidantly attached outpatients showed less positive clinical outcomes compared to those with secure or anxious attachment. Indeed, avoidantly attached patients have been shown to disengage with therapy and not finish treatment, which affects treatment outcomes (Tasca et al., 2004). Therefore, it is possible that a psychological avoidance of processes that facilitate

healing could be detrimental to subsequent increases in wellbeing. Avoidantly attached individuals tend to deny or minimise unpleasant memories and feelings and, therefore, reflect (Wallin, 2007). This inability to reflect could make them less likely to integrate their experiences, thus deriving less benefit from increased wellbeing following the experience.

H7: Mystical Experiences and Communitas will predict changes in Wellbeing

We expect to see a relationship between mystical experiences and changes in long-term wellbeing. Psychedelic research has repeatedly shown that amongst other predictors (i.e. surrender, absorption, etc), the degree of mystical experience is at present the biggest predictor of changes in wellbeing (Griffiths et al., 2011; Haijen et al., 2018; Russ et al., 2019). Research has found that mystical experiences were more predictive of positive outcome compared to the hallucinatory aspects, suggesting that it is not only the pharmaceutical properties but rather the quality of the experience that leads to long term efficacy (Roseman, et al., 2018).

We expect to see a positive relationship between communitas and wellbeing. In the only study about psychedelic communitas, they found that the amount of communitas experienced during a psychedelic ceremony predicted increased wellbeing and social connectedness which was sustained for up to four weeks (Kettner et al., 2021). Positive mood following the psychedelic experience has been shown to be mediated by increased social connectedness in a naturalistic, festival setting (Forstmann et al., 2020). Participants in trials for psilocybin for treatment-resistant depression have self-reported that the strongest mediating factor for the success of treatment was feelings of connectedness (Carhart-Harris et al., 2018). Non-psychedelic studies of psychotherapy have shown that therapeutic alliance is the biggest predictor of positive mental health outcomes, regardless of modality (Strupp & Hadley., 1979). Finally, studies have shown

that connectedness is one of the main contributing factors in mental health recovery (Leamy et al., 2011). With connection being such a strong transdiagnostic predictor of outcomes, it is reasonable to hypothesise that a richer form of connection (i.e. communitas) during a psychedelic experience could lead to changes in wellbeing following the experience.

Justification for Design

The study is an observational, retrospective cross-sectional study with three time points (all answered retrospectively):

1. Baseline measure of attachment before the psychedelic experience
2. Measure of mystical experience and communitas during the experience
3. Measure of wellbeing since the experience

Self-selected participants responded to the survey in reference to their 'most significant psychedelic experience'. Participants were made aware that they had to have taken a 'classic' psychedelic to take part. It was hoped that by answering in relation to one specific experience, memory recall may be better, allowing more accurate data. Furthermore, it was felt that 'most significant' would encourage participants to report on an experience which would be strong enough to have the potential to bring positive or negative acute and/or long-term effects. The data for this study will include a full sample and a subsample of people who took psychedelics with at least one other person; allowing for communitas – a group variable to be measured. An anonymous, retrospective online survey design was used due to it being low-cost, accessible, and possible to fit into a doctoral thesis time frame. Retrospective studies can lack accuracy of event recall (Russ et al., 2019). Surveys can be limited by being a self-selected sample and are susceptible to demand characteristics (Russ et al., 2019). However, surveys are frequently used in this area of research and can amass large data sets (Carbonaro et al., 2016; Haijen et al., 2018;

Watts et al., 2019). Additionally, as this survey asks about illegal drug use, the anonymity that an online survey permits, ensures minimum risk of harm to prospective participants. Despite the above limitations, it is the most feasible way to conduct psychedelic research under the constraints of a doctorate research thesis. Experimental psychedelic research can be extremely expensive due to using controlled drugs and have complex ethical considerations which would surpass the confines of a doctorate research thesis. However, observational studies are beneficial in this area of research as they allow for a more naturalistic setting whereby users are more likely to take psychedelics in the company of others, an aspect which is not easily possible in experimental settings (Kettner et al., 2021). A naturalistic setting is further preferable as it reflects the environment in which these substances are commonly taken (Forstmann et al., 2020). We are defining group size as anyone who responded saying that at least one other person took psychedelics with them. This could be interpreted as a small number of people to be defined as a group. However, it is necessary to increase sample size as a significant amount of users said they took the psychedelic alone.

We will be using a series of five multiple regressions to analyse the results. This will allow us to see whether there are relationships between the variables. A limitation of this method is that it can only tell us that there are relationships or the relative strength of these. It cannot tell us how these relationships may be occurring. A more sophisticated method of testing models such as path analysis would enable us to see how these relationships are mediated and/or moderated by each other e.g. whether mystical experiences moderates the relationship between attachment and changes in wellbeing (Kline, 2015). However, path analysis requires robust evidence to support each theorised path in which there was insufficient evidence base to support (Kline, 2015). Therefore, a

more exploratory approach was chosen to see if the relationships existed in the first place using multiple regression.

Justifications of Measures

Attachment

We will be using the Experiences in Close Relationships Short form (ECR-S) to measure attachment, which was developed by Wei et al. (2007). The authors recommend using the short form (12 items) due to its equivalence in psychometric properties to the original ECR. The measure has good internal consistency, test-retest reliability and construct validity (Wei et al., 2007). Since its development, the ECR-S has been validated with Chinese and Korean cohorts (Peng et al., 2021; Lee & Shin, 2019). The scale measures attachment through two separate dimensions of attachment anxiety and attachment avoidance as continuous variables. Those scoring highly on both or either dimension are insecurely attached. Low scores on both represent attachment security. The measure asks participants to answer in relation to their attachment more generally rather than in relation to a specific romantic partner. We have adapted the measure by putting it in the past tense, in order to get a score of their attachment style prior to their reported psychedelic experience. This is necessary in order to measure attachment as a baseline trait/state 'set' variable with predictive potential. A possible limitation is in regards to it being a self-report measure which may miss some unconscious aspects of attachment (Mikulincer & Shaver, 2016).

Mystical Experience

To measure mystical experience, we will be using the revised Mystical Experiences Questionnaire (MEQ), also known as MEQ30 (Maclean et al., 2012). The revised MEQ is recommended for future research by Barrett et al. (2015). The MEQ is a well-established and widely used measure for assessing mystical experiences in

psychedelic research (Barrett et al., 2015; Maclean et al., 2012). A composite score of the factors (Unity, positive mood, transcendence of time and space, ineffability) will be used as this is most predictive of positive outcomes following the experience. The MEQ is well validated, has good internal reliability and conversion reliability alongside other similar measures (Barrett et al., 2015).

A limitation of the MEQ Is its use of non-secular language which is currently being contested in the field due to fears it could damage the credibility of psychedelic science. Some feel that using mystical language gives the impression that these constructs cannot be measured or are inaccessible to scientific explanation (Sanders & Zijlmans, 2021). Furthermore, they could prime individuals to interpret their experiences through the frame of mysticism and detract from their own interpretations (Sanders & Zijlmans, 2021). This makes some researchers worry that this use of language or explanations could alienate psychedelics from mainstream science.

An alternative would be to use the Emotional Breakthrough Inventory (EBI) which has been shown to complement the MEQ and predicts positive outcomes (Roseman et al., 2019). This measures experiences of emotional breakthrough, cathartic emotional release, and resolution of challenging experiences. However, this measure is too specific to be used on its own as a measure of overall quality of the experience. Finally, it has not been used in previous studies with attachment and psychedelics. However, a measurement of EBI is included in the survey by another researcher so there will be an opportunity to explore EBI in relation to attachment and wellbeing. This would be in keeping with researcher'' request for MEQ to be measured alongside more psychological measures such as the EBI to better define what leads to positive outcomes (Roseman et al., 2019; Kangaslampi, 2023).

Communitas

We will use the communitas scale (Kettner et al., 2021) to measure communitas. At the time of writing, this is the only scale which has been validated in psychedelic settings and is specific to them. Furthermore, it has shown to be predictive of positive wellbeing outcomes (Kettner et al., 2021). The measure has good internal consistency and construct validity alongside other validated measures i.e. social connectedness after the acute experience (Kettner et al., 2021). When discussing communitas, it may seem interchangeable with connection at times. However, in this study, we are seeing communitas as a type of self-to-other connection which is experienced in psychedelic contexts. Several of the items used in the scale can attest to this such as 'I felt a sense of belonging with other participants' or 'I felt a bond with my fellow participants that I could not experience outside of the experience'. Whereas some are more specific to the shared humanity and transcendence of social status aspects of communitas. A limitation is that the scale potentially lacks cross-cultural validity due to it being tested with a WEIRD (White, Educated, Industrialised, Rich, Demographic) sample (Kettner et al., 2021).

Wellbeing

Wellbeing will be measured using the Short Warwick-Edinburg Mental Wellbeing Scale (SWEMWS) developed by Stewart-Brown et al. (2009). It is widely used as a continuous measure of both mental health and mental illness. Patients have shown a preference for more positively worded measures, and it has good content validity and strong construct validity with other measures of mental health (Tennant, 2007; Shah et al., 2021). Furthermore, it makes sense to use a measure of wellbeing rather than mental health when sampling a non-clinical population. The measure has also been used in other psychedelic studies (Haijen et al., 2008; Kettner et al., 2021), however most studies have shown a timescale of up to two or four weeks after the experience. As far as we are aware, wellbeing following the experience has been measured up to 14 months after the

experience (Griffiths et al.,2008; 2011). We will be measuring how much people attribute their responses to the SWEMWS to their psychedelic experience. We will be adapting the SWEMWS to give a change score. I.e. 'Since the experience I have…' A limitation of this is that it requires memory recall and inaccuracies could apply where an experience was several years ago. However, it will give an indication of their changes in short or long-term wellbeing following the experience, depending on how long ago their psychedelic experience was.

Control variables

We are taking a subjective measure of drug dose as higher dose has been found to be predictive of higher mystical experiences (Griffiths et al., 2011; Haijen et al., 2018). Drug doses can be unreliable to measure and calculate, especially when mixed with other substances. Therefore, we will be asking participants to report on how strong the effect of the psychedelic substance was using likert scale. Feelings of closeness and security with other group members are likely to have a confounding impact on how the group situation is experienced (Rom & Mikulincer, 2003). Therefore, we will be taking a measure of perceived closeness to other group members, prior to the experience, asking participants to rate this using an adapted version of Aron et al. (1992) Inclusion of self in other scale.

Overall, this study aims to look at whether attachment style can predict an individual's response to acute and long-term psychedelic states. Baseline attachment will be measured and explored as to whether it has a relationship with level of mystical experience and communitas during the acute psychedelic phase. Both of these factors are predictive of changes in wellbeing following the experience, so this will also be measured. We expect to see a difference in how people with different attachment styles relate to the psychedelic experience and subsequent benefits. This could be an interesting

addition to the evidence base on predicting who can benefit more or less from psychedelics.

References

Aday, J. S., Davis, A. K., Mitzkovitz, C. M., Bloesch, E. K., & Davoli, C. C. (2021). Predicting Reactions to Psychedelic Drugs: A Systematic Review of States and Traits Related to Acute Drug Effects. In *ACS Pharmacology and Translational Science,* 4 (2). https://doi.org/10.1021/acsptsci.1c00014

Agin-Liebes, G., Ekman, E., Anderson, B., Malloy, M., Haas, A., & Woolley, J. (2021). Participant Reports of Mindfulness, Posttraumatic Growth, and Social Connectedness in Psilocybin-Assisted Group Therapy: An Interpretive Phenomenological Analysis. Journal of Humanistic Psychology, 0(0). https://doi.org/10.1177/00221678211022949

Andersen, K. A., Carhart-Harris, R., Nutt, D. J., & Erritzoe, D. (2021). Therapeutic effects of classic serotonergic psychedelics: A systematic review of Modern-era clinical studies. Acta Psychiatrica Scandinavica, 143(2), 101–118. https://doi.org/10.1111/acps.13249

Anderson, B. T., Danforth, A., Daroff, P. R., Stauffer, C., Ekman, E., Agin-Liebes, G., Trope, A., Boden, M. T., Dilley, P. J., Mitchell, J., & Woolley, J. (2020). Psilocybin-assisted Group Therapy for Demoralized Older Long-Term AIDS Survivor Men: An open-label safety and feasibility pilot study. *eClinicalMedicine*, *27*. https://doi.org/10.1016/j.eclinm.2020.100538

Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of Other in the Self Scale and the Structure of Interpersonal Closeness. *Journal of Personality and Social Psychology, 63*(4).

Barrett, F. S., Johnson, M. W., & Griffiths, R. R. (2015). Validation of the Revised Mystical Experience Questionnaire in Experimental Sessions with Psilocybin. *Journal of Psychopharmacology, 29*(11). https://doi.org/10.1177/0269881115609019

Belouin, S. J., & Henningfield, J. E. (2018). Psychedelics: Where We Are Now, Why We Got

Here, What We Must Do. *Neuropharmacology*, *142*. https://doi.org/10.1016/j.neuropharm.2018.02.018

Bogenschutz, M. P., Forcehimes, A. A., Pommy, J. A., Wilcox, C. E., Barbosa, P. C. R., & Strassman, R. J. (2015). Psilocybin-assisted treatment for alcohol dependence: A proof of-concept study. Journal of Psychopharmacology, 29(3), 289–299. https://doi.org/10.1177/0269881114565144

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 Psychotherapy 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

Bowlby, J. (1969) *Attachment and Loss, Basic Books*. New York,NY.

Carbonaro, T. M., Bradstreet, M. P., Barrett, F. S., MacLean, K. A., Jesse, R., Johnson, M. W., & Griffiths, R. R. (2016). Survey study of challenging experiences after ingesting psilocybin mushrooms: Acute and enduring positive and negative consequences. Journal of Psychopharmacology, 30(12), 1268–1278. https://doi.org/10.1177/0269881116662634

Carhart-Harris, R. L., Bolstridge, M., Rucker, J., Day, C. M., Erritzoe, D., Kaelen, M., & Nutt, D. J. (2016). Psilocybin with psychological support for treatment-resistant depression: an open-label feasibility study. *The Lancet Psychiatry*, *3*(7), 619-627

Carhart-Harris, R. L., Erritzoe, D., Haijen, E., Kaelen, M., & Watts, R. (2018). Psychedelics and Connectedness. In *Psychopharmacology*, *235*(2). https://doi.org/10.1007/s00213-017-4701-y

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.

Carhart-Harris, R., Giribaldi, B., Watts, R., Baker-Jones, M., Murphy-Beiner, A., Murphy, R., Martell, J., Blemings, A., Erritzoe, D., & Nutt, D. J. (2021). Trial of psilocybin versus escitalopram for depression. New England Journal of Medicine, 384(15), 1402–1411. https://doi.org/10.1056/nejmoa2032994

Cherniak, A. D., Gruneau-Brulin, J., Mikulincer, M., Östlind, S., Carhart-Harris, R., & Granqvist, P. (2022). Psychedelic Science of Spirituality and Religion: An Attachment-Informed Agenda Proposal. *The International Journal for the Psychology of Religion.* https://doi.org/10.1080/10508619.2022.2148061

Forstmann, M., Yudkin, D. A., Prosser, A. M. B., Heller, S. M., & Crockett, M. J. (2020). Transformative Experience and Social Connectedness Mediate the Mood-Enhancing Effects of Psychedelic Use in Naturalistic Settings. *Proceedings of the National Academy of Sciences of the United States of America*, *117*(5), 2338–2346. https://doi.org/10.1073/pnas.1918477117

Frymann, T., Whitney, S., Yaden, D. B., & Lipson, J. (2022). The Psychedelic Integration Scales: Tools for Measuring Psychedelic Integration Behaviors and Experiences. *Frontiers in Psychology*, *13*.

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. In *Frontiers in Psychiatry*,10. https://doi.org/10.3389/fpsyt.2019.00943

Gasser, P., Kirchner, K., & Passie, T. (2014). LSD-assisted psychotherapy for anxiety associated with a life-threatening disease: A qualitative study of acute and sustained subjective

effects. Journal of Psychopharmacology, 29(1), 57–68. https://doi.org/10.1177/0269881114555249

George, J. R., Michaels, T. I., Sevelius, J., & Williams, M. T. (2019). The Psychedelic Renaissance and The Limitations of a White-Dominant Medical Framework: a Call for Indigenous and Ethnic Minority Inclusion. *Journal of Psychedelic Studies*, *4*(1), 4–15. https://doi.org/10.1556/2054.2019.015

Gökdağ, C. (2021). How does interpersonal emotion regulation explain psychological distress? The roles of attachment style and social support. Personality and Individual Differences, 176. https://doi.org/10.1016/j.paid.2021.110763

Gregoire, C. (2020). Inside The Movement to Decolonize Psychedelic Pharma. NEO.LIFE. https://proto.life/2020/10/inside-the-movement-to-decolonize-psychedelic-pharma/

Grinspoon, L., & Doblin, R. (2001). Psychedelics as Catalysts of Insight-Oriented Psychotherapy. *Social Research*, *68*(3), 677–695. http://www.jstor.org/stable/40971906

Griffiths, R. R., Richards, W. A., Johnson, M. W., McCann, U. D., & Jesse, R. (2008). Mystical-type Experiences Occasioned by Psilocybin Mediate the Attribution of Personal Meaning And Spiritual Significance 14 Months Later. *Journal of Psychopharmacology*, *22*(6), 621–632. https://doi.org/10.1177/0269881108094300

Griffiths, R. R., Johnson, M. W., Richards, W. A., Richards, B. D., McCann, U., & Jesse, R. (2011). Psilocybin Occasioned Mystical-Type Experiences: Immediate and Persisting Dose-Related Effects. *Psychopharmacology*, *218*(4), 649–665. https://doi.org/10.1007/s00213-011-2358-5

Griffiths, R. R., Johnson, M. W., Carducci, M. A., Umbricht, A., Richards, W. A., Richards, B. D., Cosimano, M. P., & Klinedinst, M. A. (2016). Psilocybin produces substantial and

sustained decreases in depression and anxiety in patients with life-threatening cancer: A randomized double-blind trial. *Journal of psychopharmacology (Oxford, England)*, *30*(12), 1181–1197. https://doi.org/10.1177/0269881116675513

Haijen, E. C. H. M., Kaelen, M., Roseman, L., Timmermann, C., Kettner, H., Russ, S., Nutt, D., Daws, R. E., Hampshire, A. D. G., Lorenz, R., & Carhart-Harris, R. L. (2018). Predicting Responses to Psychedelics: A Prospective Study. *Frontiers in Pharmacology*, *9*(NOV). https://doi.org/10.3389/fphar.2018.00897

Hartogsohn, I. (2017). Constructing Drug Effects: A History of Set and Setting. *Drug Science, Policy and Law*, *3*, 205032451668332. https://doi.org/10.1177/2050324516683325

Hayes, C., Wahba, M., & Watson, S. (2022). Will Psilocybin Lose its Magic in the Clinical Setting? *Therapeutic Advances in Psychopharmacology*, *12*, 204512532210908. https://doi.org/10.1177/20451253221090822

Horowitz, L. M., Rosenberg, S. E., & Bartholomew, K. (1993). Interpersonal Problems, Attachment Styles, And Outcome In Brief Dynamic Psychotherapy. *Journal of Consulting and Clinical Psychology,61*, 549–560.

Johnson, M. W., Garcia-Romeu, A., & Griffiths, R. R. (2017). Long-term follow-up of psilocybin-facilitated smoking cessation. *The American journal of drug and alcohol abuse*, *43*(1), 55–60. https://doi.org/10.3109/00952990.2016.1170135

Leamy, M., Bird, V., Le Boutillier, C., Williams, J., & Slade, M. (2011). Conceptual Framework for Personal Recovery in Mental Health: Systematic Review and Narrative Synthesis. *The British journal of psychiatry : the journal of mental science*, *199*(6), 445–452. https://doi.org/10.1192/bjp.bp.110.083733

Leary, T., Litwin, G. H., & Metzner, R. (1963). Reactions To Psilocybin Administered In a

Supportive Environment. *The Journal of nervous and mental disease*, *137*, 561–573. https://doi.org/10.1097/00005053-196312000-00007

Lee, J.-Y., Shin, Y.-J. (2019). Experience in Close Relationships Scale-Short Version (ECR–S) Validation with Korean College Students. *Measurement and Evaluation in Counseling and Development, 52(*2), 119–127.

Lleras, C. (2005). Path Analysis. *Encyclopedia of Social Measurement*, *3*, 25–30.

Murphy, R., Kettner, H., Zeifman, R., Giribaldi, B., Kartner, L., Martell, J., Read, T., Murphy-Beiner, A., Baker-Jones, M., Nutt, D., Erritzoe, D., Watts, R., & Carhart-Harris, R. (2022). Therapeutic Alliance and Rapport Modulate Responses to Psilocybin Assisted Therapy for Depression. *Frontiers in Pharmacology*, *12*. https://doi.org/10.3389/fphar.2021.788155

Maclean, K. A., Leoutsakos, J. M., Johnson, M. W., & Griffiths, R. R. (2012). Factor Analysis of the Mystical Experience Questionnaire: A Study of Experiences Occasioned by the Hallucinogen Psilocybin. *Journal for the scientific study of religion*, *51*(4), 721–737. https://doi.org/10.1111/j.1468-5906.2012.01685.

Mikulincer, M & Nachshon, O. (1991). Attachment Styles and Patterns of Self-Disclosure. Journal of Personality and Social Psychology–- PSP. 61. 321-331. 10.1037//0022-3514.61.2.321.

Mikulincer, M., & Shaver, P. R. (2016). *Attachment In Adulthood: Structure, Dynamics, and Change* (Second Edition). Guilford Press.

Nutt, D. (2023). *Psychedelics: The revolutionary drugs that could change your life – a guide from the expert.* (First Edition). Yellow Kite.

Osório, F.deL., Sanches, R. F., Macedo, L. R., Santos, R. G., Maia-de-Oliveira, J. P., Wichert-

Ana, L., Araujo, D. B., Riba, J., Crippa, J. A., & Hallak, J. E. (2015). Antidepressant effects of a single dose of ayahuasca in patients with recurrent depression: a preliminary report. *Revista brasileira de psiquiatria (Sao Paulo, Brazil : 1999)*, *37*(1), 13–20. https://doi.org/10.1590/1516-4446-2014-1496

Kettner, H., Rosas, F. E., Timmermann, C., Kärtner, L., Carhart-Harris, R. L., & Roseman, L. (2021). Psychedelic Communitas: Intersubjective Experience During Psychedelic Group Sessions Predicts Enduring Changes in Psychological Wellbeing and Social Connectedness. *Frontiers in Pharmacology*, *12*. https://doi.org/10.3389/fphar.2021.623985

Kangaslampi, S. (2023). Association Between Mystical-Type Experiences under Psychedelics and Improvements in Well-Being or Mental Health – A Comprehensive Review Of The Evidence. *Journal of Psychedelic Studies*. https://doi.org/10.1556/2054.2023.00243

Peng, J., Xiao, Y., Li, Y., Liang, W., Sun, H., Bao, W., Huang, Q., Zhang, Y., & Wu, S. (2021). Testing the reliability and validity of the Experiences in Close Relationships Scale–Short Form with Chinese college students. *Social Behavior and Personality*, *49*(7). https://doi.org/10.2224/sbp.10400

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 (5). American Psychiatric Association. https://doi.org/10.1176/appi.ajp.2019.19010035

Rom, E., & Mikulincer, M. (2003). Attachment Theory and Group Processes: The Association between Attachment Style and Group-Related Representations, Goals, Memories, and Functioning. *Journal of Personality and Social Psychology 84*(6). https://doi.org/10.1037/0022-3514.84.6.1220

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(1) https://doi.org/10.3389/fphar.2017.00974

Roseman, L., Haijen, E., Idialu-Ikato, K., Kaelen, M., Watts, R., & Carhart-Harris, R. (2019). Emotional breakthrough and psychedelics: Validation of the Emotional Breakthrough Inventory. *Journal of Psychopharmacology*, *33*(9). https://doi.org/10.1177/0269881119855974

Ross, S., Bossis, A., Guss, J., Agin-Liebes, G., Malone, T., Cohen, B., Mennenga, S. E., Belser, A., Kalliontzi, K., Babb, J., Su, Z., Corby, P., & Schmidt, B. L. (2016). Rapid and sustained symptom reduction following psilocybin treatment for anxiety and depression in patients with life-threatening cancer: A randomized controlled trial. *Journal of Psychopharmacology, 30*(12), 1165–1180. https://doi.org/10.1177/0269881116675512

Russ, S. L., Carhart-Harris, R. L., Maruyama, G., & Elliott, M. S. (2019). States and traits related to the quality and consequences of psychedelic experiences. *Psychology of Consciousness: Theory, Research, and Practice, 6*(1). https://doi.org/10.1037/cns0000169

Sachse, J., & Strauss, B. (2002). Attachment Characteristics and Psychotherapy Outcome Following Inpatient Psychodynamic Group Treatment. *Psychotherapie, Psychosomatik, Medizinische Psychologie*, *52*(3-4).

Sanches, R. F., de Lima Osório, F., Dos Santos, R. G., Macedo, L. R., Maia-de-Oliveira, J. P., Wichert-Ana, L., de Araujo, D. B., Riba, J., Crippa, J. A., & Hallak, J. E. (2016). Antidepressant Effects of a Single Dose of Ayahuasca in Patients With Recurrent Depression: A SPECT Study. *Journal of clinical psychopharmacology*, *36*(1), 77–81. https://doi.org/10.1097/JCP.0000000000000436

Sanders, J. W., & Zijlmans, J. (2021). Moving Past Mysticism in Psychedelic Science. *ACS*

Pharmacology and Translational Science 4 (3). https://doi.org/10.1021/acsptsci.1c00097

Sauer, E. M., Anderson, M. Z., Gormley, B., Richmond, C. J., & Preacco, L. (2010). Client attachment orientations, working alliances, and responses to therapy: A psychology training clinic study. Psychotherapy research : *Journal of the Society for Psychotherapy Research, 20*(6). https://doi.org/10.1080/10503307.2010.518635

Sessa, B. (2012). *The psychedelic renaissance: Reassessing the role of psychedelic drugs in 21st century psychiatry and society.* Muswell Hill Press.

Shah, N., Cader, M., Andrews, B., McCabe, R., & Stewart-Brown, S. L. (2021). Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS): Performance in a Clinical Sample in Relation to PHQ-9 and GAD-7. *Health and Quality of Life Outcomes*, *19*(1). https://doi.org/10.1186/s12955-021-01882-x

Shechtman, Z., & Rybko, J. (2004). Attachment Style and Observed Initial Self-Disclosure as Explanatory Variables of Group Functioning. *Group Dynamics: Theory, Research, And Practice, 8*(3). doi: 10.1037/1089-2699.8.3.20.

Siegal, D.J. (1999). *The developing mind: How relationships and the brain interact to shape who we are.* Guildford Press.

Stace, W.T (1960) *Mysticism and Philosophy*. New York: MacMillan Press

Stauffer, C. S., Anderson, B. T., Ortigo, K. M., & Woolley, J. (2021). Psilocybin-Assisted Group Therapy and Attachment: Observed Reduction in Attachment Anxiety and Influences of Attachment Insecurity on the Psilocybin Experience. *ACS Pharmacology and Translational Science*, *4*(2). https://doi.org/10.1021/acsptsci.0c00169

Stewart-Brown, S., Tennant, A., Tennant, R., Platt, S., Parkinson, J., & Weich, S. (2009). Internal Construct Validity of the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS): A

Rasch Analysis Using Data from the Scottish Health Education Population Survey. *Health and Quality of Life Outcomes*, *7*. https://doi.org/10.1186/1477-7525-7-15

Strassman, R. J. (1991). Human hallucinogenic drug research in the United States: A present-day case history and review of the process. *Journal of Psychoactive Drugs, 23*(1). doi:10.1080/02791072.1991.10472572

Strassman, N. (2001). *DMT: The spirit molecule.* (First Edition). Park Street Press.

Strauss, D., de La Salle, S., Sloshower, J., & Williams, M. T. (2021). Research Abuses Against People of Colour and Other Vulnerable Groups in Early Psychedelic Research. *Journal of Medical Ethics*, *48* (1). https://doi.org/10.1136/medethics-2021-107262

Strupp, H. H., & Hadley, S. W. (1979). Specific vs Nonspecific Factors in Psychotherapy. A Controlled Study of Outcome. *Archives of general psychiatry*, *36*(10). https://doi.org/10.1001/archpsyc.1979.01780100095009

Studerus, E., Gamma, A., Kometer, M., & Vollenweider, F. X. (2012). Prediction of Psilocybin Response in Healthy Volunteers. *pLoS ONE*, *7*(2). https://doi.org/10.1371/journal.pone.0030800

Tasca, G. A., Taylor, D., Bissada, H., Ritchie, K., & Balfour, L.(2004). Attachment Predicts Treatment Completion in an Eating Disorders Partial Hospital Program Among Women With Anorexia Nervosa. *Journal of Personality Assessment,83*.

Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J., & Stewart-Brown, S. (2007). The Warwick-Dinburgh Mental Well-Being Scale (WEMWBS): Development and UK Validation. *Health and Quality of Life Outcomes*, *5*. https://doi.org/10.1186/1477-7525-5-63

Trope, A., Anderson, B. T., Hooker, A. R., Glick, G., Stauffer, C., & Woolley, J. D. (2019).

Psychedelic-Assisted Group Therapy: A Systematic Review. *In Journal of Psychoactive Drugs, 51,*(2). *https://doi.org/10.1080/02791072.2019.1593559*

Turner, V. (1969).*Liminality and communitas. The ritual process: Structure and anti-structure.* Routledge.

Van Ijzendoorn, M., Schuengel, C., & Bakermans–Kranenburg, M. (1999). Disorganized Attachment in Early Childhood: Meta-Analysis of Precursors, Concomitants, and Sequelae. *Development and Psychopathology, 11*(2). doi:10.1017/S0954579499002035

Vollenweider, F. X., & Kometer, M. (2010). The neurobiology of psychedelic drugs: Implications for the treatment of mood disorders. Nature Reviews Neuroscience, 11(9), 642–651. https://doi.org/10.1038/nrn2884

Wallin, D. J. (2007). *Attachment in psychotherapy*. Guilford Press.

Watts, R., Day, C., Krzanowski, J., Nutt, D., & Carhart-Harris, R. (2017). Patients' Accounts of Increased "Connectedness" and "Acceptance" After Psilocybin for Treatment-Resistant Depression. *Journal of Humanistic Psychology*, *57*(5). https://doi.org/10.1177/0022167817709585

Watts, R., Kettner, H., Geerts, D., Gandy, S., Kartner, L., Mertens, L., Timmermann, C., Nour, M. M., Kaelen, M., Nutt, D., Carhart-Harris, R., & Roseman, L. (2022). The Watts Connectedness Scale: A New Scale for Measuring a Sense of Connectedness to Self, Others, and World. *Psychopharmacology*, 239. https://doi.org/10.1007/s00213-022-06187-5

Wei, M., Russell, D. W., Mallinckrodt, B., & Vogel, D. L. (2007). The Experiences in Close Relationship Scale (ECR)-Short Form: Reliability, Validity, And Factor Structure. *Journal of Personality Assessment*, *88*(2). https://doi.org/10.1080/00223890701268041

Wilkinson, S. T., Wright, D., Fasula, M. K., Fenton, L., Griepp, M., Ostroff, R. B., & Sanacora, G. (2017). Cognitive Behavior Therapy May Sustain Antidepressant Effects of Intravenous Ketamine in Treatment-Resistant Depression. *Psychotherapy and psychosomatics*, *86*(3). https://doi.org/10.1159/000457960

Winkelman, M. (2010).*Shamanism: a biopsychosocial paradigm of consciousness and healing*. ABC-CLIO.

Wolff, M., Evens, R., Mertens, L. J., Koslowski, M., Betzler, F., Gründer, G., & Jungaberle, H. (2020). Learning to Let Go: A Cognitive-Behavioral Model of How Psychedelic Therapy Promotes Acceptance. *Frontiers in Psychiatry*, *11*. https://doi.org/10.3389/fpsyt.2020.00005

Yaden, D. B., Potash, J. B., & Griffiths, R. R. (2022). Preparing for the Bursting of the Psychedelic Hype Bubble.*JAMA Psychiatry, 79*(10). https://doi.org/10.1001/jamapsychiatry.2022.2546

Zhang, F., & Labouvie-Vief, G. (2004). Stability and Fluctuation in Adult Attachment Style Over a 6-Year Period. *Attachment and Human Development, 6*(4). https://doi.org/10.1080/1461673042000303127

Part 2: Empirical Paper:

Attachment and the Psychedelic Experience:

An Exploration of the Relationship between Attachment Style, Mystical Experience, Emotional Breakthrough, Communitas and Changes in Subsequent Wellbeing.

Abstract

Background: An important theme of psychedelic research is related to predicting beneficial acute and long-term benefits of the psychedelic experience. Contextual factors, also know as the 'set and setting' are known to be predictive of beneficial elements of the psychedelic experience. Here, we will focus on adult attachment style and whether this relates to acute factors of mystical experience, emotional breakthrough, communitas and changes in wellbeing following the experience.

Methods: Nine hundred and nineteen participants completed an online, retrospective survey. Participants answered in regards to their 'most significant experience'. They completed retrospective measures of baseline attachment and acute measures of mystical experience, emotional breakthrough and communitas. A measure of changes in wellbeing since the experience was also reported.

Results: Five multiple regression analyses revealed that attachment anxiety is a weak, positive predictor of acute psychedelic state factors such as mystical experience (β=.11, p=.001), emotional breakthrough (β=.24, p=.001), communitas (β=.10, p=.02) and changes in wellbeing following the experience (β=.12, p=.001). No significant relationship was found between attachment avoidance and the above variables. In separate regression models, we also found that mystical experience (β=.24, p=.001), emotional breakthrough (β=.38, p=.001) and communitas (β =.19, p=.001) accounted for a 43% of variance in changes in long-term wellbeing.

Conclusions: Attachment anxiety seems to influence the acute psychedelic experience as part of the 'set' (and setting). This study begins to explore the predictive potential of baseline attachment and the psychedelic experience, by confirming that these relationships exist in the case of attachment anxiety but not avoidance. However, it is

limited in showing how these relationships occur and how they interact with other contextual factors. Future research should expand on these findings to further support the notion of benefits being maximised and harm minimised regarding the therapeutic potential of psychedelic substances.

Introduction

Background

In the past two decades, the second wave of psychedelic research, also known as the 'psychedelic renaissance' (Sessa, 2012) is progressing through its infancy. Substances being studied include (but not exclusively) the classic psychedelics such as psilocybin ('magic mushrooms'), Lysergic Acid Diethylamide (LSD), Dimethyltryptamine (DMT), ayahuasca, 5-methoxy-N,N-dimethyltryptamine (5-MeO-DMT), mescaline and analogues which exert their influence predominantly through serotonergic (5-HT) agonism (George et al., 2019). Psychedelics have been used ceremonially for millennia by indigenous communities where their healing potential was first discovered. Scientific research into the use and effects of psychedelics started in the 1950s when they were discovered by the western world (George et al., 2019). In parallel, these substances were being used recreationally and by the counterculture movement, all of which led to much popular media coverage. Early promising findings were discovered such as the treatment potential of LSD with depression, anxiety, addiction and psychosomatic diseases (Fuentes et al., 2020). However, this all took a downturn due to unethical practices (particularly with ethnic and minoritized groups), unsound research methodologies and a lack of control groups (Strassman, 1991). Some studies' denial of the importance of context (or 'set and setting') led to unfavourable and harmful outcomes (Carhart-Harris et al., 2018). This, coupled with psychedelic's recreational association with counterculture protest movements of 1960/70s America and negative press coverage, led to many psychedelics becoming schedule I controlled substances (Belouin & Henningfield, 2018; George et al., 2019). This led to a hiatus in research until the 2000s. Despite the limited research and stringent controls on these substances, there has been a sustained psychedelic culture

within which these drugs have been used in unsanctioned (until recently) ceremonial, therapeutic and in social settings through the period between 1970 and the present day .

Recent research has shown promising therapeutic outcomes with a range of mental health difficulties such as treatment resistant depression, anxiety, trauma, end of life anxiety and addiction (Reiff et al., 2020). Perhaps most notably; changes in wellbeing following a psychedelic experience in both clinical and non-clinical samples (Griffiths et al., 2011; Haijen et al., 2018; Russ et al., 2019). However, with vast variation in sample populations, research methodologies and controlled drug restrictions, there is still a lot to be learned (Kangaslampi, 2023). Particularly when it comes to individual differences predicting who may benefit the most from taking psychedelics and why. This is understandably the focus of many studies to minimise risk and maximise benefit; especially where the use of psychedelics is being considered therapeutically via Psychedelic-Assisted Psychotherapy (PAP) (Hayes et al., 2022). Yaden et al. (2022) acknowledged the current media 'hype bubble' from presenting psychedelics as a 'panacea' which risks the restrictions, stigma, and unpopularity of the 1950s/60s being repeated if harm occurs. To prevent this, they suggested that rigorous, unbiased research needs to take place before psychedelics are used therapeutically with clinical populations.

One way of doing this is by researching predictors of the acute psychedelic experience ('state' factors and experiences whilst on psychedelics) and long-term mental health and wellbeing outcomes. Contextual and environmental factors have been shown to play a huge role in how these substances are experienced (Carhart-Harris et al., 2018). Amongst psychedelic users and within psychedelic research, these contextual factors are known as the 'set and setting'. 'Set' refers to trait and state factors such as mental health, personality, mood, intention and expectations before the experience. 'Setting' refers to the physical, cultural and societal environment in which the experience is taking place

(Hartogsohn, 2017). Both the set and setting are well documented to impact the acute psychedelic experience, which in turn impacts long-term wellbeing outcomes following the experience (Aday et al., 2021; Roseman et al., 2018). Being aware of the contextual factors which predict therapeutic effects can help reduce challenging experiences and harm and increase long-term therapeutic benefits (Russ et al., 2018). Finally, understanding these predicting factors could help inform harm reduction. It could also provide the media with accurate and *balanced* research to manage potential users' expectations (Carhart-Harris et al., 2018; Hartogohn, 2017). Related to this, Carhart-Harris et al. (2018) hypothesise a cultural feedback loop in which the 'setting' of public opinion and media regarding psychedelics feeds into the 'set' of peoples' expectations. This then effects acute psychedelic experiences and long-term outcomes, which then feeds back into media representations, and back into users 'set' and expectations.

Acute Psychedelic 'State' Predictors of Long-Term Outcomes

At the time of writing, having a mystical experience during the acute psychedelic phase is one of the strongest predictors for changes in long-term wellbeing amongst psychedelic users (Griffiths et al., 2011; Haijen et al., 2018; Russ et al., 2019). This is interesting as unlike common pharmaceuticals, the quality of the experience is more predictive of long-term benefits compared to some of the pharmaceutical properties (Roseman et al., 2018). Mystical experiences involve a profound sense of unity, sacredness, truth, positive mood, ineffability and transcendence of time and space (Stace, 1960). Mystical experiences describe the quality of the experience. However, there has been debate in the psychedelic research community around the non-secular, non-scientific language used which some feel implies these constructs cannot be measured empirically (Sanders & Zijlmans, 2021). Having a challenging experience after taking psychedelics has been shown to have more of a nuanced relationship with changes in wellbeing (Watts

et al., 2017). A challenging acute psychedelic experience can still lead to positive wellbeing outcomes (Carbonaro et al., 2016). This makes sense given in that in both traditional and psychedelic-assisted therapy, difficult memories, traumas and feelings arise which are worked through (Nutt, 2023).

To overcome this, research has started to focus on other, more tractable constructs, such as 'emotional breakthrough' as a more psychological construct which accounts for resolution of challenging experiences (Roseman et al., 2019). It describes emotional release or catharsis (Roseman et al., 2019). Some participants report a physical release of emotion i.e. crying, followed by a strong sense of relief. Others report connecting to deep, challenging emotions then experiencing a sense of lightness or relief (Roseman et al., 2019). Emotional breakthrough during a psychedelic experience is associated with greater changes in wellbeing (Murphy et al., 2022; Roseman et al., 2019). Roseman et al. (2019) have suggested that emotional breakthrough be measured alongside mystical and challenging experiences, as all three constructs adequately differ from one another, and provide a range of 'state' predictors in changes in wellbeing.

Nonetheless, it is important to note that some challenging experiences, especially those of an extended duration can also be predictive of long-lasting negative effects such as suicidality, psychosis or flashbacks for a small minority (Carbonaro et al., 2016; Nutt, 2023). The aforementioned authors discuss that whilst rare, long-lasting harm usually results from non-therapeutic settings where the user has an unsafe and/or unsupportive set and setting. Respondents in Carbonaro et al's (2016) survey about 'bad trips' did not have the necessary screening or preparation which is present in psychedelic assisted therapy. Current, stringently controlled trials of psychedelic assisted therapy have led to minimal long-term risk (Nutt, 2023). Carbonaro et al (2016) note that cases in clinical trials which have had negative aftereffects of up to a month have been addressed by the researchers

and therapists. Nonetheless, it highlights the need for further research into set and setting to ascertain who should take psychedelics and how.

In non-psychedelic studies, connectedness is transdiagnostically an important factor in mental health recovery (Leamy et al., 2011). This however, along with the group experience, has been overlooked in psychedelic studies (Kettner et al., 2021). Research into taking psychedelics as part of a group (i.e. retreat/ceremony setting) has shown that psychedelic feelings of 'communitas' leads to increases in wellbeing and social-connectedness in up to four weeks after (Kettner et al., 2021). Communitas describes a strong sense of harmony and belonging with others which transcends social hierarchy and feels unique to the experience (Kettner et al., 2021). Additionally, in a qualitative study with psilocybin, Watts et al. (2017) found that participants with treatment resistant depression attributed their recovery to feeling more connected.

'Set and Setting' as predictors for Psychedelic Acute State Factors

This evidence of 'state' acute psychedelics factors has begun to pave the way in our understanding of what types of psychedelic experience lead to beneficial wellbeing outcomes. Therefore, it makes sense to study factors which may predict these positive psychedelic states. Here, it is perhaps helpful to return to exploring the 'set and setting', or more baseline (before the experience) state and trait predictors. 'Set' factors such as a positive mindset, openness to experience, acceptance, emotional excitability and few stressors in the past week have been found to be predictive of positive and mystical experiences (Aday et al., 2021; Studerus et al., 2012). However, an anxious or negative mindset prior to ingestion led to more unpleasant experiences and weaker mystical experiences (Aday et al., 2021). The personality trait of 'absorption' (how easily and deeply someone is able to be immersed in experiences) has been shown to predict acute

state factors such as both mystical and challenging experiences (Haijen et al., 2018; Studerus et al.,2012). Moreover, the baseline 'state' factor of degree of surrender (ability to 'let go' and fully embrace experience) to the psychedelic experience has been shown to predict stronger mystical experiences and fewer challenging experiences (Aday et al., 2021). Finally, Murphy et al. (2022) found that therapeutic alliance (a 'setting' factor) predicted greater mystical experience and emotional breakthrough during a psychedelic-assisted psychotherapy trial. Although this variable is only relevant to therapeutic uses of psychedelics, this finding suggests the need for predictors of therapeutic alliance, of which attachment could be a likely factor.

Attachment as a predictor of Acute States and long-term Wellbeing

At the time of writing, Stauffer et al. (2021) is the only study which has investigated individuals' adult attachment style as a predictor for the acute psychedelic experience. Attachment theory (Bowlby, 1969) describes three different patterns (Secure, insecure-anxious and insecure-avoidant) of relating to others and themselves, which was formed in early childhood and serves as a blueprint for adult relationships. Although often described as 'attachment styles', this can be more helpfully conceptualised as dimensions of attachment anxiety and attachment avoidance (Wei et al., 2007). People who have high levels of attachment anxiety typically crave intimacy, depend on others, need reassurance in their relationships and have difficulties with emotional regulation. In response to distress, they tend to 'hyperactivate'(an overactivation of emotions and dependency on others for emotional regulation) with the function of bringing others closer. Those high in attachment avoidance when distressed tend to become overly self-reliant, suppress their emotions, and avoid intimacy and emotionally triggering situations; i.e. display 'deactivating' strategies in response to their emotional experience. The goal is these deactivating strategies is to distance themselves from others. Individuals low in

attachment anxiety and avoidance are said to have secure attachment. This denotes a pattern of felt security in relationships, with positive views of self and others and an ability to feel and communicate emotions (Wallin, 2007). Therefore, individuals with different attachment styles respond to distress and intimacy in different ways. Given this, it is possible that individuals with different attachment styles could experience psychedelics differently. This could impact the psychedelic experience and its long-term benefits.

In a small-scale pilot study into attachment and group psychedelic-assisted psychotherapy, Stauffer et al. (2021) found that higher attachment anxiety predicted stronger mystical experiences. A non-significant, weak negative association was found between attachment avoidance and mystical experience. Instead, attachment avoidance was found to be predictive of challenging experiences. They also found that attachment anxiety but not avoidance, decreased over the course of therapy. This could suggest that anxious, but not avoidant attachment is responsive to group psychedelic-assisted psychotherapy. Despite being an interesting finding, the researchers partially attribute it to the fact that the therapy targeted symptoms which could overlap with anxious attachment. Whilst these are interesting preliminary findings into baseline attachment and the psychedelic experience, they are limited by a small and homogeneous sample (n=18). This current study aimed to build on these findings.

Below we will set out our predictions of how we expect baseline attachment to interact with aspects of the psychedelic experience and long-term wellbeing.

Mystical experiences

In keeping with the findings from Stauffer et al. (2021), we expect to see attachment anxiety being related to stronger mystical experiences. In non-psychedelic

studies, it was found that persons with attachment anxiety experienced more sudden religious conversion with mystical experience. The same relationship was not found with avoidant or secure attachment (Halama et al., 2013). It seems counterintuitive that attachment insecurity would predict stronger and more positive mystical experiences than attachment security, given the 'maladaptive' nature of attachment anxiety. Nonetheless, hyperactivating strategies employed by those high in attachment anxiety could prime individuals for more intense interconnectedness and thus, mystical experiences (Stauffer et al., 2021). Furthermore, dependency, a strong desire to be loved, a weak sense of self and the pursuit of an 'ultimate rescuer' could result in those with attachment anxiety embracing and surrendering to a transcendent-like experience (Cherniak et al., 2022). As mentioned previously, surrendering to the psychedelic experience is a predictor of mystical experiences.

On the other hand, with attachment avoidance, we expect to see a negative relationship with mystical experiences. Psychedelic experiences have been shown to become more challenging when emotional and experiential aspects are suppressed rather than accepted (Wolff et al., 2020). A characteristic need for control and tendency to suppress unpleasant experiences could result in them not benefitting from mystical experience and instead having a more challenging time (Stauffer et al., 2021).

Communitas

Given that attachment encapsulates how people connect, it would follow to observe the attachment dimensions experiencing varying degrees of communitas during a group psychedelic experience. Individuals with anxious attachment tend to continuously seek connection and rely on interpersonal relationships to regulate their emotions (Gökdağ, 2021). This inclination towards connection and reaching out for support may be

associated with experiencing more communitas. Anxiously attached individuals tend to self-disclose more (Mikulincer & Nachshon, 1991). This is important as greater self-disclosure has been shown to predict communitas (Kettner et al., 2021). Furthermore, those with attachment anxiety tend to do well in group tasks where group cohesion is high and where their security needs are met (Rom & Mikulincer, 2003). Conversely, a preoccupation with being approved of by others in a group situation could be a distraction from experiencing communitas (Forbes et al., 2010). Nonetheless, these fluctuations are most probably due to distinctions in feelings of security with others. Where feeling close allows persons with anxious attachment to thrive, and lack of closeness leads to greater feelings of insecurity (Sheinbaum et al., 2015). However, a preoccupation with closeness to others could result in increased anxiety prior to the group experience, which has been shown to be predictive of negative experiences (Aday et al., 2021). It would make more theoretical sense for low attachment anxiety (i.e. security) to be predictive of communitas. Those who are more secure tend to feel secure in relationships and care-seeking. They are also able to self-disclose and in more appropriate ways (Rom & Mikulincer, 2003) This coupled with a lack of interpersonal anxiety could predict higher levels of communitas.

We expect the attachment avoidance dimension to have a negative relationship with communitas. Those with a need to avoid intimacy may find experiences of intense psychedelic connection to be overwhelming. Indeed, Rom & Mikulincer (2003) observed that avoidantly attached individuals did worse in set group tasks when group cohesion was high and concluded that feelings of attachment security were distressing rather than comforting to them. Those with attachment avoidance are also less likely to self-disclose, have negative views of others and be dismissive of group interactions and cohesion

(Mikulincer & Nachshon, 1991; Rom & Mikulincer, 2003). All of which could be detrimental to experiencing high levels of communitas.

Changes in Wellbeing

We expect to see more nuanced relationships with changes in wellbeing, especially given the sample is naturalistic rather than individuals taking part in therapy interventions. Changes in wellbeing from both non-psychedelic and psychedelic therapies is in part related to how much someone can integrate what they have learned from the experience (Wilkinson, 2017). The different attachment dimensions are associated with different reflective abilities, which could impact this ability to apply lessons learned to their day-to-day life (Wallin, 2007). Those with attachment anxiety tend to benefit more from therapy compared to attachment avoidance (Shechtman & Rybko, 2004). However, there is mixed evidence on this as attachment anxiety can also lead to increased distress at the end of therapy, perhaps due to the therapeutic relationship ending (Sauer et al., 2010). Additionally, struggling with overwhelming emotions could impact their ability to reflect adequately on an experience (Wallin, 2007). A study of group therapy with Post Traumatic Stress Disorder (PTSD) showed that highly anxiously attached individuals showed the least recovery from symptoms compared to the other attachment styles (Forbes et al., 2010). Due to the mixed evidence for anxious attachment style and changes in wellbeing, we have not predicted the direction of this hypothesis and it will be non-directional. As expected, those with attachment security tend to benefit the most from long-term therapeutic outcomes (Shechtman & Rybko, 2004). Perhaps due to being more likely to reflect, emotionally regulate and connect and thus, integrate their experiences in a meaningful way (Cherniak et al., 2022). We expect to see a negative relationship with those high in attachment avoidance. Stauffer et al. (2021) found that attachment anxiety, but not avoidance, decreased over the course of the group psychedelic intervention.

Additionally, a tendency to deny or minimise negative memories and emotions could affect reflective abilities, therefore complicating opportunities to integrate learnings into their lives. In non-psychedelic studies, those with attachment avoidance have been shown to benefit less from group therapy (Shechtman & Rybko, 2004; Sachse et al., 2002) and to disengage from therapy, lowering treatment outcomes (Tasca et al., 2004).

Aims and Hypotheses of current Study

This study aimed to add to the research base on 'set and setting' predicting beneficial aspects of the psychedelic experience within a naturalistic setting. We were interested in whether the 'set' of baseline attachment is predictive of the acute psychedelic experience and changes wellbeing following the experience. We hoped to address existing gaps in literature surrounding attachment highlighted by previous researchers (Murphy et al., 2022; Stauffer et al., 2021; Cherniak et al., 2022). Part of our study also focused on the group psychedelic experience (in regards to communitas) which had previously been neglected in psychedelic literature (Kettner et al., 2021). We had the following hypotheses:

H1: Attachment anxiety will have a positive association with mystical experiences

H2: Attachment avoidance will have a negative association with mystical experience

H3: Attachment anxiety will have a relationship with communitas

H4: Attachment avoidance will have a negative relationship with communitas

H5: Attachment anxiety will have a relationship with change in wellbeing

H6: Attachment avoidance will have a negative relationship with change in wellbeing

H7: Mystical experiences and communitas will have a positive relationship with changes in wellbeing

N.b. We did not have a hypothesis for emotional breakthrough as this was more of an additional and exploratory variable to the pre-planned analyses listed above.

Method

Ethical Approval

Ethics approval from the UCL ethics committee was obtained before recruitment started (Project ID: 9437/001. Please refer to appendix 1 for ethical approval confirmation letter.

Participants and Recruitment

Participants were invited to take part in an anonymous survey if they met the research criteria of a) being over the age of 18 and b) had taken a classic psychedelic before, i.e. psilocybin, LSD, DMT, ayahuasca, 5-MeO-DMT, mescaline (and analogues which exert their effects mostly through serotonergic (5-HT) agonism). They were recruited via an online advert, asking to take part in a survey 'exploring the relationship between psychedelics, cognition and mental health.' They were advised that the survey would take 20-30 minutes.

Participants were recruited via snowballing and online advertisement of an online survey. The survey was shared through the Psychedelics Society UK newsletter, university psychedelic societies and via Facebook, Instagram and other online sites relevant to psychedelics.

An a priori power test was conducted using G*Power version 3.1.9.4 (Faul et al., 2007) to calculate the minimum sample size to test our hypotheses. The results showed the required sample size to achieve 80% power for detecting a small effect (Cohen's

d=0.02) at a significance criterion of α = .05, with 3 predictors was *N* =550. A larger sample size gave us flexibility to consider using more complex statistical techniques such as path analysis (Kline, 2016). A larger sample also allows for dropout and missing data while retaining power.

Recruitment started on the 9th January 2023 and finished on 5th May 2023. Of the 1,545 participants who consented to participate in the survey, 195 (12%) were excluded for never having taken a psychedelic or not completing key parts of the survey. Three hundred and ninety (25%) were excluded due to not completing the Experiences in Close Relationships Short form (ECR-S), our measure of attachment style as this was the main predictor of the study. A further 39 (2.5%) were excluded for not meeting the study criteria for taking a classic psychedelic (i.e. having taken Ketamine instead). This left a sample size of 919. Because a key aim of the study was to examine the effects of communitas, an additional 281 (31%) were excluded as they stated they had not taken a psychedelic with another person. This resulted in a sample of n=639 who had used a psychedelic drug with ≥1 other person also taking a psychedelic. Any further variations in reported sample sizes can be accounted for by listwise deletion due to missing values for ≥1 variable.

Design

The study was an observational, naturalistic cross-sectional survey study. Although data was only collected at a single timepoint, the questionnaires related to three retrospective time points (differentiated by the phrasing of the questionnaires):

T1: Baseline measure of attachment style *prior to* the psychedelic experience

T2: Measure of mystical experience, emotional breakthrough and communitas *during* the psychedelic experience.

T3: Measure of perceived *change* in wellbeing *since* the experience

The study used a between-subjects design as the ECR (measure of attachment) generates a score of individuals' attachment anxiety and avoidance in two separate dimensions.

This was a joint project with other doctorate and PhD students who shared the same survey and data but analysed different variables. Please see appendix 4 for more detailed information on these projects.

Materials

Adult Attachment Style

Experiences in Close Relationships Short form (ECR-S) was used to measure attachment, which was developed by Wei et al. (2007). ECR-S is a 12-item scale scored on a 7-point likert scale (1=strongly disagree – 7=strongly agree). Half of the items relate to attachment anxiety and the other half, attachment avoidance. They represent two separate, continuous dimensions, one for attachment anxiety and the other for attachment avoidance. At the low end of these scales is low anxiety and/or avoidance (i.e. attachment security). Items include 'I need a lot of reassurance that I am loved by my partner' and 'I try to avoid getting too close to my partner'.

Participants were asked to answer in relation to their romantic attachment generally rather than in relation to a specific partner. We reworded the measure to be in past tense, to get a measure of their baseline attachment style prior to their most significant psychedelic experience. i.e. 'I got frustrated if romantic partners were not available when I needed them.' As opposed to 'I get frustrated if romantic partners are not available when I need them'. Scores on each dimension can vary from 6-42.

The ECR-S has good internal consistency, factor structure, test-retest reliability, and construct validity (Wei et al., 2007). It has since been validated with Chinese and Korean cohorts (Lee & Shin, 2019; Peng et al., 2021).

Mystical Experiences

The revised Mystical Experiences Questionnaire (MEQ30) is a 30-item measure with a 5-point likert scale in which participants indicate how much they experienced any of the items during the experience (1= None; not at all to '5=Extreme (more than any other time in my life))(Barrett et al., 2015). Items included 'sense of awe or awesomeness' and 'experience of timelessness'. It measures four subscales of mystical, positive mood, transcendence of time and space and ineffability. As recommended by Barrett et al. (2015) a composite score of these factors was used. Total scores can vary from 30-150.

The MEQ has good internal reliability, conversion validity and is well validated and widely used in psychedelic studies (Barrett et al., 2015).

Communitas

The adapted Communitas scale (COMS) is a 10-item scale scored using a 7-point likert scale. It measures harmony, shared humanity, belonging and transcendence of social status within a group setting (Kettner et al., 2021). Items included 'I felt a bond with fellow members that felt unique to the experience' and 'I felt that social status became irrelevant'.

We changed it from a 10 to 9-item scale by removing 'I felt a strong connection with the facilitator or shaman'. This was more specific to a retreat/ceremony setting and would not have been applicable to our more general, naturalistic sample. We also changed the word 'ceremony' to 'experience'. Score range from 9-63.

The measure has good internal consistency and construct validity (Kettner et al., 2021).

Emotional Breakthrough

The Emotional Breakthrough Inventory (EBI) is a 6-item scale scored using a visual analogue scale from 0-100 (0='no, not more than usually' to 100='yes, entirely or completely'). It is a measure of emotional breakthrough and the overcoming of challenging emotions during the psychedelic experience (Roseman et al., 2019). Items include 'I faced emotionally difficult feelings that I usually push aside' and 'I achieved an emotional release followed by a sense of relief'. Scores range from 0-600.

It has high internal consistency with a Cronbach's alpha =0.93 (Roseman et al., 2019).

Wellbeing

The Short Warick-Edinburg Mental Wellbeing Scale (SWEMWS) was used to measure wellbeing following the experience (Stewart-Brown et al., 2009). It is a 7-item scale with a 7-point likert scale. We adapted the scale to give a change in wellbeing score by asking participants to answer 'how you have felt *since* and *due* to your most significant psychedelic experience'. Items include 'I've been better at dealing with problems' and 'I've been feeling closer to other people'.

It has strong construct validity and good content validity with other measures of mental health (Tennant et al., 2007; Shah et al., 2021).

All of the above measures were scored using the mean total score for each participant.

Strength of the Psychedelic Substance

Dosage and therefore relative strength of psychedelics is usually hard to gauge due to issues with purity, tolerance and other drugs taken in combination. We therefore asked participants to report the subjective 'strength of the effect of the psychedelic substance' (1=very weak, 5=very strong). This was used as a control variable as higher dose has been found to be predictive of acute psychedelic states, particularly mystical

experiences and emotional breakthrough (Griffiths et al, 2011; Haijen et al, 2018; Roseman et al, 2019). However, Haijen et al. (2018) did not find dose to be predictive of changes in short or long-term wellbeing, so it was not used as a control for wellbeing. It will be used as a control for communitas as although it was not used in the original paper due to difficulties in obtaining drug dosage, they suggest it could be useful in future studies (Kettner et al., 2021).

Prior Closeness to other Group Members

We took a measure of perceived closeness to others sharing the experience with them before taking the psychedelic drug. We asked participants to rate this pictorially using an adaptation of Aron et al. (1992) Inclusion of self in other scale. The scale asks participants to rate their relationship to others based on 7 pictures of Venn diagrams representing the self and other with varying degrees of overlap. The first one shows two separate circles, and the final one depicts them to be mostly overlapping one another. Possible scores ranged from 1-7 (where 1=not close, 7=extremely close). This measure is being used as a control variable as Kettner et al. (2021) found that prior rapport with other participants pre-ceremony most strongly effected ceremony communitas. Furthermore, we hypothesised that degree of closeness could confound communitas for some attachment styles as intimacy can be perceived as a threat (as in avoidant attachment) or a goal (as in anxious attachment)(Rom & Mikulincer, 2003).

Procedure

Participants were asked to give informed consent and provided with a participant information sheet at the beginning of the survey (see appendix 2). Throughout the survey, they were asked to report on their ‘most significant’ psychedelic experience which was defined to them as; ‘most memorable’ and/or ‘impactful’ and both with or without ‘long-lasting effect on their mood and thinking’. They then answered questions on

demographics (age, gender, ethnicity, etc.). We also collected information on the type of psychedelic taken, amount of previous use, how long ago the experience was, intentions, location the drug was taken in, prior closeness to others who were taking psychedelics with them and strength of the psychedelic substance.

Because this project was part of a larger project, participants completed additional measures relating to preparation behaviours, personality/relationships before the experience, other aspects of the acute psychedelic experience and impact/aftereffects of the experience. These are listed in the appendix but will not be described further in the current chapter (see appendix 3).

Data collection

Data was collected using an online survey on Qualtrics (www.qualtrics.com). Data was analysed using SPSS 29.

Data analysis strategy

Data was judged to meet the parametric assumptions of multiple regression. Data for each individual multiple regression was visually examined and the residuals of the regressions were judged to be of normal distribution using P-P plots (see appendix 5 for P-P plots for each of the five multiple regressions). Variables were also observed to show homoscedasticity. Variance Inflation Factor (VIF) values for all variables were below 2, and Pearson's bivariate correlations were below .8 meaning multicollinearity was not a problem. The outcome variables for the predictors were mystical experience, communitas, emotional breakthrough and changes in wellbeing following the experience. The baseline predictor variables were attachment anxiety, attachment avoidance, strength of the psychedelic and prior closeness to other group members. Acute experience predictors were mystical experiences, communitas and emotional breakthrough which were also used to predict changes in long-term wellbeing.

Attachment was controlled as a predictor as each participant had a score for both attachment avoidance and anxiety. For example, a low anxiety score could be someone who is highly avoidant on the other dimension. The specific effect of attachment on mystical experiences, communitas and emotional breakthrough was examined while holding the other attachment dimension constant (i.e. anxiety or avoidance).

Strength of association was interpreted using Cohen (1988). A small association is β=.1 to .3. A medium association is β=.3 to .5 and large is β=.5-1.0. Significance was interpreted with 0.05 alpha level.

Analysis of Data

Five multiple regressions were run to test our hypotheses. All multiple regressions were run using the enter method. See below for greater detail:

Multiple regression 1 - H1: Attachment anxiety will have a positive association with mystical experiences & H2: Attachment avoidance will have a negative association with mystical experience.

For this analysis we wanted to see whether baseline attachment predicts mystical experience. We entered strength of psychedelic substance as a control variable (see pg. 68 for the rational), attachment anxiety and attachment avoidance. The full sample was analysed here which included participants who reported taking the psychedelic alone or with a sober person.

Multiple regression 2 – H3: Attachment anxiety will have relationship with communitas & H4: Attachment avoidance will have a negative relationship with communitas.

Here our predictor variables were attachment anxiety, attachment avoidance and closeness to the group prior to the experience. Prior closeness and strength of psychedelic substance were used as a control variable (see pg. 68 & 69 for

rational). As communitas is a measure of intersubjective experience, the sub-sample of those who ingested psychedelics with someone who had also taken the substance.

Multiple regression 3 – Attachment as a predictor for emotional breakthrough

Hypotheses were not generated here as it was an exploratory analysis. Predictor variables included attachment anxiety, attachment avoidance and strength of the psychedelic as a control variable (see pg. 68 for justification of this). The whole sample was analysed for this analysis.

Multiple regression 4 – H5 : Attachment anxiety will have a relationship with change in wellbeing & H6: Attachment avoidance will have a negative relationship with change in wellbeing

We entered predictor variables of attachment anxiety and attachment avoidance by analysing the full sample.

Multiple regression 5 – H7: Mystical experiences and communitas will have a positive relationship with changes in wellbeing

For this analysis we entered mystical experiences, communitas and emotional breakthrough as predictors for changes in wellbeing. Emotional breakthrough was not in the original hypothesis but was included as an additional exploratory variable. This analysis used the subsample of those who took psychedelics with another person as communitas is a measure which is only used with groups.

Missing Data

Cases were deleted listwise if ECR-S scores (the main predictor) were missing. There were below 5% missing values within analyses apart from one; MEQ, EBI and COMS predicting wellbeing in groups as there was 7% missing data when using listwise deletion.

Listwise deletion was also used for this analysis as the amount of missing data was still minor (7%). Power was not an issue due to a large sample so missing data bias was likely to be small (Kang, 2013). Mean substitution was also tested to check if there was a difference in sampling bias, but it did not produce noticeably different results, with no differences in significant levels to listwise deletion (see appendix 6 for comparisons). Therefore, listwise was used due to it being more commonly used for large samples (Kang, 2013).

Results

Participant characteristics

Demographics

The sample was comprised of 45.3% of participants identifying as male, 50.8% as female, 3.3% as non-binary and 0.7% identifying as other gender identities not listed in our survey. The mean age of participants was 38 (SD=11.8). Participants were predominantly of white/caucasian ethnicity (74.2%) and were mostly educated to degree level or above (75.5%). The most common psychedelic substances reported on were psilocybin (41%) and LSD (30%), with a mean drug strength of 4.3 (4=strong). It was a mostly experienced sample, with most previous psychedelic uses being over 20 times (42.7%) and between 11-20 times (19.2%). The most common intentions for the psychedelic experience were for personal growth (37%) and fun/recreation (27%). A small number of the experiences took place in an organised therapeutic setting; 12% in a psychedelic retreat or ceremony and 1.3% in a clinic or hospital. Participants were asked to answer questions in regards to their 'most significant psychedelic experience'. A large proportion of participants reported this to have been more than two years ago (47.7%) or 1-12 months ago (25.2%).

Further information on baseline characteristics of the sample are described in table 1.

Table 1

Demographics of the Group Subsample and the Full Sample

Baseline Characteristic	Sample Consisting of >1 Other Person	Full Sample (Including Solitary Use)
	N =639	*N=919*
Gender		
Male	265 (41.5%)	417 (45.3%)
Female	352 (55.1%)	467 (50.8%)
Non-binary	18 (2.8%)	30 (3.3%)
Other	4 (0.6%)	6 (0.7%)
Age	M=37 (SD=11.6)	M=38 (SD=11.8)
Religion		
Non-religious	279 (38%)	391 (37.3%)
Christianity	48 (6.5%)	74 (7.1%)
Islam	11 (1.5%)	13 (1.2%)
Sikhism	0	0
Judaism	11 (1.5%)	15 (1.4%)
Hinduism	7 (1%)	10 (1%)
Buddhism	25 (3.4%)	36 (3.4%)
Spiritual (Non Organised Religion)	326 (44.4%)	468 (44.7%)

Other	27 (3.7%)	40 (3.8%)
Ethnicity		
Black	13 (1.9%)	18 (1.8%)
East Asian	4 (0.6%)	8 (0.8%)
South Asian	21 (3%)	28 (2.8%)
South-East Asian	7 (1%)	9 (0.9%)
Native American	11 (1.6%)	18 (1.8%)
White/Caucasian	506 (73%)	740 (74.2%)
Hispanic/Latino	63 (9.1%)	92 (9.2%)
Arab	25 (3.6%)	29 (2.9%)
Other	43 (6.2%)	55 (5.5%)
Highest Level of Education		
High school/college	144 (22.5%)	224 (24.3%)
Undergraduate degree/equivalent	243 (38%)	354 (38.5%)
Postgraduate/equivalent	251 (39.3%)	340 (37%)
Time Since Experience		
1 Month Ago Or Less	31 (4.9%)	69 (7.5%)
1-12 Months Ago	148 (23.2%)	232 (25.2%)
1-2 Years Ago	116 (18.2%)	180 (19.6%)
More Than 2 Years Ago	344 (53.8%)	439 (47.7%)
Previous Psychedelic use		
1 Occasion Only	36 (5.6%)	51 (5.5%)
2-5 Occasions	113 (17.7%)	141 (15.3%)

6-10 Occasions	105 (16.4%)	158 (17.2%)
11-20 Occasions	122 (19.1%)	177 (19.2%)
Over 20 Occasions	263 (41.2%)	393 (42.7%)
Drug		
Psilocybin	310 (37.4%)	476 (41%)
LSD	280 (33.8%)	347 (30%)
DMT	58 (7%)	90 (7.7%)
Ayahuasca	91 (11%)	94 (8%)
Mescaline/Peyote/San Pedro	28 (3.4%)	36 (3.1%)
5-MeO-DMT	21 (2.5%)	36 (3.1%)
Salvia	9 (1.1%)	17 (1.5%)
Analogues/Combination	32 (3.9%)	76 (6.5%)
No. People Who Took a Psychedelic With Them		
Alone	N/A	263 (28.6%)
1	232 (36.3%)	239 (26%)
2	93 (14.6%)	95 (10%)
3	69 (10.8%)	70 (7.6%)
4	44 (6.9%)	46 (5%)
5	47(7.4%)	47 (5.1%)
6	25(3.9%)	26 (2.8%)
7	12(1.9%)	13 (1.4%)
8	11(1.7%)	11 (1.2%)
9	7(1.1%)	7 (0.8%)

10	29(4.5%)	29 (3.2%)
11	2(0.3%)	2 (0.2%)
12	6(0.9%)	7 (0.8%)
13	1(0.2%)	1 (0.1%)
14	6(0.9%)	6 (0.7%)
15	7(1.1%)	7 (0.8%)
16	1(0.2%)	1 (0.1%)
17	1(0.2%)	1 (0.1%)
18	3(0.5%)	3 (0.3%)
19	2(0.3%)	2 (0.2%)
More Than 20	41(6.4%)	42 (4.6%)

Intention

Fun/Recreation	349 (33.6%)	411 (27%)
Personal Growth/Exploration	367 (35.4%)	555 (37%)
Spiritual/Religious Reasons	79 (7.6%)	128 (8.4%)
Psychological Or Emotional Reasons	209 (20.1%)	364 (24%)
To Manage A Physical Health Problem	13 (1.3%)	24 (1.6%)
Other	21 (2%)	38 (2.5%)

Location of Experience

Psychedelic Retreat/Ceremony	122 (15.2%)	136 (12%)
Music Festival Or Party	76 (9.5%)	88 (7.8%)
In A Clinic Or Hospital	2 (0.2%)	15 (1.3%)
Own Home	167 (20.8%)	352 (31%)
Someone Else's Home	131 (16.3%)	165 (14.6%)
Urban Outdoor Environment	62 (7.7%)	77 (6.8%)
Rural/Natural Outdoor Environment	209 (26.1%)	249 (22%)
Other	33 (4.1%)	51 (4.5%)

Descriptive statistics for all predictor and outcome variables are shown in table 2.

Table 2

Mean And Standard Deviation for Baseline Predictor Variables, Acute Outcome Variables

and Acute Predictor Variables and Long-Term Outcome Variable.

Predictor/Outcome Variable	Groups >1 Other Person Only *M (SD)*	Full Sample *M (SD)*
Baseline Predictor Variables		
Attachment Anxiety	3.5(1.2)	3.6 (1.2)
Attachment Avoidance	2.9 (1)	2.9 (1)
Strength of Psychedelic Substance	4.3 (0.8)	4.3 (0.8)
Prior Closeness to Others	3.6 (1.9)	N/A
Acute Experience Outcome and Predictor Variables		
Mystical Experience	4.7 (1)	4.7 (1)
Communitas	5.65 (1.2)	N/A
Emotional Breakthrough	58 (31.2)	60.6 (30.7)
Long-Term Outcome Variable		
Change in Long-Term Wellbeing	5.4 (1.2)	5.4 (1.1)

Note. For strength of psychedelic 1=weak, 5=very strong. For Prior closeness to others 1=not very close at all, 7=extremely close.

Baseline Attachment Predicting Acute Psychedelic Experiences

H1 & H2: Attachment and Mystical Experience

We first tested our hypothesis of whether attachment anxiety and attachment avoidance predicted the extent of participants' mystical experience (see table 3). Strength of the psychedelic was controlled for as strength/dose of a psychedelic has been observed to predict greater mystical experience (Griffiths et al, 2011; Haijen et al, 2018). Because this analysis did not relate to social use of psychedelics, the full sample (n=911) was used.

Table 3

Multiple Regression Analysis: Results for the Relationship Between Attachment Style, Strength of Psychedelic Substance and Mystical Experience

	Unstandardized Coefficients		Standardized Coefficients			95% CI for B	
	B	SE	Beta	t	Sig.	*LB*	*UB*
Constant	1.78	0.20		8.72	<.001	1.38	2.18
Strength of Psychedelic Substance	0.57	0.04	.44	14.92	<.001	0.50	0.65
Attachment Anxiety	0.09	0.03	.11	3.58	<.001	0.04	0.14
Attachment Avoidance	0.05	0.03	.05	1.76	.079	-0.01	0.12

Note. SE = Standard Error; CI = Confidence Interval; LB = Lower Bound; UB = Upper Bound

Multiple regression analysis was used to test if attachment style significantly predicted participants' levels of mystical experience during the acute psychedelic phase when other variables were held constant. Unsurprisingly, the control variable of strength of psychedelic experience had a medium, significant relationship with mystical experience ($\beta = .44$, $p=.001$). The results of the regression indicated all three predictors together explained 21% of the variance in mystical experience ($R^2 =.21$, $F (3,909)=79.3$, $p=.001$). It was found that attachment anxiety had a weak, positive, significant association with mystical experience ($\beta = .11$, $p=.001$). However, attachment avoidance was non-significant ($\beta =.05$, $p=.08$). The results show that attachment anxiety is a weak, positive predictor of mystical experience but attachment avoidance is not when controlling for strength of the psychedelic. The results confirm our hypothesis that attachment anxiety predicts mystical experience. However, our hypothesis about attachment avoidance having a negative relationship with mystical experience is not supported by our findings.

H3 & H4: Attachment and Communitas in Groups

This analysis only looked at people who took a psychedelic with at least one other person. We tested the hypothesis that baseline attachment anxiety and avoidance predicted communitas during the acute psychedelic experience (see table 4). Ratings of how close participants felt to other group members prior to taking the psychedelic was controlled for (where 1=not close at all, 7=extremely close) and strength of the psychedelic (where 1= weak, 5=extremely strong). We hypothesised that this could impact levels of communitas.

Table 4

Multiple Regression Analysis: Results for the Relationship Between Attachment Style, Strength of Psychedelic Substance, Prior Closeness to Group Members, and Communitas

	Unstandardized Coefficients		Standardized Coefficients			95% CI for B	
	B	SE	Beta	t	Sig.	LB	UB
Constant	4.24	0.34		12.30	<.001	3.56	4.90
Strength of Psychedelic substance	0.12	0.06	.08	2.02	.044	0.00	0.24
Prior Closeness to Other Group Members	0.13	0.03	.20	5.10	<.001	0.08	0.18
Attachment Anxiety	0.10	0.04	.10	2.42	.016	0.02	0.17
Attachment Avoidance	0.03	0.05	.03	0.65	.515	-0.06	0.13

Note. Total N = 624; SE = Standard Error; CI = Confidence Interval; LB = Lower Bound; UB = Upper Bound

The results indicated all four predictors together only explained 5% of the variance in communitas (R^2 =.05, F (4,619)= 8.17, p=.001). It was found that attachment anxiety is a small, positive, significant predictor of communitas (β = .10, p=.02), but attachment avoidance is not (β =.03, p=.52). The control variable of prior closeness to other group members had a weak, positive, significant relationship with communitas (β = .20, p=.001). Furthermore, the control variable of strength of the psychedelic substance had a small, significant relationship with communitas (β=.08, p=.04). These results are not consistent with our hypothesis for attachment avoidance as we expected to see a negative relationship. The results confirm our hypothesis that attachment anxiety would have a relationship with communitas and shows it is a positive one.

Attachment and Emotional Breakthrough

As an exploratory analysis, we looked at whether attachment anxiety and attachment avoidance predicted the strength of emotional breakthrough, as a measure of a psychological component of the quality of the experience. Strength of the psychedelic was controlled for as emotional breakthrough has been found to work in a dose-dependent manner (Roseman et al, 2019).

Table 5

Multiple Regression Analysis: Results for the Relationship Between Attachment Style, Strength of Psychedelic Substance and Emotional Breakthrough

	Unstandardized Coefficients		Standardized Coefficients			95% CI for B	
	B	SE	Beta	t	Sig.	LB	UB
Constant	-5.67	6.65		-0.85	.394	-18.73	7.39
Strength of Psychedelic Substance	10.07	1.24	.26	8.12	<.001	7.63	12.50
Attachment Anxiety	6.10	0.80	.24	7.59	<.001	4.52	7.68
Attachment Avoidance	0.50	1.00	.02	0.51	.611	-1.44	2.44

Note. Total N = 885; SE = Standard Error; CI = Confidence Interval; LB = Lower Bound; UB = Upper Bound

Here we tested to see if attachment style significantly predicted participants' levels of emotional breakthrough during the acute psychedelic phase, (i.e. in the midst of the psychedelic experience) when controlling for strength of the psychedelic substance (see table 5). The results showed that together the variables explained 12% of the variance in emotional breakthrough (R^2 =.12, F (3,881)= 40.1, p=.001). It was observed that

attachment anxiety was a small, positive, predictor of emotional breakthrough (β = .24, p=.001). Attachment avoidance was found to be non-significant (β =.02, p=.61). The strength of psychedelic substance (control) had a weak, positive association with emotional breakthrough (β=.26, p=.001). The results show that attachment anxiety is a weak, positive predictor of emotional breakthrough, but attachment avoidance is not.

Baseline Attachment Predicting Changes in Wellbeing Following the Experience

H5 & H6: Attachment and Changes in Long-Term Wellbeing Following the Experience

We tested our hypothesis on whether attachment anxiety and attachment avoidance predicted changes in long-term wellbeing following the experience (see table 6 for results).

Table 6

Multiple Regression Analysis: Results for the Relationship Between Attachment Style and Changes In Wellbeing.

	Unstandardized Coefficients		Standardized Coefficients			95% CI for B	
	B	SE	Beta	t	Sig.	LB	UB
Constant	4.92	0.15		32.59	<.001	4.62	5.21
Attachment Anxiety	0.11	0.03	.12	3.48	<.001	0.05	0.17
Attachment Avoidance	0.04	0.04	.03	0.91	.364	-0.04	0.11

Note. Total N = 878; SE = Standard Error; CI = Confidence Interval; LB = Lower Bound; UB = Upper Bound

Our results showed that attachment anxiety and avoidance explained 2% of the variance in changes in wellbeing (R^2 =.02, F (2,875) = 7.1, p=.001) It was observed that attachment anxiety was a small, positive, predictor of long-term wellbeing (β = .12, p=.001). Attachment avoidance was found to be non-significant (β = .03, p=.36). This confirms our hypothesis of attachment anxiety having a relationship with changes in wellbeing. It also confirms the direction, showing that greater attachment anxiety predicts larger improvements in wellbeing. However, it was found that attachment avoidance is not a predictor of changes in wellbeing following the experience.

Acute Psychedelic Experiences Predicting Long-term Wellbeing *H7: Mystical experiences, Communitas, Emotional Breakthrough and Changes in Long-Term Wellbeing*

Mystical experiences, communitas and emotional breakthrough have been shown in previous studies to predict changes in wellbeing whilst controlling for other variables. As an exploratory analysis, we entered them into a multiple regression to see if previous findings could be replicated (see table 6). This data is for participants who had at least one other person taking psychedelics with them so that communitas (a variable only measured in groups) could be included.

Table 7

Multiple Regression Analysis: Results for the Relationship Between Mystical Experience, Communitas, Emotional Breakthrough and Changes In Wellbeing

	Unstandardized Coefficients		Standardized Coefficients			95% CI for B	
	B	SE	Beta	t	Sig.	LB	UB
(Constant)	2.13	0.21		10.17	<.001	1.72	2.54
Mystical Experience	0.29	0.05	.24	6.01	<.001	0.19	0.38
Communitas	0.19	0.04	.19	5.27	<.001	0.12	0.26
Emotional Breakthrough	0.01	0.00	.38	10.13	<.001	0.01	0.02

Note. Total N = 579; SE = Standard Error; CI = Confidence Interval; LB = Lower Bound; UB = Upper Bound

The results showed that all three predictors accounted for 43% of the variance in changes in wellbeing (R^2 =.43, F (3,575) = 146.5, p=.001). It was observed that emotional breakthrough had the strongest relationship with a medium, positive, significant association with change in long-term wellbeing when the other variables were held constant (β = .38, p=.001). Mystical experiences predicted a small, significant association with change in wellbeing (β = .24, p=.001). Finally, communitas showed a significant, small association with change in long-term wellbeing (β = .19, p=.001). The results support our hypothesis.

Discussion

The present study aimed to find out whether individuals' 'baseline' attachment was predictive of acute psychedelic experiences and changes in long-term wellbeing. Note we use the term 'baseline' to imply that this is an unchanging metric that has remained stable since before participants' reference psychedelic experience. Additionally, we aimed to find out if these acute experiences were predictive of changes in long-term wellbeing (Griffiths et al., 2011; Haijen et al., 2018; Kettner et al., 2021; Russ et al., 2019).This study involved online, retrospective survey data from a naturalistic sample of 919 psychedelic users.

Our findings showed that baseline attachment anxiety is a significant but weak predictor of mystical experience, emotional breakthrough, communitas and changes in wellbeing. Surprisingly, attachment avoidance had no significant relationship with any of the above outcomes. In our exploratory analysis we also discovered relationships between emotional breakthrough, mystical experience, communitas and changes in wellbeing.

Higher attachment anxiety was shown to be related to higher mystical experiences in our sample. Attachment avoidance showed no relationship with mystical experiences. Along with strength of psychedelic substance, all three predictors accounted for a relatively substantial amount of variance in mystical experience. These findings are consistent with previous research into psychedelics and attachment. In particular our findings replicate those of Stauffer et al. (2021) although these authors found a strong correlation between attachment anxiety and mystical experiences, whereas our regression showed a small effect. However, this could be explained by differences in sample

characteristics (i.e.,. clinical versus non-clinical respectively). Moreso, their study was part of a clinical trial for psychedelic-assisted psychotherapy, whereas ours was a naturalistic sample. It could be the case that mystical experiences are stronger in therapeutic settings where participant preparation is present and there is control over variables. Indeed, Murphy et al. (2022) found that therapeutic alliance in psychedelic-assisted psychotherapy was predictive of the strength of mystical experience.

Although our study found a small, positive relationship between attachment anxiety and mystical experiences, it is nonetheless an interesting one. The hyperactivating strategies present in anxious attachment could prime them for the interconnectedness construct of mystical experiences (Stauffer et al., 2021). Furthermore, it is possible that a tendency to experience more extreme high and low could prime anxiously attached individuals for the intensity of a mystical experience (Wallin, 2007). Previous attachment research has showed that anxiously attached individuals often ride an 'emotional roller coaster' (Hazan et al., 1987). This emotional lability has been shown to be experienced daily and with most emotional variability shown to be within the *positive* range of emotions. Fluctuations in negative emotions were found to be no different to those with secure or avoidant attachment styles (Tidwell et al., 1996). Therefore, having access to a wider range of positive emotions could prime anxiously attached persons for more intense psychedelic and mystical experiences. Furthermore, despite those with attachment anxiety having difficulties with emotional regulation, a tendency to experience and express intense emotions could mean that emotions may not be experienced as unfamiliar, compared to someone with avoidant attachment who habitually suppresses, and therefore experiences less emotion. The lack of relationship between avoidant attachment and mystical experiences was not negative or significant as expected but was consistent with previous literature (Stauffer et al., 2021).

In terms of attachment predicting changes in wellbeing since the psychedelic experience, we found that anxious attachment was a weak predictor. Previous non-psychedelic research into therapy outcomes for individuals with attachment anxiety was mixed, with some studies showing improvement, and others less so (Shechtman & Rybko, 2004; Sauer et al., 2010; Forbes et al., 2010). However, whilst these previous studies seemed like the closest evidence base to the novel subject area studied here, it is important to distinguish that our sample did not involve a formal therapeutic intervention (even if intentions for taking psychedelics were for personal growth/mental health). This is a surprising finding given those with insecure attachment styles tend to have greater difficulties with reflecting compared to those with low attachment anxiety (i.e. security). As reflection and integration are important for changes in wellbeing, you would perhaps expect to see those with more attachment security benefiting more from changes in wellbeing. However, it could be explained by the fact that those with insecure attachments generally experience more psychopathology (Wallin, 2007). Therefore, it is possible that those with anxious attachment had lower levels of wellbeing prior so noticed greater change in their wellbeing after the psychedelic experience. However, this would not have been reflected in our single change score. Similarly, Haijen et al. (2018) found that emotional stability before a psychedelic experience was not predictive of changes in long-term wellbeing as these participants tended to have higher wellbeing to begin with.

The strongest effect we saw within our analyses of attachment was with emotional breakthrough. Higher attachment anxiety was related to greater emotional breakthrough. This makes sense as emotional breakthrough involves emotional release which persons with attachment anxiety could be said to characteristically do, by overexpression and disclosure of emotional states and cognitions (hyperactivation) (Wallin, 2007). This, adaptive

Our finding that higher attachment anxiety is related to higher levels of communitas with others is interesting. This effect was apparent when baseline perceived closeness to others was held constant –a factor which has been shown to impact the insecure styles in different ways (Rom & Mikulincer,2003; Sheinbaum et al., 2015). Attachment theory would assume that securely attached individuals would be more likely to experience greater connection due to consistent relational security and positive view of self and other. Nonetheless, an intense desire for closeness, could lead to greater feelings of intimacy, which carries over to the psychedelic experience. Indeed, this was the conclusion that Tidwell et al. (1996) arrived at when they found that anxiously attached individuals reported higher levels of intimacy compared to securely attached individuals in a non-psychedelic study.

We expected those with avoidant attachment to feel threatened by feelings of communitas during the psychedelic phase; thus, triggering distancing strategies ((in line with non-psychedelic findings (Rom & Mikulincer, 2003; Sheinbaum et al., 2015). However, we found no relationship. Whilst a lack of a relationship is difficult to interpret, it disproves our hypothesis that high avoidant attachment would be related to *less* communitas.

The overall finding that attachment avoidance had no significant relationship with any of the acute state predictors (i.e. mystical experience, communitas, emotional breakthrough and changes in wellbeing) is interesting. Of course, it could be the case that attachment avoidance is not an important baseline 'set' variable. However, this would not align with attachment theory or previous literature (Stauffer et al., 2021). A possibility is that the retrospective nature of the survey could have interacted with some of the suppressive or minimising tendencies observed with avoidant attachment (Wallin, 2007). In defending against vulnerability, this emotional minimisation could mean that strong

emotions were not experienced fully or remembered for reporting in the survey; thus, no significant effects were found. Sheinbaum et al. (2015) hypothesised that for avoidant attachment, survey measures which ask them to report their experience *in the moment* could allow for reporting vulnerability *before* defensive strategies and heuristics come into play. However, a retrospective survey like in the present study could have meant that milder experiences were reported as these experiences could have already been minimised. Furthermore, it is worth noting that 390 participants were excluded from the study as they had reported not having had a previous romantic relationship and/or had not answered the ECR-S (our attachment measure). Whilst speculative, it is possible that this cohort could have contained more avoidantly attached participants who are more likely to avoid romantic relationships (Wallin, 2007). Schindler et al (2010) found that avoidantly attached individuals are less likely to be in or desire committed romantic relationships. This is a limitation as the ECR-S is designed to measure experiences in romantic relationships. Participants could have assumed that 'romantic relationship' referred to a committed, monogamous relationship only. This could have also made the sample less representative as it excludes people who have not had romantic relationships. A way of overcoming this with future research could be to define what is meant by 'romantic relationships' i.e. to include casual or non-committed relationships. Another option would be to use a measure that encapsulates more than romantic attachments.

We found that acute, 'state' predictors of mystical experiences, communitas and emotional breakthrough accounted for 43% of changes in wellbeing. When the other variables were held constant, emotional breakthrough accounted for a medium relationship ($\beta = .38$). Mystical experiences and communitas predicted small changes ($\beta = .24$) and ($\beta = .19$) respectively. These are consistent with previous studies (Kettner et al., 2021; Roseman et al., 2019). In a similarly naturalistic online survey, Roseman et al.

(2019) found that emotional breakthrough, mystical experiences and *challenging* experiences accounted for 45% of the variance in change in wellbeing. However, they found a slightly smaller effect for emotional breakthrough (β = .29), but the same effect for mystical experiences (β = .24). Whilst the similarity is striking, it is important to note that these were the results of a subsample which had lower baseline wellbeing to begin with. The full sample showed smaller, yet significant effects (see Roseman et al., 2019). It is also important to note that our results reflect our subsample of people who had at least one other person taking a psychedelic with them. Roseman et al. (2019) conclude that a combination of these measures should be used together to measure quality of the acute psychedelic experience. Our research supports these findings but perhaps also suggests the inclusion of communitas if used in a group setting. Our findings also support previous research of communitas and mystical experiences being predictive of changes in long-term wellbeing (Haijen et al.,2018; Griffiths et al., 2011; Kettner et al., 2021; Russ et al., 2019;).

Overall, it seems that attachment does have a relationship with elements of the acute psychedelic experience. Whilst these are minor and very preliminary findings, they can perhaps suggest that anxious attachment could be a baseline 'set' variable which is predictive of acute psychedelic states and changes in wellbeing following the experience. Indeed, it seems that anxious attachment has a beneficial relationship with aspects of the psychedelic experience. However, this should be explored further before any assertions can be made regarding psychedelic-assisted psychotherapy. Our sample was extremely broad in terms of characteristics and 'set and setting variables'. It was not a clinical sample and only a small minority reported it being part of a ceremony or clinical trial. Therefore, it is not possible to generalise to a clinical population. However, this perhaps has interesting implications for attachment research as attachment anxiety is usually seen

as a ‘maladaptive’ way of relating to self and others. However, it seems to be more *adaptive* in our current findings. Indeed, it could be that there is overlap between attachment anxiety experiences and the psychedelic experience. For example, a desire to be extremely close to others and to be engulfed by an ‘external rescuer’ could prime individuals for the psychedelic experiences of unity and mysticism and thus, changes in wellbeing. Therefore, these ‘maladaptive’ tendencies could be adaptive to some extent on psychedelics as our study suggests that those with attachment anxiety tend to benefit more from the acute and long-term psychedelic experiences.

Our study provided a broad overview of whether relationships existed between attachment and the acute and long-term psychedelic experience. However, our analyses are limited in that they do not tell us *how* these relationships may have occurred. Future research could focus on the specific ‘set and setting’ variables which could interact with attachment styles. For example, how feelings of security during group psychedelic experiences interact with attachment style. In non-psychedelic studies, varying feelings of security in a group can trigger the insecure attachment styles to both feel threatened, or at other times, safe. (Rom & Mikulincer,2003; Sheinbaum et al., 2015). In our analysis, prior closeness was only used as a control variable. It could be more fruitful in future research to explore it as a moderating or mediating variable as part of a path analysis model. Also, it is important to remember the prior closeness is not synonymous to relational security. Other unmeasured ‘set and setting’ variables such as whether alone/with others, in a therapeutic/recreation setting, level of trust and perceived emotional support, intentions and personality traits could all be factors which could affect how the attachment styles relate to different parts of the psychedelic experience. Examining these factors in future research could provide answers to how contextual variables could benefit or worsen aspects of the psychedelic experiences for different

attachment styles. Not exploring these interactions could have potentially confounded the observed effects of attachment on the outcome variables. Furthermore, attachment is not static across relationships as whilst people usually have a dominant attachment style, they tend to vary across relationships (Thompson et al., 2021). For example, a secure individual with a neglectful or rejecting partner could become more anxiously attached. Also, some may experience secure relationships with friends but insecure with partners. A way of overcoming this in future research could be to ask participants to complete the attachment measure in relation to their feelings towards those who they embarked on the psychedelic experience with. This would give more of an insight into which attachment style was potentially dominant before the experience. This more nuanced approach is important for any future therapy implications, given attachment insecurity underlies psychopathology and will show up in clinical populations (Wallin, 2007). If significant, these future findings could be built into formulation, then inform on preparation for psychedelic-assisted psychotherapy. This would help address the key theme in maximising beneficial therapeutic effects and minimising harm.

Furthermore, our research confirms previous research that mystical experiences, emotional breakthrough and communitas are predictive of changes in long-term wellbeing. These factors accounted for a reasonable amount of variance in changes in wellbeing. Consistent with Roseman et al. (2019) who recommended using a battery of measures to encapsulate therapeutic aspects of the acute psychedelic experience; we would recommend incorporating communitas into routine assessment of the effects of psychedelics if the psychedelic was taken with others. This would help to address an element of togetherness and connection which has previously been sparse in psychedelic literature, despite its well known therapeutics implications in non-psychedelic studies (Watts et al., 2017). This could be an important factor in assessing people for group

psychedelic-assisted psychotherapy, particularly when thinking who would benefit more from group psychedelic-assisted therapy. Our results are limited to a more recreational sample however and can only comment on anxious attachment being a predictor for communitas within a non-therapeutic setting.

Our study had several limitations. The sample lacked generalisability as it consisted of mostly white, well-educated, participants who were experienced with psychedelics. However, our sample included more women compared to previous psychedelic studies (Haijen et al., 2018; Watts et al., 2019). Nonetheless, this leaves out a significant proportion of cultural ethnicities and lacks diversity. It would be important to know why this is and what barriers there are to people from other ethnic backgrounds participating in this type of research. Michaels et al. (2018) purport that this could be due to people of colour not being represented in the field. Moreso, the fact that people of colour may not trust researchers due to past abuses in the medical field (Michaels et al., 2018). Also, inequalities in the criminal justice system regarding drug-related offences could underlie a potential fear in disclosing taking illicit substances in the current survey (Michaels et al., 2018).

Furthermore, there was likely sample bias due to it being a self-selected sample with no incentive other than contributing to psychedelic research. A lack of incentive requires good will or perhaps a vested interest. This, for example, could attract more people who have positive views of psychedelic drugs and/or want decriminalisation of these substances. However, this is a limitation in most psychedelic survey literature (Haijen et al., 2018; Watts et al., 2019). Additionally, this was a retrospective survey which means accuracy could have been lost due to memory recall. Especially given many participants reported an experience which was more than two years ago (47.7%). Furthermore, the sample was constrained by the fact it was a sample of mostly

experienced users who had taken psychedelics on more than two occasions. Only 5.5% of the sample had taken psychedelics once. Those naïve to psychedelics could have different experiences. This is important when it comes to thinking about psychedelic-assisted therapy as clients may be new to psychedelic substances. Therefore, the findings of this study should be seen as preliminary due to lack of having a diverse and representative sample.

Finally, our question that determined whether the psychedelic was taken in a group or not was perhaps too specific. It only asked the number of people who also took psychedelics *with* them. This loses important data on people who perhaps took psychedelics with others who were sober, but arguably could have been included in our research on groups and communitas.

Future research could utilise different designs to overcome some of the limitations discussed. A prospective survey as utilised by Haijen et al (2018) could give more accurate self-report measures as participants would be reporting on a planned experience, just before and after it. This could account for any effects of attachment style interacting with the retrospective nature, i.e. More accurate answers before avoidantly attached individuals may have had the time to minimise or supress their experiences (Sheinbaum et al., 2015). Additionally, to counteract the psychedelic 'hype bubble', future research should look at some of the more negative effects of psychedelics to make research more balanced by highlighting any potential harms, for example, looking at attachment and challenging experiences (Stauffer et al., 2021). Even more fruitful would be to include attachment measures in randomised controlled trials (RCT). This would mean there would be more control over who takes part; allowing for a more representative sample. Attachment measures could also be completed in reference to when they are being

experienced and researchers could also assess their attachment styles to rule out bias related to self-report measures.

To conclude, our research confirmed that acute state factors of mystical experience, emotional breakthrough and communitas are predictive of changes in long-term wellbeing. The present study begins to explore the relationships between attachment and the psychedelic experience. This adds to literature on how 'set and setting' impact the acute psychedelic experience and long-term benefits. These are important steps in discovering whether psychedelics can be used therapeutically or not and under what circumstances. Our findings showed small, significant, and positive relationships between attachment anxiety, mystical experiences, communitas, emotional breakthrough and changes in wellbeing. However, no relationship was found between attachment avoidance and any of these variables. Therefore, we can conclude that attachment anxiety is a small 'set' factor which predicts positive psychedelic outcomes.

References

Aday, J. S., Davis, A. K., Mitzkovitz, C. M., Bloesch, E. K., & Davoli, C. C. (2021). Predicting Reactions to Psychedelic Drugs: A Systematic Review of States and Traits Related to Acute Drug Effects. In *ACS Pharmacology and Translational Science,* 4 (2). https://doi.org/10.1021/acsptsci.1c00014

Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of Other in the Self Scale and the Structure of Interpersonal Closeness. *Journal of Personality and Social Psychology, 63*(4).

Barrett, F. S., Johnson, M. W., & Griffiths, R. R. (2015). Validation of the Revised Mystical Experience Questionnaire in Experimental Sessions with Psilocybin. *Journal of Psychopharmacology, 29*(11). https://doi.org/10.1177/0269881115609019

Belouin, S. J., & Henningfield, J. E. (2018). Psychedelics: Where We Are Now, Why We Got Here, What We Must Do. *Neuropharmacology*, *142*. https://doi.org/10.1016/j.neuropharm.2018.02.018

Bowlby, J. (1969)*Attachment and Loss, Basic Books.* New York,NY.

Carbonaro, T. M., Bradstreet, M. P., Barrett, F. S., MacLean, K. A., Jesse, R., Johnson, M. W., & Griffiths, R. R. (2016). Survey study of challenging experiences after ingesting psilocybin mushrooms: Acute and enduring positive and negative consequences. Journal of Psychopharmacology, 30(12), 1268–1278. https://doi.org/10.1177/0269881116662634

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). https://doi.org/10.1177/0269881118754710

Cherniak, A. D., Gruneau-Brulin, J., Mikulincer, M., Östlind, S., Carhart-Harris, R., & Granqvist,

P. (2022). Psychedelic Science of Spirituality and Religion: An Attachment-Informed Agenda Proposal. *The International Journal for the Psychology of Religion.* https://doi.org/10.1080/10508619.2022.2148061

Cohen J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. New York, NY: Routledge Academic.

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A Flexible Statistical Power Analysis Program for the Social, Behavioral, and Biomedical Sciences. *Behavior Research Methods, 39*. https://doi.org/10.3758/BF03193146

Forbes, D., Parslow, R., Fletcher, S., McHugh, T., & Creamer, M. (2010). Attachment Style in the Prediction of Recovery Following Group Treatment of Combat Veterans with Post-Traumatic Stress Disorder. *Journal of Nervous and Mental Disease*, *198*(12). https://doi.org/10.1097/NMD.0b013e3181fe73fa

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. In *Frontiers in Psychiatry*,10. https://doi.org/10.3389/fpsyt.2019.00943

George, J. R., Michaels, T. I., Sevelius, J., & Williams, M. T. (2019). The Psychedelic Renaissance and The Limitations of a White-Dominant Medical Framework: a Call for Indigenous and Ethnic Minority Inclusion. *Journal of Psychedelic Studies*, *4*(1), 4–15. https://doi.org/10.1556/2054.2019.015

Gökdağ, C. (2021). How does interpersonal emotion regulation explain psychological distress? The roles of attachment style and social support. Personality and Individual Differences, 176. https://doi.org/10.1016/j.paid.2021.110763

Griffiths, R. R., Johnson, M. W., Richards, W. A., Richards, B. D., McCann, U., & Jesse, R.

(2011). Psilocybin Occasioned Mystical-Type Experiences: Immediate and Persisting Dose-Related Effects. *Psychopharmacology*, *218*(4), 649–665. https://doi.org/10.1007/s00213-011-2358-5

Haijen, E. C. H. M., Kaelen, M., Roseman, L., Timmermann, C., Kettner, H., Russ, S., Nutt, D., Daws, R. E., Hampshire, A. D. G., Lorenz, R., & Carhart-Harris, R. L. (2018). Predicting Responses to Psychedelics: A Prospective Study. *Frontiers in Pharmacology*, *9*(NOV). https://doi.org/10.3389/fphar.2018.00897

Halama, P., Gasparikova, M., & Sabo, M. (2013). Relationship Between Attachment Styles and Dimensions of the Religious Conversion Process/Vztah medzi stylmi vztahovej vazbya dimenziami procesu nabozenskej konverzie. *Studia Psychologica: Journal for Basic Research in Psychological Sciences, 55*(3), https://link-gale-com.libproxy.ucl.ac.uk/apps/doc/A415563035/AONE?u=ucl_ttda&sid=bookmark-AONE&xid=e9b32763

Hartogsohn, I. (2017). Constructing Drug Effects: A History of Set and Setting. *Drug Science, Policy and Law*, *3*, 205032451668332. https://doi.org/10.1177/2050324516683325

Hazan, C, & Shaver, P. R. (1987). Romantic Love Conceptualized as an Attachment Process. *Journal of Personality and Social Psychology, 52*.

Kang H. (2013). The prevention and handling of the missing data. *Korean journal of anesthesiology*, *64*(5), 402–406. https://doi.org/10.4097/kjae.2013.64.5.402

Kangaslampi, S. (2023). Association Between Mystical-Type Experiences under Psychedelics and Improvements in Well-Being or Mental Health – A Comprehensive Review Of The Evidence. *Journal of Psychedelic Studies*. https://doi.org/10.1556/2054.2023.00243

Kettner, H., Rosas, F. E., Timmermann, C., Kärtner, L., Carhart-Harris, R. L., & Roseman, L.

(2021). Psychedelic Communitas: Intersubjective Experience During Psychedelic Group Sessions Predicts Enduring Changes in Psychological Wellbeing and Social Connectedness. *Frontiers in Pharmacology*, *12*. https://doi.org/10.3389/fphar.2021.623985

Kline, R. B. (2015). *Principles and Practice of Structural Equation Modeling.* Guilford publications.

Leamy, M., Bird, V., Le Boutillier, C., Williams, J., & Slade, M. (2011). Conceptual Framework for Personal Recovery in Mental Health: Systematic Review and Narrative Synthesis. *The British journal of psychiatry : the journal of mental science*, *199*(6), 445–452. https://doi.org/10.1192/bjp.bp.110.083733

Lee, J.-Y., Shin, Y.-J. (2019). Experience in Close Relationships Scale-Short Version (ECR–S) Validation with Korean College Students. *Measurement and Evaluation in Counseling and Development, 52(*2), 119–127.

Lleras, C. (2005). Path Analysis. *Encyclopedia of Social Measurement*, *3*, 25–30.

Michaels, T. I., Purdon, J., Collins, A., & Williams, M. T. (2018). Inclusion of People of Color in Psychedelic-Assisted Psychotherapy: A Review of the Literature. *BMC Psychiatry*, *18*(1). https://doi.org/10.1186/s12888-018-1824-6

Mikulincer, M & Nachshon, O. (1991). Attachment Styles and Patterns of Self-Disclosure. Journal of Personality and Social Psychology - PSP. 61. 321-331. 10.1037//0022-3514.61.2.321.

Murphy, R., Kettner, H., Zeifman, R., Giribaldi, B., Kartner, L., Martell, J., Read, T., Murphy-Beiner, A., Baker-Jones, M., Nutt, D., Erritzoe, D., Watts, R., & Carhart-Harris, R. (2022). Therapeutic Alliance and Rapport Modulate Responses to Psilocybin Assisted

Therapy for Depression. *Frontiers in Pharmacology*, *12*. https://doi.org/10.3389/fphar.2021.788155

Nutt, D. (2023). *Psychedelics: The revolutionary drugs that could change your life – a guide from the expert.* (First Edition). Yellow Kite.

Peng, J., Xiao, Y., Li, Y., Liang, W., Sun, H., Bao, W., Huang, Q., Zhang, Y., & Wu, S. (2021). Testing the reliability and validity of the Experiences in Close Relationships Scale–Short Form with Chinese college students. *Social Behavior and Personality*, *49*(7). https://doi.org/10.2224/sbp.10400

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 (5). American Psychiatric Association. https://doi.org/10.1176/appi.ajp.2019.19010035

Rom, E., & Mikulincer, M. (2003). Attachment Theory and Group Processes: The Association between Attachment Style and Group-Related Representations, Goals, Memories, and Functioning. *Journal of Personality and Social Psychology 84*(6). https://doi.org/10.1037/0022-3514.84.6.1220

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(1) https://doi.org/10.3389/fphar.2017.00974

Roseman, L., Haijen, E., Idialu-Ikato, K., Kaelen, M., Watts, R., & Carhart-Harris, R. (2019). Emotional breakthrough and psychedelics: Validation of the Emotional Breakthrough Inventory. *Journal of Psychopharmacology*, *33*(9). https://doi.org/10.1177/0269881119855974

Russ, S. L., Carhart-Harris, R. L., Maruyama, G., & Elliott, M. S. (2019). States and traits related to the quality and consequences of psychedelic experiences. *Psychology of Consciousness: Theory, Research, and Practice, 6*(1). https://doi.org/10.1037/cns0000169

Sachse, J., & Strauss, B. (2002). Attachment Characteristics and Psychotherapy Outcome Following Inpatient Psychodynamic Group Treatment. *Psychotherapie, Psychosomatik, Medizinische Psychologie*, *52*(3-4).

Sanders, J. W., & Zijlmans, J. (2021). Moving Past Mysticism in Psychedelic Science. *ACS Pharmacology and Translational Science 4* (3). https://doi.org/10.1021/acsptsci.1c00097

Sauer, E. M., Anderson, M. Z., Gormley, B., Richmond, C. J., & Preacco, L. (2010). Client attachment orientations, working alliances, and responses to therapy: A psychology training clinic study. Psychotherapy research : *Journal of the Society for Psychotherapy Research, 20*(6). https://doi.org/10.1080/10503307.2010.518635

Sessa, B. (2012). *The psychedelic renaissance: Reassessing the role of psychedelic drugs in 21st century psychiatry and society.* Muswell Hill Press.

Shah, N., Cader, M., Andrews, B., McCabe, R., & Stewart-Brown, S. L. (2021). Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS): Performance in a Clinical Sample in Relation to PHQ-9 and GAD-7. *Health and Quality of Life Outcomes*, *19*(1). https://doi.org/10.1186/s12955-021-01882-x

Sheinbaum, T., Kwapil, T. R., Ballespí, S., Mitjavila, M., Chun, C. A., Silvia, P. J., & Barrantes-Vidal, N. (2015). Attachment Style Predicts Affect, Cognitive Appraisals, and Social Functioning in Daily Life. *Frontiers in psychology*, *6*. https://doi.org/10.3389/fpsyg.2015.00296

Shechtman, Z., & Rybko, J. (2004). Attachment Style and Observed Initial Self-Disclosure as

Explanatory Variables of Group Functioning. *Group Dynamics: Theory, Research, And Practice, 8*(3). doi: 10.1037/1089-2699.8.3.207

Schindler I., Fagundes C. P., Murdock K. W. (2010). Predictors of romantic relationship formation: attachment style, prior relationships, and dating goals. *Personal. Relationsh.* 17, 97–105. 10.1111/j.1475-6811.2010.01255.x

Stace, W.T (1960) *Mysticism and Philosophy*. New York: MacMillan Press

Stewart-Brown, S., Tennant, A., Tennant, R., Platt, S., Parkinson, J., & Weich, S. (2009). Internal Construct Validity of the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS): A Rasch Analysis Using Data from the Scottish Health Education Population Survey. *Health and Quality of Life Outcomes*, *7*. https://doi.org/10.1186/1477-7525-7-15

Strassman, R. J. (1991). Human hallucinogenic drug research in the United States: A present-day case history and review of the process. *Journal of Psychoactive Drugs, 23*(1). doi:10.1080/02791072.1991.10472572

Studerus, E., Gamma, A., Kometer, M., & Vollenweider, F. X. (2012). Prediction of Psilocybin Response in Healthy Volunteers. *PLoS ONE*, *7*(2). https://doi.org/10.1371/journal.pone.0030800

Tasca, G. A., Taylor, D., Bissada, H., Ritchie, K., & Balfour, L.(2004). Attachment Predicts Treatment Completion in an Eating Disorders Partial Hospital Program Among Women With Anorexia Nervosa. *Journal of Personality Assessment,83*.

Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J., & Stewart-Brown, S. (2007). The Warwick-Dinburgh Mental Well-Being Scale (WEMWBS): Development and UK Validation. *Health and Quality of Life Outcomes*, *5*. https://doi.org/10.1186/1477-7525-5-63

Tidwell M. C. O., Reis H. T., Shaver P. R. (1996). Attachment, Attractiveness, and Social Interaction: A Diary Study. *Journal of Personality and Social Psychology 71*(4).

Thompson, R.A., Simpson, J.A., Berlin, L.J. (2021). *Attachment: The fundamental questions.* Guildford Press.

Wallin, D. J. (2007). *Attachment in psychotherapy*. Guilford Press.

Watts, R., Day, C., Krzanowski, J., Nutt, D., & Carhart-Harris, R. (2017). Patients' Accounts of Increased "Connectedness" and "Acceptance" After Psilocybin for Treatment-Resistant Depression. *Journal of Humanistic Psychology*, *57*(5). https://doi.org/10.1177/0022167817709585

Watts, R., Kettner, H., Geerts, D., Gandy, S., Kartner, L., Mertens, L., Timmermann, C., Nour, M. M., Kaelen, M., Nutt, D., Carhart-Harris, R., & Roseman, L. (2022). The Watts Connectedness Scale: A New Scale for Measuring a Sense of Connectedness to Self, Others, and World. *Psychopharmacology*, 239. https://doi.org/10.1007/s00213-022-06187-5

Wei, M., Russell, D. W., Mallinckrodt, B., & Vogel, D. L. (2007). The Experiences in Close Relationship Scale (ECR)-Short Form: Reliability, Validity, And Factor Structure. *Journal of Personality Assessment*, *88*(2). https://doi.org/10.1080/00223890701268041

Wolff, M., Evens, R., Mertens, L. J., Koslowski, M., Betzler, F., Gründer, G., & Jungaberle, H. (2020). Learning to Let Go: A Cognitive-Behavioral Model of How Psychedelic Therapy Promotes Acceptance. *Frontiers in Psychiatry*, *11*. https://doi.org/10.3389/fpsyt.2020.00005

Yaden, D. B., Potash, J. B., & Griffiths, R. R. (2022). Preparing for the Bursting of the Psychedelic Hype Bubble.*JAMA Psychiatry, 79*(10).

https://doi.org/10.1001/jamapsychiatry.2022.2546

Part 3: Critical Appraisal

In this chapter, I will cover reflections and learning from the process of doing this piece of research. Firstly, I will talk about my interest in the topic and hopes. Secondly, I will discuss my experience of researching a controversial subject area and how this shaped and balanced my views. Then, I will discuss what I would do differently now, a dilemma that occurred and limitations of the study.

Psychedelics has been an area of great interest to me over the years. I was fascinated by the novel findings it was bringing and how relatively new the area is, and how much this leaves to be explored. Coming from a clinical background in which I have experienced psychiatry and medication to be the dominant force in mental health practice, I was surprised to learn during my research that psychotherapy used to be the main approach to healing in the 1950/60s. It was in fact substances such as psychedelics which started the psychopharmaceutical revolution (George et al., 2019) . I am mentioning this here as often in my clinical work, there has been a sense that psychiatry and psychology can clash on theoretical grounds. However, something I find appealing about research into psychedelics is that psychedelic-assisted psychotherapy seems to marry up both areas. Whilst it is a relatively new area, and there is no certainty around it taking off in this country, it could create new opportunities and ways for psychology and psychiatry to work together and learn from each other (Murphy et al., 2022). Whilst all hypothetical at this stage, I would hope that this new way of working could trickle into other shared areas of mental health, creating a more aligned, open, and flexible team dynamic.

Over the course of the research, I noticed that the more I learned about psychedelics, the more disenchanted I became at times. When I embarked on this journey, I had been swept up by the positive media and promising research findings and treating psychedelics as a ‘panacea’; what Yaden et al. (2022) termed the ‘hype bubble’. The

process of research helped me to view the area a lot more critically and from a position of caution. Yaden et al. (2022) acknowledges our responsibility as researchers to be cautious not to contribute to the media hype and to provide balanced and informed views. Also, to acknowledge when findings have not been positive and to specifically research negative effects. Indeed, Watts (2022) wrote an apology to acknowledge her part in contributing to this overly simplistic narrative on psychedelics being a 'cure all' in her Ted Talk. However, it is important to remember the context, that at the time of the talk, there was still much stigma surrounding psychedelics. It is possible that the current hype was born from the intention of trying to get these substances and studies taken seriously by the mass population. Nonetheless, realistic portrayals in the public domain are important, as to not lead to this bubble bursting and a return to the prohibition and stigmatisation of the 1950/60s (Yaden et al., 2022). Furthermore, as public opinion is a part of our culture, which feeds into 'set', this is likely to influence participants' expectations before taking part in psychedelic research. These expectations are then likely to influence someone's psychedelic experience and subsequent wellbeing (Carhart-Harris et al., 2018). Having high hopes and it not working could further instil a sense of hopelessness in someone who has been classed as having 'treatment resistant depression'. Indeed, this media image and expectations are also likely to influence who decides to take part in psychedelic studies. For example, greater representation of white researchers (amongst other factors) could alienate people of colour from taking part in psychedelic research.

This leads on to another aspect of the research that contributed to my disenchantment. A lack of diversity seems to be a substantial problem that was reflected in our sample, amongst others. This threatens the generalisability of studies as well as maintaining social inequalities. With psychedelics being a new area of research and therapy, it leaves room for these to be challenged from the beginning and to prevent

structural and institutional racism and inequalities from entering the field further. This links into the rise of psychedelic use in the west, some of which has been at the detriment of indigenous cultures who have been using these substances for centuries; especially in cases where western psychedelic use has deprived native communities from using them. This was the case in Gabon where ibogaine grows natively and is sacred to the Gabonese. Western companies exploitation of this resource lead to the Gabonese being not only deprived of the substance, but also of any recognition in discovering its healing benefits (Sullivan, 2023). This is one of many examples of the west appropriating these substances (George et al., 2019). Some companies have been operating ethically by giving money to communities and including the indigenous community in co-creating research and therapies (George et al., 2019). However, this is the exception rather than the rule. Some companies are rushing to develop protocols and profit from this emerging area of healthcare (Gregoire, 2020). This is worrying, considering research is still in its infancy. As a relatively new discipline in the west, which developed from non-western traditions, there is an opportunity to acknowledge this and make concerted efforts to not replicate existing power structures (George et al., 2019). Learning all of this was upsetting and angering but gave me a much more balanced, historically informed, and sceptical view of psychedelic research, and encouraged cultural humility and sensitivity in the topic. It also inspired me to contribute to this research into factors that contribute to aspects of the psychedelic experience, so that harm can be reduced. Interestingly, in talking about my research with others, I noticed the influence of the 'hype' in most people. Whilst this is progress from the stigma surrounding this topic, more of a middle ground needs to be established. This made me talk about my research with others in a more sensitive and balanced way, thus helping to ground expectations in the field (which feeds back into peoples psychedelic experiences). This made me experience a unique role in research I

was not expecting in terms of the proliferation of accurate and informed information to lay persons. Indeed, I agree with Yaden et al. (2022) in saying that there is a level of responsibility here, especially to people who do not typically read research.

If I were to do this project again, I would have narrowed my focus. I think at times, it felt like I was trying to cover too much; for example, by looking at long-term as well as acute experiences and the group experience. Having a more blinkered approach would have allowed for more depth into the area of attachment and psychedelics. For example, analysis could have included how the relationships worked using a path analysis model. Indeed, this is one of the main limitations of multiple regression , as it only shows the relationships but not how they came about or how they function. Future research could explore this more and whether set and setting variables impact the relationship between attachment styles and the psychedelic experience. I.e. for the insecure attachment styles and feelings of security with others prior to the experience. Research like this could provide more information on contexts which may be more or less favourable to the different attachment styles. This could inform harm reduction better, but still perhaps not psychedelic-assisted psychotherapy due to it not being a clinical sample. However, this piece of research could be seen as laying the foundations as it showed which variables were related to each other, to what degree and in which direction.

A dilemma that occurred was related to how I would be analysing and conceptualising my data. Initially, the plan was to do a series of path-analysis models. A lot of work was put into theorising different combinations of path models with the variables of attachment, mystical experiences, communitas and changes in wellbeing. However, a downside of path analysis is that it requires sound theory and evidence behind the hypothesised paths. After many iterations of path models, it became clear that there was not enough evidence to support it. This is one of downsides in working with a

relatively novel area of psychedelic research. Eventually, it became clear that doing a series of multiple regressions would make a lot more sense as these can be more exploratory. Multiple regression was more suited to the questions I was asking, in terms of whether or not the relationships exist and to what extent. I found that doing various iterations of path-analyses was distancing me from what I was actually interested in covering, as I was restricted by the need for clearly defined paths with evidence. Whilst it felt like a bit of a disappointment to not be doing the path analysis, it demonstrated to me the ever-shifting nature of research, the need to be critical of your approach and the importance of not getting too wedded to an idea.

Another thing I would have done differently would have been to try to address lack of diversity in the sample during recruitment. A more diverse sample would have resulted in more generalisability and would contribute towards psychedelic science not becoming more colonialised. While efforts were made to share the advert with more diversity-aware psychedelic groups on social media, we could have gone a step further and directly highlighted the need for more diversity in the advert. This could have encouraged people from diverse backgrounds to feel more included if directly addressed in an advert. More research should be done on the barriers to people of colour engaging in this research and to think of ways this could be overcome (Michaels et al, 2018).

Additionally, our sample further lacked generalisability as most participants were educated to university level or above. In hindsight, this makes sense given recruitment was partially through university psychedelic societies and MAPS (Multidisciplinary Association for Psychedelic Studies); a non-profit research and education organisation. Further thinking needs to be done about how to access this group.

Furthermore, there were problems with the way in which we determined whether participants were in a group or not. We asked specifically whether another person took a

psychedelic with them. We did this as we were interested in groups of people doing psychedelics together, as when done in a ceremony or as a shared experience amongst friends (similar to Kettner et al., 2021). However, this excluded people who took the psychedelic in the presence of other sober people. This could have been overcome by asking how many people were present for the experience and how many had taken the substance. This has taught me about the importance of precision when it comes to survey design.

The retrospective nature of the study was a limitation, especially as a lot of participants reported experiences that happened over two years ago. As mentioned in the discussion, this could have impacted the accuracy of reporting. Especially in regards to individuals with avoidant attachment style as they have a tendency to suppress or minimise emotional experiences. This, coupled with the time scale could mean that the event was not remembered fully, as the defence of suppression was occurring. Another approach could have been to ask participants to only report experiences that happened in the past week, which could mean bias in reporting had not chance to set in. Although, this would severely limit the sample size. A prospective method could be used by asking participants to answer the questionnaire in regard to an upcoming planned psychedelic experience and collecting data at three different time points. However, this method asks a lot of the participant and could have a significant drop out rate. Even better would be for RCTs to include attachment as a measure. Participants would be answering the measures during or immediately after the experience. This, combined with the opportunity for researchers to be observing behaviour, would give a more accurate reflection of how the different attachment styles experience the psychedelic experience.

Overall, I have learned a lot through this process. It was fascinating to enter this new field as a relatively lay person with idealism and to exit it with a more critical and

balanced view of the topic, whilst acknowledging its dark past. I have learned to keep things simpler in terms of focus. I have also acknowledged the various merits and limitations of statistical analyses and what this meant for my own and future research. Further, I have learned more about the importance of inclusive and generalisable samples. Finally, I have learned about the importance of questionnaire design in eliciting useful information and the limitations of a retrospective design.

References

George, J. R., Michaels, T. I., Sevelius, J., & Williams, M. T. (2019). The Psychedelic Renaissance and The Limitations of a White-Dominant Medical Framework: a Call for Indigenous and Ethnic Minority Inclusion. *Journal of Psychedelic Studies*, *4*(1), 4–15. https://doi.org/10.1556/2054.2019.015

Gregoire, C. (2020). Inside the movement to decolonize psychedelic pharma. NEO.LIFE. https://neo.life/2020/10/inside-the-movement-to-decolonize-psychedelic-pharma/

Michaels, T. I., Purdon, J., Collins, A., & Williams, M. T. (2018). Inclusion of People of Color in Psychedelic-Assisted Psychotherapy: A Review of the Literature. *BMC Psychiatry*, *18*(1). https://doi.org/10.1186/s12888-018-1824-6

Watts, R. (2022, March 5). Can magic mushrooms unlock depression? What I've learned in the five years since my TEDx talk. Medium. https://medium.com/@DrRosalindWatts/can-magic-mushrooms-unlock-depression-what-ive-learned-in-the-5-years-since-my-tedx-talk-767c83963134

Sullivan, G. (2023, February 11). The psychedelic ibogaine can treat addiction. The race is on to cash in. The Guardian. https://www.theguardian.com/society/2023/jan/23/ibogaine-iboga-drug-addiction-psychedelic-gabon

Appendices

Appendix 1: UCL Ethical Approval Letter

UCL RESEARCH ETHICS COMMITTEE
OFFICE FOR THE VICE PROVOST RESEARCH

21st July 2022

Professor Sunjeev Kamboj
Research Department of Clinical, Educational and Health Psychology
UCL

Cc: Rosalind McAlpine, Agatha Fauchille, Fiona Bailey, Yasmeen Hayat, Maximillian Wood & Katarina Krajnovic

Dear Professor Kamboj

Notification of Ethics Approval with Provisos
Project ID/Title: 19437/002: Psychedelics and mental health online survey: an investigation into various predictors, mediators and psychological mechanisms of action

Further to your satisfactory responses to the Committee's comments, I am pleased to confirm in my capacity as Chair of the UCL Research Ethics Committee (REC) that your study has been ethically approved by the UCL REC until **1st June 2024.**

Ethical approval is subject to the following conditions:

Notification of Amendments to the Research
You must seek Chair's approval for proposed amendments (to include extensions to the duration of the project) to the research for which this approval has been given. Each research project is reviewed separately and if there are significant changes to the research protocol you should seek confirmation of continued ethical approval by completing an 'Amendment Approval Request Form' https://www.ucl.ac.uk/research-ethics/responsibilities-after-approval

Adverse Event Reporting – Serious and Non-Serious
It is your responsibility to report to the Committee any unanticipated problems or adverse events involving risks to participants or others. The Ethics Committee should be notified of all serious adverse events via the Ethics Committee Administrator (ethics@ucl.ac.uk) immediately the incident occurs. Where the adverse incident is unexpected and serious, the Joint Chairs will decide whether the study should be terminated pending the opinion of an independent expert. For non-serious adverse events the Joint Chairs of the Ethics Committee should again be notified via the Ethics Committee Administrator within ten days of the incident occurring and provide a full written report that should include any amendments to the participant information sheet and study protocol.

The Joint Chairs will confirm that the incident is non-serious and report to the Committee at the next meeting. The final view of the Committee will be communicated to you.

Office of the Vice Provost Research, 2 Taviton Street
University College London
Tel: +44 (0)20 7679 8717
Email: ethics@ucl.ac.uk
http://ethics.grad.ucl.ac.uk/

Final Report
At the end of the data collection element of your research we ask that you submit a very brief report (1-2 paragraphs will suffice) which includes in particular issues relating to the ethical implications of the research i.e. issues obtaining consent, participants withdrawing from the research, confidentiality, protection of participants from physical and mental harm etc.
In addition, please:

- ensure that you follow all relevant guidance as laid out in UCL's Code of Conduct for Research;
- note that you are required to adhere to all research data/records management and storage procedures agreed as part of your application. This will be expected even after completion of the study.

With best wishes for the research.

Yours sincerely

Professor Lynn Ang
Joint Chair, UCL Research Ethics Committee

Appendix 2: Participant Information Sheet and Consent Form.

Participant Information Sheet for Respondents of Online Questionnaire on Effects of Previous Psychedelic Use.

UCL Research Ethics Committee Approval ID Number: 9437/002

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

Title of Study: Psychedelics online survey: an investigation into various predictors, mediators, and psychological mechanisms of action.

Department: Research Department of Clinical, Educational and Health Psychology

Name and Contact Details of the Researcher(s):
Sunjeev Kamboj (Professor) - sunjeev.kamboj@ucl.ac.uk
Rosalind McAlpine (PhD Student) - rosalind.mcalpine.18@ucl.ac.uk
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Yasmeen Hayat (DClinPsy Trainee) - yasmeen.hayat.20@ucl.ac.uk
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Max Wood (DClinPsy Trainee) - max.wood.20@ucl.ac.uk
Katarina Krajnovic (Undergraduate Student) – katarina.krajnovic.21@ucl.ac.uk.

Name and Contact Details of the Principal Researcher:
Prof. Sunjeev Kamboj - sunjeev.kamboj@ucl.ac.uk

You are being invited to take part in a study about the use of psychedelics.

Before you decide whether you will consent to participating, it is important for you to understand why the research is being done and what participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether you wish to take part.

Thank you for reading this.

What is the project's purpose?
The aim of this online questionnaire is to investigate how psychedelics effect mental wellbeing and personal beliefs.

We are interested in the following two hypotheses:

1) How *prior* preparatory practices, 'set and setting', and behaviours *during* the psychedelic experience influence the quality of the psychedelic experience

2) How these influence the consequent self-reported changes in mental health symptoms, well-being, and beliefs.

We hope these findings will improve our understanding of the use of psychedelics for therapeutic purposes, and potentially help us to develop new treatments for disorders like anxiety, depression, and PTSD.

Why have I been chosen?
We aim to recruit 1000 participants aged 18+ to take part in this study. You have been identified as you have indicated that you have previously used psychedelics (in any setting) and have found our Qualtrics survey that we have disseminated on social media, shared with psychedelic research groups, and posted in online psychedelic user forums.

Do I have to take part?
No, it is up to you to decide whether to take part or not. If you do take part, you will be asked to sign an online consent form. You are free to withdraw from the study at any time without giving a reason, even after giving your consent and without any loss to any benefits to which you are entitled.

If you decide to withdraw, you have a choice with what will happen to any data you have provided. All data will initially be anonymized.

What will happen to me if I take part?
Before participating in the study, you will be asked to complete a consent form. If you decide to take part in this study, you will be able to complete an online questionnaire that will ask you for a series of questions relating to some of the following variables:

- Demographics
- Previous psychedelic and drug use (requirement for taking part in the study)
- Mental health history
- Preparatory practices
- Priming and exposure to psychedelic culture
- Personality traits
- Attachment styles
- Set and intention prior/during the psychedelic trip
- Setting during the psychedelic trip (e.g., group settings vs. alone; use of music)
- Quality of the acute psychedelic experience
- Psychological variables
- Mental health and wellbeing post psychedelic trip
- Spiritual and/or religious beliefs

This online questionnaire will be completed only once and should take around 30-40 minutes to complete.

Will I be recorded and how will the recorded media be used?

There will be no video monitoring of you during the study.

What are the possible disadvantages and risks of taking part?

Overall, we believe the risks of taking part in this study are low. However, like any research, we cannot guarantee zero risk to you. From our current knowledge, we do not know of any significant risks associated with completing this type of questionnaire. However, it is important to know that you will reflect on your psychedelic experiences, which may bring up some personal feelings and emotional memories. This may cause some moderate temporary feelings of distress in some people.

Nonetheless, you should not take part if you believe that recalling or describing an emotionally memory will cause you a lot of distress. You can of course stop taking part at any stage of the questionnaire. You will not be asked to re-join the study.

What are the possible benefits of taking part?
Whilst there are no immediate benefits for those people participating in the project, it is hoped that you will find participation in this study interesting. Your participation will also help improve our general understanding of psychedelic processes which may be relevant in the development of new psychological therapies.

What if something goes wrong?
If you have any complaints about taking part in this study, you should contact the principal supervisor Professor Sunjeev Kamboj (*details at the top of this document*). If you feel your complaint is not handled to your satisfaction after speaking to Professor Kamboj, you can contact the Chair of the UCL Research Ethics Committee ethics@ucl.ac.uk.

Will my taking part in this project be kept confidential?
Information about you that is collected during your participation in this research will be kept strictly confidential and stored securely in accordance with the Data Protection Act 2018. Only researchers directly involved in the study will have access to the data. The results of this research may be disseminated in peer-reviewed scientific journals, but you will in no way be identifiable in any publication. You may request feedback when the study is completed.

Limits to confidentiality
Please note that confidentiality will be maintained as far as it is possible, however if anything is disclosed that indicates that someone might be in danger of harm, I or the University might have to inform relevant agencies of this. Confidentiality will be respected subject to legal constraints and professional guidelines and will be maintained unless there are compelling and legitimate reasons for this to be breached, for example if we were seriously concerned for your safety or the safety of others. If this was the case, we would inform you of any decisions that might limit your confidentiality.

What will happen to the results of the research project?
The data from this research project will be disseminated through standard scientific outlets, for example in peer-reviewed papers, talks and conference posters. The data will also be included in Master's and/or PhD theses.

Your data may be stored indefinitely and numerical data and limited (non-identifiable) data may be shared with others outside the research group for the purposes of further scientific research. Any information you provide will be kept securely for the duration of the study (or longer, if you consent to being contacted for future research) and would not be included in any data shared with other researchers. The data you provide through participating in the study may be archived online as "open data" following publication of any resulting papers, in a de-identified form. Any such data could be downloaded by anyone with an internet connection and used for any purpose. Any data that could identify you personally would be removed before online archiving. You can request to be sent a copy of the published results.

Local Data Protection Privacy Notice
The data controller for this project will be University College London (UCL). The UCL Data Protection Office provides oversight of UCL activities involving the processing of personal data and can be contacted at data-protection@ucl.ac.uk. UCL's Data Protection Officer can also be contacted at data-protection@ucl.ac.uk.

If you are concerned about how your data is being processed, please contact UCL in the first instance at data-protection@ucl.ac.uk. If you remain unsatisfied, you can also contact the Information Commissioner's Office (ICO). Contact details, and details of data subject rights, are available on the ICO website at: https://ico.org.uk/for-organisations/data-protection-reform/overview-of-the-gdpr/individuals-rights/

This 'local' privacy notice sets out the information that applies to this study. Further information on how UCL uses participant information can be found in our 'general' privacy notice:

For participants in health and care research studies, see http://www.ucl.ac.uk/legal-services/privacy/participants-health-and-care-research-privacy-notice
The information that is required to be provided to participants under data protection legislation (GDPR and DPA 2018) is provided across both the 'local' and 'general' privacy notices.

Who is organising and funding the research?
The research is organised by the Clinical, Education and Health Psychology Department, UCL.

Contact for further information
Please discuss the information above with others if you wish, and please contact the researchers if there is anything that is not clear or if you would like more information. You will be given a copy of this information sheet and a consent form to keep.

Thank you for reading this information sheet and for considering taking part in this research study.

CONSENT FORM FOR PREVIOUS PSYCHEDELIC USERS

Please complete this form after you have read the Information Sheet and/or listened to an explanation about the research.

Title of Study: Psychedelics and mental health online survey: an investigation into various predictors, mediators and psychological mechanisms of action.

Department: Faculty of Brain Sciences
Name and Contact Details of the Researcher(s):

- Rosalind McAlpine rosalind.mcalpine.18@ucl.ac.uk
- Agathe Fauchille agathe.fauchille.14@ucl.ac.uk
- Max Wood max.wood.20@ucl.ac.uk
- Yasmeen Hayat yasmeen.hayat.20@ucl.ac.uk
- Fiona Bailey fiona.bailey.20@ucl.ac.uk
- Katarina Krajnovic katarina.krajnovic.21@ucl.ac.uk

Name and Contact Details of the Principal Researcher: Sunjeev Kamboj sunjeev.kamboj@ucl.ac.uk
Name and Contact Details of the UCL Data Protection Officer: Alexandra Potts data-protection@ucl.ac.uk
This study has been approved by the UCL Research Ethics Committee: Project ID number: 9437/002

Thank you for considering taking part in this research. The person organising the research must explain the project to you before you agree to take part. If you have any questions arising from the Information Sheet, please ask the researcher before you decide whether to join in.

I confirm that I understand that by ticking/initialling each box below I am consenting to this element of the study. I understand that it will be assumed that unticked/initialled boxes means that I DO NOT consent to that part of the study. I understand that by not giving consent for any one element that I may be deemed ineligible for the study.

		Tick Box
1.	I confirm that I have read and understood the Information Sheet for the above study. I have had an opportunity to consider the information and what will be expected of me. I have also had the opportunity to ask questions which have been answered to my satisfaction and would like to take part in an online survey.	
2.	I understand that I will be able to withdraw my data at any time before completion of the survey	
3.	I consent to participate in the study. I understand that the information I provide *(*including my age, gender, ethnicity, and the location and personal aspects of my psychedelic experience*)* will be used for the purposes explained to me. I understand that according to data protection legislation, 'public task' will be the lawful basis for processing.	
4.	I understand that my data gathered in this study will be stored anonymously and securely. It will not be possible to identify me in any publications.	
5.	I understand that my information may be subject to review by responsible individuals from the University or monitoring and audit purposes.	
6.	I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason.	

7.	I understand the potential risks of participating.	
8.	I understand the direct/indirect benefits of participating.	
9.	I understand that I will not benefit financially from this study or from any possible outcome it may result in in the future.	
10.	I agree that my anonymised research data may be used by others for future research. No one will be able to identify you when this data is shared.	
11.	I understand that the information I have submitted will be published as a report and I wish to receive a copy of it. Yes/No	
12.	I consent to my online survey being stored and understand that the content will be: (a) Stored anonymously, using password-protected software and may be used for training, quality control, audit and specific research purposes.	
13.	I hereby confirm that: (a) I understand the exclusion criteria as detailed in the Information Sheet; (b) I do not fall under the exclusion criteria.	
14.	I am aware of who I should contact if I wish to lodge a complaint.	
15.	I understand my (anonymised) quotes may be used in published papers and theses.	
16.	I voluntarily agree to take part in this study.	
17.	I would be happy for the data I provide to be archived on a secure portal at UCL. I understand that other authenticated researchers will have access to my anonymised data.	

If you would like your contact details to be retained so that you can be contacted in the future by UCL researchers who would like to invite you to participate in follow up studies to this project, or in future studies of a similar nature, please tick the appropriate box below.

	Yes, I would be happy to be contacted in this way	
	No, I would not like to be contacted	

Appendix 3: List of Measures Used in Survey

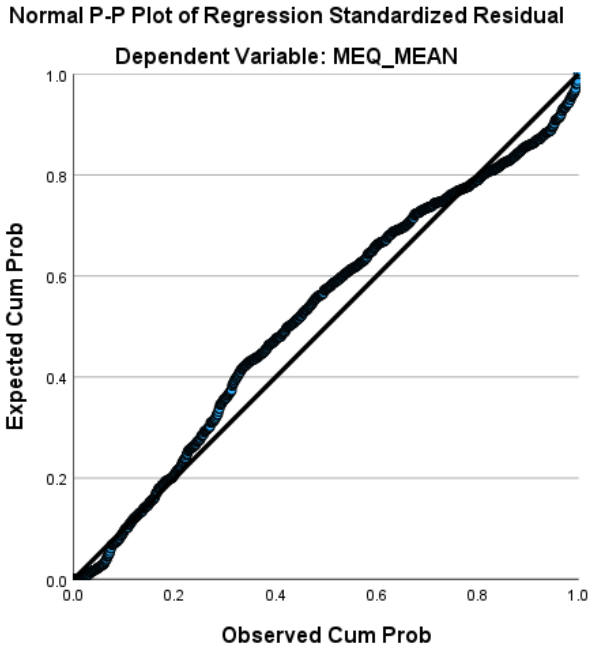
Construct	Measure
Mystical Experience	Mystical Experiences Questionnaire
Challenging Experience	Challenging Experience Questionnaire
Emotional breakthrough/resolution of challenges	Emotional breakthrough Inventory (EBI)
Response to challenging psychedelic experience	Self-constructed measure by co-researcher, Max Wood from qualitative data
Well-being	Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS)
Adult attachment style	The Experience in Close Relationship Scale - short form (ECR-S)
Communitas	The adapted psychedelic Communitas Scale (COMS)
Surrender	State of Surrender (SoS)
Extraversion	NEO-FFI-3: extraversion subscale
Preparation	Novel adapted set/prep scale (Psychedelic Preparation Scale)
One-off questions relating to demographics, mood, previous psychedelic experience, intentions, music, strength of substance etc.	Self-constructed questions
Prior closeness to other group members	Inclusion of Self in Other Scale
Impact of experience	Self-constructed measure by co-researcher Ros McAlpine

Appendix 4: Areas Investigated by Other Students as Part of a Joint Project

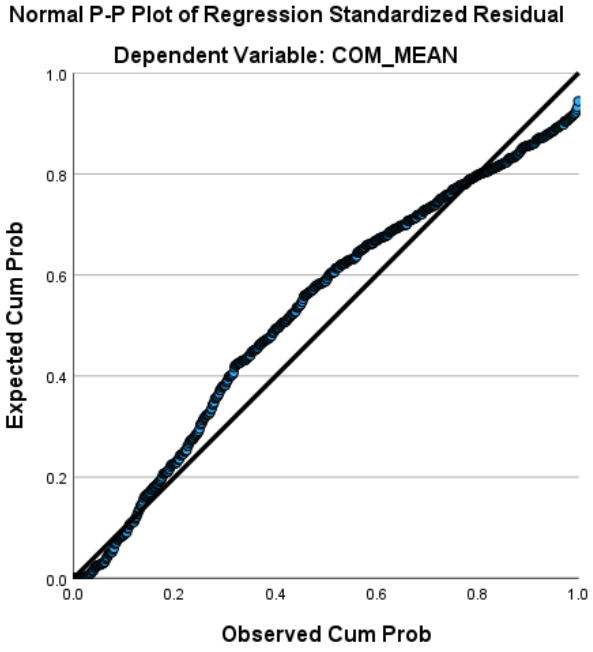
Researcher	Areas Investigated
Yasmeen Hayaat Dclinpsy trainee	Exploration of impact of extraversion on surrender, mystical experiences and communitas in group psychedelic use
Max Wood Dclinpsy trainee	Mixed methods study of challenging experiences. Exploring different acute management strategies as predictors for emotional breakthrough
Rosalind McAlpine PhD student	Impact of preparation behaviours on acute and long-term experiences.
Agathe Fauchille PhD student	How pre-existing spiritual beliefs impact short- and long-term outcomes. Impact of music on these factors.

Appendix 5: P-P Plots For Normal Distribution of Residuals

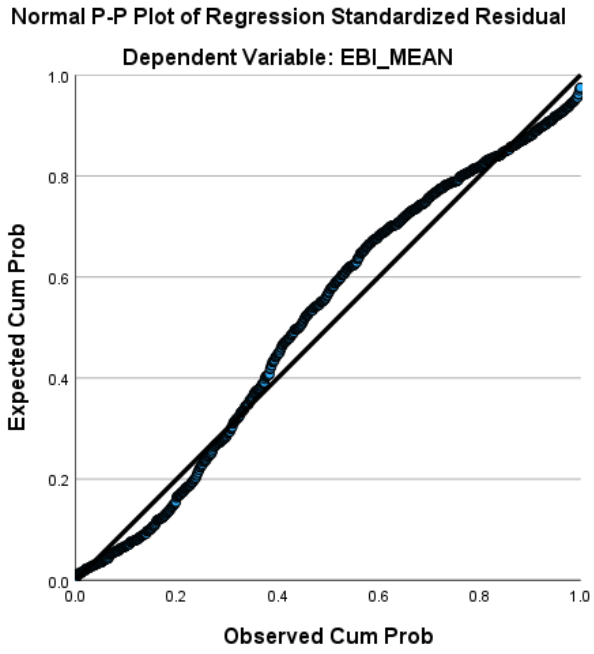
Multiple Regression 1: P-P Plot Showing Normal Distribution of Residuals for Strength of Psychedelic, Attachment Anxiety and Attachment Avoidance Predicting Mystical Experience



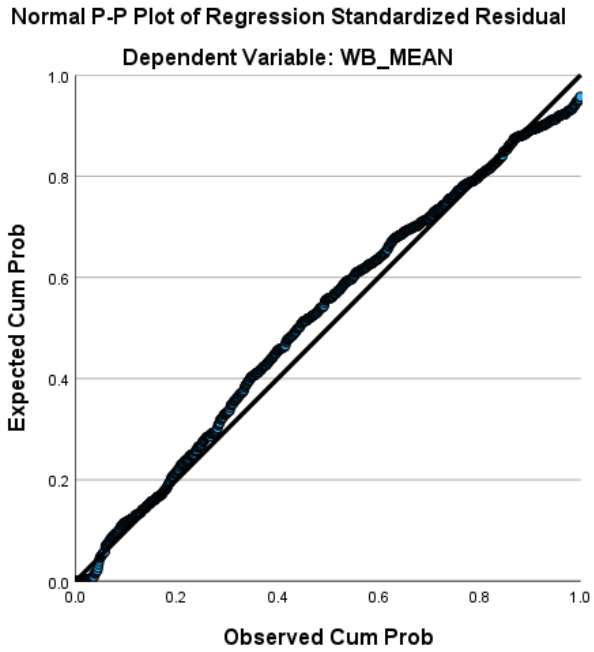
Multiple Regression 2: P-P Plot Showing Normal Distribution of Residuals for Strength of Psychedelic, Prior Closeness, Attachment Anxiety and Attachment Avoidance Predicting Communitas



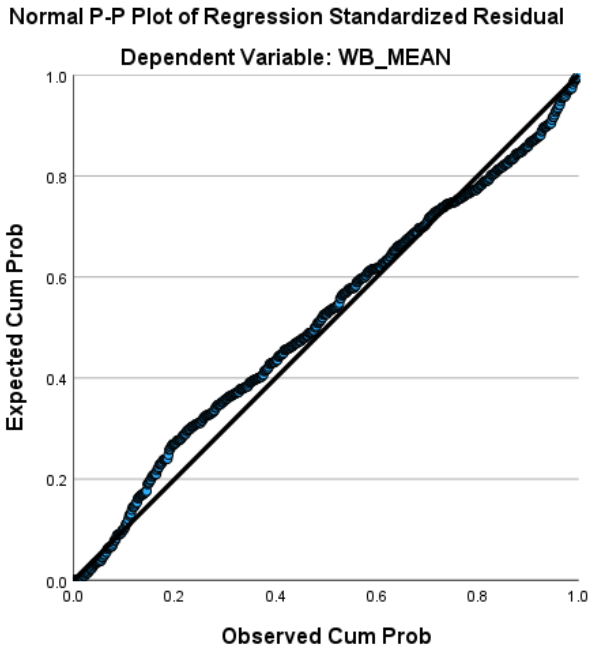
Multiple Regression 3: P-P Plot Showing Normal Distribution of Residuals for Strength of Psychedelic, Attachment Anxiety and Attachment Avoidance Predicting Emotional Breakthrough



Multiple Regression 4: P-P Plot Showing Normal Distribution of Residuals for Attachment Anxiety and Attachment Avoidance Predicting Changes in Wellbeing



Multiple Regression 5: P-P Plot Showing Normal Distribution of Residuals for Mystical Experience, Communitas and Emotional Breakthrough Predicting Changes in Wellbeing



Appendix 6: Results of Analysis for Multiple Regression 5 when Using Listwise Deletion Compared to Mean Substitution for Handling of Missing Data

Predictor Variable	Listwise Deletion (used in thesis) Standardized Coefficient Beta	Mean Substitution Standardized Coefficient Beta
MEQ	.24	.24
COMS	.19	.22
EBI	.38	.36

N.B p=.001 significance level for all the above results.