“Lifting the Veil on the Social World”: Understanding How Classic Psychedelics Influence Autistic Adults’ Experience of the Social World

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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

In recent years, there has been a renewed interest in the therapeutic potential of psychedelic drugs. Preliminary evidence indicates that psychedelics could be effective in treating various mental health conditions. Social connection, known to be associated with mental health, can be augmented during psychedelic experiences. Naturally occurring psychedelics have long been used in ceremonial contexts by certain traditional communities for healing purposes. It is thought that the therapeutic or healing benefits of psychedelic ceremonies are, in part, underscored by their communal aspects.

Further exploration of this may be relevant to autistic populations, who experience higher rates of social isolation and mental health difficulties relative to the general population. There is very little research into the impact of psychedelics on the social experiences of autistic people. This thesis comprises three parts and aims to address the following knowledge gaps.

Part One presents a scoping review that maps the observational literature qualitatively exploring ceremonial psychedelic experiences in people with psychological disorders. It also identifies therapeutically beneficial experiences, processes, or setting features related to the ceremonial context.

Part Two comprises an empirical chapter which qualitatively explores the impact of classic psychedelics on the social experiences of autistic adults. A reflexive thematic analysis was conducted on a pre-existing qualitative dataset collected using an online, cross-sectional survey. This was part of a larger joint project with Hannah Krzyzanowski.

Part Three presents a critical appraisal of the abovementioned research, including reflections on the researcher's context, assumptions and epistemology. This chapter also expands upon the strengths and limitations discussed in Part Two.

Impact Statement

In recent years, there has been a resurgence of interest in the potential therapeutic application of psychedelic drugs. This has manifested as a growing body of clinical research into the utility of psychedelics in psychological conditions and for enhancing psychological wellbeing. Thus far, Western clinical research into psychedelics has employed highly controlled environments to explore the benefits of individual psychedelic sessions. However, psychedelics also have the potential to provide therapeutic benefits when used in naturalistic ceremonial settings, as they have been for millennia by non-Western traditional communities. The following research explores the potential of psychedelics through two distinct but related studies. The first is a scoping review of *qualitative* observational studies investigating the experience of psychedelic ceremonies in people with specific psychological conditions. Importantly, it identifies potentially important therapeutic aspects pertaining to the experience of the communal environment and ceremonial frame. This work justifies future research into the impact of ceremonial psychedelic use in a broader range of psychological conditions. It also provides insights into the conditions that appear to facilitate beneficial elements of psychedelics in naturalistic settings. It may also influence the focus and design of future research, which could consider exploring the effects of shared psychedelic experiences in controlled settings, given the findings in naturalistic settings. This is particularly important in the context of social wellbeing, which has a well-documented relationship with mental health outcomes.

The second study was a qualitative investigation of how classic psychedelics influence the social experiences of autistic adults. Given the limited amount of contemporary psychedelic research with autistic people, this work could provide a platform for expanding our understanding of how psychedelics affect autistic people and provide hypotheses that could be more formally evaluated in experimental and clinical trials. Carefully performed clinical trials are an essential step in potentially opening up the conversation around the clinical use of classic psychedelics in autistic people who experience social anxiety. The identification of psychedelic-related social challenges could inform future research into the potential risks associated with psychedelic use in autistic people. Since the effects and risks in this population are unknown, this would be an important step in ensuring the safety of autistic participants of any future psychedelic studies. It could also lead to the development of guidance around potential considerations for autistic participants in this field. This work also highlights factors which can contribute to fulfilling social experiences for autistic people. Even beyond the scope of psychedelics, furthering understanding and awareness of this is important and could inform guidance or policy around fostering the social wellbeing of autistic people. This is important, given the link between social isolation and mental health difficulties.

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Part One: Literature Review

Therapeutically Beneficial Factors Associated with Ceremonial Psychedelic Use in People with Psychological Disorders: A Qualitative Scoping Review

Abstract

Aims: Naturally occurring psychedelics have long been used by traditional communities. There is increasing evidence for the psychotherapeutic use of psychedelics with individuals in controlled settings. However, less is known about the qualitative experience of ceremonial psychedelic use in the context of psychological disorders. This article aimed to map qualitative evidence and identify therapeutic factors relating to the ceremonial use of psychedelics in participants with psychological disorders.

Methods: A scoping review of naturalistic, observational studies collecting qualitative data from participants of psychedelic ceremonies with a psychological disorder was undertaken. Study characteristics, qualitative findings and therapeutically valuable factors attributed to the ceremonial experience were extracted from the included studies. Therapeutic factors were grouped into clusters.

Results: The 26 included studies reported on the ceremonial use of ayahuasca and peyote in individuals with substance use disorders, eating disorders and post-traumatic stress disorder. Whilst there were inconsistencies in the reporting of demographic details and qualitative analyses, there was some consensus regarding therapeutically valuable factors pertaining to the *set, setting, acute effects* and *impact*.

Conclusions: This review highlights the therapeutic value of the ceremonial frame and features, the sense of community and support, and the psychological, somatic and spiritual factors in the context of psychological disorders. Further observational, qualitative work is needed to understand the effects of ceremonial psychedelic use on a broader range of psychological disorders.

Introduction

Following a period of inactivity resulting from the Controlled Substance Act of 1970 and the criminalisation of psychedelic drugs, there has been a recent surge in interest in the clinical utility of psychedelics. The term “psychedelic” encompasses a range of naturally occurring and synthetic psychoactive compounds with differing pharmacological actions, which produce altered states of consciousness marked by distortions in perception, hallucinations and feelings of ecstasy and connectedness (Vollenweider & Kometer, 2010). Included in this group are “classic” psychedelics whose effects are a result of agonist or partial agonist action on serotonin (5-hydroxytryptamine; or “5-HT”) 2A receptors and include psilocybin, lysergic acid diethylamide (LSD), N,N-dimethyltryptamine (DMT) and mescaline (Nichols, 2016). The entactogen 3,4-methyenedioxymethamphetamine (MDMA) also exerts effects by stimulating the release and inhibiting the uptake of serotonin (Parrott, 2001). Other compounds, such as atypical psychedelic Ibogaine and anaesthetic ketamine, are thought to act primarily on N-methyl-D-aspartate (NMDA) receptors (Maisonneuve & Glick, 2003; Mion & Villevieille, 2013).

There is a particular focus on the psychotherapeutic potential of psychedelics in the search for novel treatments for psychiatric difficulties. Subsequently, there is a growing body of controlled research into the effects of psychedelics in the treatment of psychological difficulties including, but not restricted to, depression (Carhart-Harris et al., 2016; Carhart-Harris, Bolstridge, et al., 2018; Palhano-Fontes et al., 2019; Sanches et al., 2016; Santos et al., 2018), addiction (Bogenschutz et al., 2015; Dakwar et al., 2018; Johnson et al., 2014; Krebs & Johansen, 2012), post-traumatic stress disorder (PTSD)

(Bouso et al., 2008; Mithoefer et al., 2011, 2013, 2018; Oehen et al., 2013; Ot'alora et al., 2018), social anxiety in autistic adults (Danforth et al., 2018) and distress associated with severe health conditions (Gasser et al., 2014; Griffiths et al., 2016; Grob et al., 2011). Studies of psychedelic treatments have proposed important factors contributing to therapeutic outcomes, including openness (MacLean et al., 2011; Wagner et al., 2017), prosocial feelings (Carhart-Harris et al., 2015; Erritzoe et al., 2018), self-efficacy and psychological insights (Bogenschutz & Pommy, 2012), as well as connectedness and shifting from avoidance to acceptance (Watts et al., 2017).

Naturally occurring psychedelics are used, and have been historically, by several traditional communities. For example, the mescaline-containing peyote cactus used by Native American communities (Huttlinger & Tanner, 1994; Schaefer, 2006) and the DMT-containing plant brew ayahuasca, used by Amazonian Indigenous peoples (Tupper, 2009). This practice became introduced into syncretic religions such as Santo Daime or União do Vegetal (UDV) in the case of ayahuasca (Labate & Jungaberle, 2011) and the Native American Church (NAC) in the case of peyote (Huttlinger & Tanner, 1994). Psychedelic ceremonies are also employed in neo-shamanic settings, which hold the characteristics of traditional shamanism and elements from different cultural and religious sources and typically have a focus on individualist – rather than collectivist - spiritual development (Scuro & Rodd, 2014; Townsend, 2004). Psychedelic ceremonies are also used in therapeutic centres such as those incorporating medicinal plants, psychotherapy and communal living in the treatment of substance use disorders (SUDs) and other mental health difficulties (Berlowitz et al., 2020; Mabit et al., 1996).

It is consistently claimed that the therapeutic effects of these compounds are heavily dependent upon “set and setting”, a term which refers to the psychological, social and cultural factors which shape an individual’s response to psychedelics (Hartogsohn, 2017; Leary, 1961). “Set”, or mindset, encompasses internal factors relating to an individual’s expectations, mood, suggestibility, preparation and psychopathology, whilst “setting” captures aspects of the environment, including physical and interpersonal factors plus the wider social and cultural context (Hartogsohn, 2017; Leary, 1961; Leary et al., 1963; Metzner & Leary, 1967). It is thought that setting factors might heighten sensitivity to a psychedelic experience and intensify an individual’s subjective effects (Carhart-Harris, Bolstridge, et al., 2018). Ceremonial psychedelic use in its various contexts stresses the importance of the environmental context, including the importance of ceremony, ritual and music (Labate & Cavnar, 2014a). Studying ceremonial psychedelic use is important to complement the randomised-controlled trial (RCT) and neuroscience evidence for psychedelics since factors pertaining to the setting may have synergistic effects with drug effects. Pontual et al. (2022) suggests that the ceremonial setting heavily shapes the nature of a psychedelic experience. They found that higher setting quality ratings corresponding to social context, decoration, comfort, and instructions were associated with lower incidence of challenging experiences and higher rated mystical experiences (Pontual et al., 2022), thought to influence therapeutic change (Griffiths et al., 2006, 2008; MacLean et al., 2011). Ceremonial factors such as leadership, music, singing and praying were also described as important to the nature of the experience (Pontual et al., 2022). A recent placebo-controlled study found reductions in symptoms of stress, anxiety and depression in individuals who partook in a ceremony both with and without consuming

ayahuasca (Uthaug et al., 2021). This suggests an important role for non-pharmacological factors such as set and setting within ceremonial contexts (Uthaug et al., 2021).

There exists a growing body of evidence suggesting the therapeutic potential of naturalistic ceremonial psychedelic use for different psychological difficulties. Ceremonial ayahuasca use has been shown to hold therapeutic potential for SUDs (Argento et al., 2019; Berlowitz et al., 2019; Perkins et al., 2022; Thomas et al., 2013), eating disorders (EDs) (Lafrance et al., 2017; Renelli et al., 2020), depression (Uthaug et al., 2018), anxiety (Bouso et al., 2012; Uthaug et al., 2021), and PTSD (Weiss et al., 2023), whilst ceremonial peyote use has long been used to treat alcoholism in the context of the NAC (Albaugh & Anderson, 1974; Jilek, 1994; Winkelman, 2015). Studies also discuss factors and mechanisms relating to the ceremonial experience which may contribute to therapeutic change. For example, music, a key feature of ceremonies, is thought to guide therapeutic or healing processes by encouraging certain states of consciousness, eliciting emotional states and transforming them (Goldsby et al., 2022; Winkelman, 2021), whilst the sense of community provided by the communal environment has been described as providing support and facilitating self-esteem (Cruz & Nappo, 2018; Molla, 2021). Establishing which factors contribute to positive outcomes following the ceremonial use of psychedelics could further our understanding of the mechanisms underlying therapeutic change and inform practice in non-ceremonial (i.e. Western healthcare) settings. Given the early stage of research in this area and the need for theory generation, qualitative methodologies are especially well-equipped to capture the highly personal and subjective experience of a psychedelic ceremony and provide the basis for future hypothesis testing.

Whilst there are scoping and systematic reviews looking into the use of psychedelics for psychological conditions (Breeksema et al., 2020; Gonçalves et al., 2023; Sharma et al., 2023), to the author's knowledge, no published review focuses solely on qualitative literature reporting on ceremonial psychedelic use in the context of psychological disorders. This scoping review aims to address this gap by answering the following research question: *What therapeutically beneficial factors are reported by individuals with psychological disorders who have engaged in ceremonial psychedelic use?* Mapping out the existing qualitative evidence concerning the use of psychedelic ceremonies could further our understanding of the therapeutic processes specific to ceremonial settings and identify areas for further research. The review will focus on findings gathered by qualitative methodologies to capture the range and nuance of such personal experiences.

Methods

Design

This review followed the methodology for scoping reviews set out by the Joanna Briggs Institute (JBI) (Peters et al., 2020). Scoping reviews are intended to examine the range, extent and nature of a research area by rapidly mapping its key underlying concepts and the main sources and types of evidence available (Arksey & O'Malley, 2005; Mays et al., 2001). Like systematic reviews, scoping reviews employ comprehensive literature searches and a thorough screening and data extraction process. However, they

do not critically appraise included literature but are undertaken in emerging areas of knowledge to provide a general overview of the state-of-the-art (Arksey & O'Malley, 2005).

Definitions

Psychedelic: In this review, psychedelics refers to "classic psychedelics", which include ayahuasca, peyote, psilocybin, LSD, mescaline and DMT.

Ceremonial: This review focuses on the consumption of plant-based psychedelics in the context of ceremonies. Psychedelic ceremonies are structured ritual environments with intentions and roles extending beyond healing and are held by self-formed groups with the support of a facilitator (Labate & Cavnar, 2014b; Labate & Jungaberle, 2011). These ceremonies are used historically and are still used by several traditional communities, for example, Amazonian communities that use ayahuasca (Tupper, 2009) and the use of the peyote cactus by a community in northern Mexico (Schaefer, 2006). The traditions share similarities, despite differing geographically, such as the use of plant-based compounds, ritual practices, spiritual themes, ceremonial building shape and use of music and perfume (Winkelman, 2012). Studies were included in this review if they described a ceremonial setting of any kind, for example, traditional shamanic, neo-shamanic, in a religious context or as part of a psychotherapeutic centre or retreat.

Psychological disorders: In this review, psychological disorders are understood as those for which someone might seek psychotherapy since this is the context in which psychedelics are currently receiving growing interest. This includes SUDs, EDs, PTSD, depressive disorders, anxiety disorders and so-called personality disorders.

Therapeutic factors: Refers to experiences, effects, processes or setting features related to ceremonial psychedelic use, which led to therapeutically beneficial outcomes.

Inclusion and Exclusion Criteria

This review aimed to consolidate published research that qualitatively reports the experience of ceremonial psychedelic use by individuals with a diagnosed or self-reported psychological difficulty (see definition above). Since this is a qualitative review, there is no outcome or comparator to be considered. As such, the PICo (Population, phenomenon of Interest, Context) framework was employed (Stern et al., 2014):

Population (P): Humans over the age of 18 of any gender and ethnicity diagnosed or reporting a psychological disorder.

Phenomenon of Interest (I): Setting features, processes, and acute or longer-term effects of the ceremonial psychedelic experience deemed therapeutically valuable.

Context (Co): Ceremonial settings of any kind.

To be included in this review, articles needed to focus on ceremonial use of psychedelics by participants self-reporting or diagnosed with a psychological disorder.

Articles were included if they reported qualitative data on participants' experience and the acute or longer-term psychotherapeutic effects of ceremonial psychedelic use. Only articles written in English were included. Empirical research using observational designs (qualitative, case reports, prospective, retrospective, case-control, cross-sectional) was eligible, as were relevant systematic, scoping and narrative reviews, book chapters and theses. No date limit for included studies was defined. Articles were excluded if they did not report qualitative findings or if the study methodology was experimental, for example, RCTs or open-label trials (note, however, that such designs are not generally used in ceremonial psychedelic use). Articles were excluded if the psychedelic ingestion setting was non-ceremonial, not clearly stated, or if a mixture of settings were described without a clear description of which results related to ceremonial use. Articles were also excluded if the sample was non-clinical (i.e. did not report psychological disorders) or the focus of the research focus was not the effect of psychedelic use on a psychological disorder.

Literature Search

Comprehensive literature searches were conducted in PsychINFO, Embase, Medline, PubMed and Scopus using the following search strategy developed by the research team: (psychedelic* OR entheogen* OR hallucinogen*) AND qualitative* (see Appendix 1). The search results were then exported to EndNote, where automated de-duplication was performed. Results were also manually de-duplicated where EndNote failed to detect duplicates. The de-duplicated results were exported to Microsoft Excel before screening by the research team.

Selection of Evidence and Data Charting

The author of this review completed screening at the title/ abstract and then full-text level. A second reviewer independently screened 67 of the 333 full-text records (20%); discrepancies were resolved by discussion between the reviewers. Additional sources of evidence not identified by the initial search were obtained through hand searches of reference lists of eligible documents and articles citing the eligible documents. Data on key study characteristics and findings were extracted from eligible articles using a data abstraction form.

Therapeutic Factors

Experiences, effects, processes or setting features related to the ceremonial context with putative therapeutic value were extracted from the findings of all included studies. Factors were derived from the qualitative findings, including the themes for those reporting themes, and then collated and grouped into clusters to identify generalisable ceremony-specific therapeutic factors reported across the studies.

Critical Appraisal

The current article is a scoping review aiming to provide an overview of extant research on putative therapeutic identified from qualitative studies irrespective of the

methodological quality or risk of bias (Tricco et al., 2018). As such, the evidence included in this review was not critically appraised as expected in a systematic review.

Results

Eligible Literature

The formal search strategy identified 2006 articles, 1058 of which were removed as duplicates (see Figure 1). Title and abstract screening of the remaining 948 articles identified 333 as relevant and which underwent full-text screening. Applying exclusion criteria, 317 were ineligible, leaving 15 eligible for inclusion. Citation searching identified 11 more eligible articles that were not identified by the original search, giving a total of 26 eligible articles. Of the included documents, 17 described primary empirical research, whilst the remaining nine were reviews. Only the characteristics and findings of individual articles that met the eligibility criteria for this scoping review were extracted for reviews. Therefore, eligible articles within reviews are also included as empirical articles. To prevent data duplication, only primary empirical research was included in descriptive statistics, and where appropriate, descriptive statistics for reviews were reported separately. Study characteristics, qualitative findings and therapeutic factors are displayed in Table 1.

Figure 1

PRISMA Flow Diagram

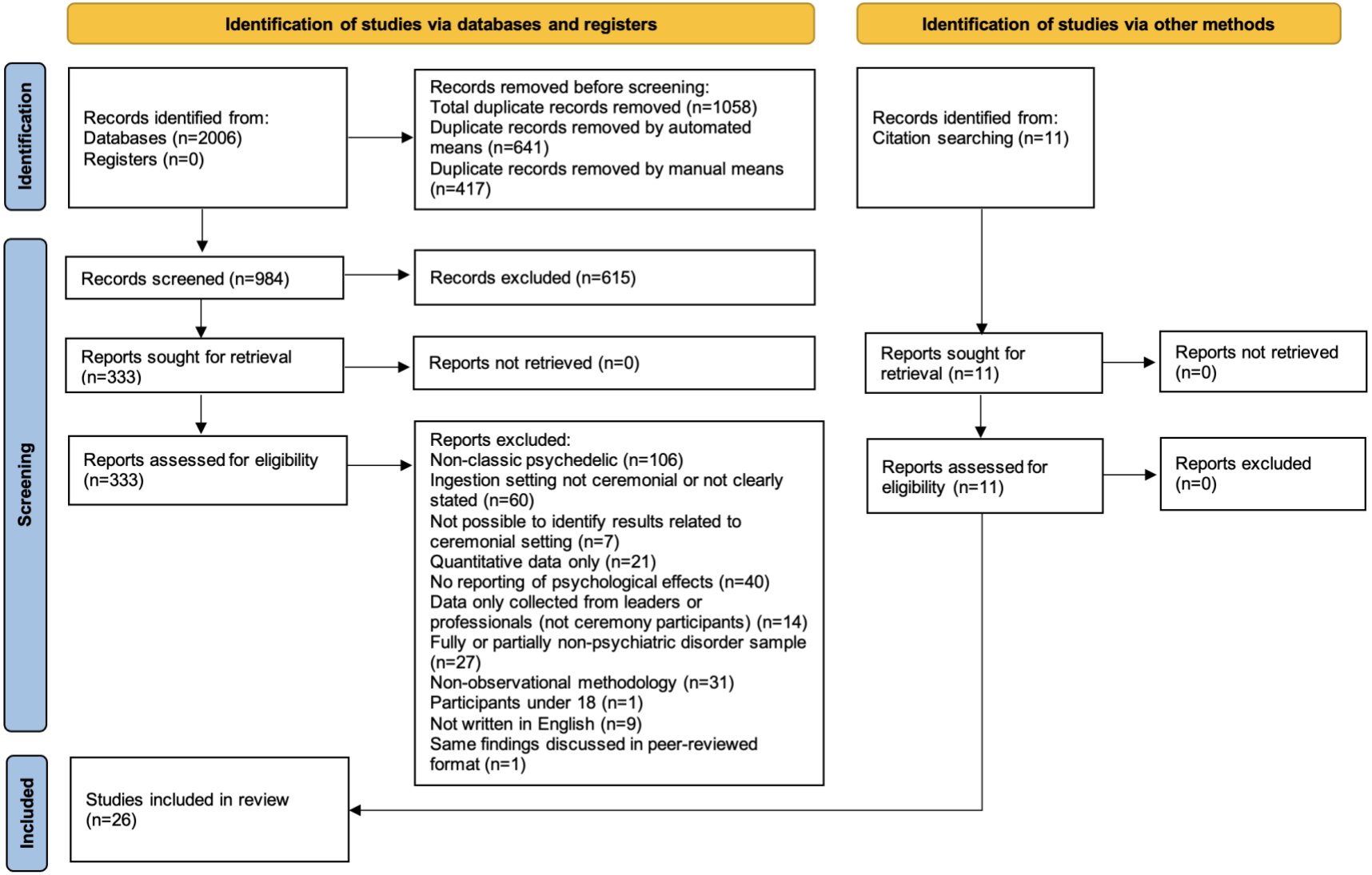

Table 1

Study Characteristics

Author(s) (year); Document type	Methodology	Psychedelic drug	Sample (targeted psychological disorder; n (sex); age; ethnicity)	Ceremony location	Ingestion setting	Therapeutic factors (Cluster: Theme or subtheme)	Qualitative results (Theme: Subtheme)
Primary research							
Albaugh & Anderson (1974) Journal article	Case studies Qualitative data sources: case study, data collection method NR Analysis: NR	Peyote	Substance use [disorder] N=1 (male) Age NR Native American	North America	Specialised alcoholism rehabilitation centre; religious peyote ceremonies (Native American Church); Southern Cheyenne and Arapaho tribes	Set: Trust and truth Setting: NR Acute effects: Cathartic release; Psychological insights; Clarity and consciousness; Vulnerability Impact: New perspective or outlook; Social connectedness	NR
Argento et al. (2019) Journal article	Qualitative only Qualitative data source: semi-structured interview (in-person or telephone) Analysis: thematic analysis	Ayahuasca	Substance use [disorder] N=11 (5 Female) Mean age=38 (range=19-56) Canadian First Nations	Canada	Retreat for addiction and stress; influences: Peruvian indigenous tradition; group counselling	Set: NR Setting: NR Acute effects: Psychological insights Impact: Positive self-self-relating; Social-connectedness; Connection to nature and spirituality; Less impacted by cravings	- Diminished substance use and cravings - Enhanced connection with Spirit and nature - Heightened connection with sense of self - Transformation of relationships with others - Overall feelings about the retreats
Blum et al. (1977) Journal article	Case studies Qualitative data source: participant observations Analysis: NR	Peyote	Substance use [disorder] N=4 (0 Female) Age NR for all	North America	Religious peyote ceremonies (Native American Church); Arapaho tribe	Set: NR Setting: NR Acute effects: Confronting reality	NR

			North American Indian (2), Black non-Indian (1) and White non-Indian (1) members of the Native American Church			Impact: Healing; Positive self-self-relating; Anxiety management; Clarity and consciousness	
Cruz and Nappo (2018) Journal article	Qualitative only Qualitative data sources: in-depth semi-structured interviews (in-person) and participant observations Analysis: content analysis	Ayahuasca	Substance use [disorder] N=40 (2 Female) Mean age=35 (range=23-47) Brazilian	Brazil	Religious ayahuasca ceremonies (Santo Daime)	Set: NR Setting: Community; Ritual, religious or spiritual Acute effects: Clarity and consciousness Impact: Positive self-self-relating; Healing	- Reasons for seeking ayahuasca - The 'treatment': The ayahuasca tea, The religious service, The ayahuasca community - The 'cure' - Relapse
Daldegan-Beuno et al. (2022) Journal article	Mixed methods Qualitative data source: survey (online) Analysis: thematic analysis	Ayahuasca	Substance use [disorder] N=441 (233 Female) Mean age=34.19 Brazilian	NR	Religious (Santo Daime, Uniao de Vegetal), shamanic/ neo-shamanic, and indigenous traditional ayahuasca ceremonies	Set: NR Setting: NR Acute effects: Purging; Spiritual experiences Impact: Anxiety management; Motivation or determination; Less impacted by cravings	- Acquired awareness - Sensorial experiences - Purging - Spiritual experience - Non-specific/inexplicable experiences - Decreased desire to smoke and repulsion to cigarettes - Immediate or gradual smoking cessation - Increased motivation
Fernández and Fábregas (2014) Book chapter	Qualitative only Qualitative data sources: semi-structured interviews (medium NR), participant integration session testimonies and participant observation	Ayahuasca	Substance use [disorder] N=20 (4 Female) Age NR Spanish	Brazil	Specialised centre for SUD; influences: Amazonian Shamanism, Santo Daime; Western psychology, Eastern techniques	Set: NR Setting: NR Acute effects: Accessing and uncovering; Re-living or processing; Death or re-birth experience; Purging; Psychological insights Impact: Healing; New perspective or outlook;	*In order of therapeutic value:* - Review of the past - Psychological insights - Experiences of emotional nature - Death and rebirth experiences - Experiences with nature - Transcendental experiences

	Analysis: thematic analysis					Positive self-self-relating; Feelings towards others	
Jordans (2023) Thesis	Qualitative only Qualitative data source: semi-structured interviews (Video call) Analysis: thematic analysis	Ayahuasca	Post-traumatic stress disorder N=8 (0 Female) Age=30s and 40s Ethnicity NR	Peru US	Traditional ayahuasca ceremonies (varied rituals)	Set: Preparation Setting: Integration and aftercare; Community Acute effects: Re-living or processing; Purging; Cathartic release; Vulnerability Impact: New perspective or outlook; Experiencing or regulating emotion; Positive self-self-relating; Manifesting empathy and social emotions	*Ceremony related:* - Gratitude - Jungle diet - Purge - Setting intentions - Experiencing positive emotions - Reprocessing memories: Reliving/ re-experiencing repressed memories, New outlook on trauma - Hell exists: Vine of Death, Demons - Ceremony integration - Self-forgiveness and releasing shame and guilt - Given a 'reset' *Post-ceremony related:* - Explaining the unexplainable - Awareness: Self-awareness and empathy, Ego-death - Importance of re-integration: Re-integration, Community, Old patterns - Emotional intelligence: Surrendering to emotional vulnerability, Mindfulness, Happiness and Gratitude - Sobriety and substance use decrease - Unexplainable health improvements - "Can't fake it anymore" - Shift in values - Decreased trauma symptoms: New mindsets, Control - Most painful and most beneficial
Lafrance et al. (2017)	Qualitative only Qualitative data source: semi-	Ayahuasca	Eating disorders N=16 (14 Female)	North America South America	Retreats; influences: Amazonian tradition; other	Set: NR	- Reduction of psychological symptoms - Changes in body perception and physical sensations

Journal article	structured interviews (telephone) Analysis: thematic analysis		Mean age=33.5 Ethnicity NR (residing in North America)	Central America	"eclectic" settings	Setting: Support and care during ritual; Safety; Integration and aftercare Acute effects: Accessing and uncovering; Psychological insights; Connection to body Impact: New perspective or outlook; Positive self-self-relating; Experiencing or regulating emotion	- Contextual: Importance of ceremony, Aftercare
Loizaga-Velder & Verres (2014) Journal article	Qualitative only Qualitative data sources: problem-centred interviews (in-person), field study, participant observation, contextual resources Analysis: content analysis	Ayahuasca	Substance use [disorder] N=14 (Sex NR) Mean age=42 (range=24-52) Latin American (12), Spanish (1), American (1)	South America	Ayahuasca ceremonies; ayahuasca-assisted therapy (varied settings)	Set: NR Setting: Therapy; Integration and aftercare Acute effects: Cathartic release; Psychological insights; Spiritual experiences; Vulnerability Impact: Healing; Positive self-self-relating; Better relating with others; Less impacted by cravings; Less impacted by withdrawal	NR
Loizaga-Velder and Pazzi (2014) Book chapter	Qualitative only Qualitative data sources: problem-centred interviews (in-person) and field observations Analysis: not explicitly stated - thematic analysis?	Ayahuasca	Substance use [disorder] N=14 (Sex NR) Mean age=41 (range=24-52) Latin American (12), Spanish (1), North American (1)	NR	Ayahuasca-assisted therapy for addiction; traditional indigenous medicine (3), neo-shamanic (1), hybrid of traditional medicine and psychotherapy (10)	Set: NR Setting: Ritual, religious or spiritual context; Containing frame and orientation; Music; Integration and aftercare Acute effects: Death or re-birth experiences; Accessing and uncovering; Cathartic	- Body-oriented: Increased body awareness, Detoxification, Anti-craving) - Emotional/ social: Release of psychological burdens, Reliving traumatic life events, Contacting blocked emotions, Forgiveness of self and others, Facilitating social support - Transpersonal: Death experiences, Peak experiences, Spiritual healings,

						release; Connection to body; Introspection Impact: Manifesting empathy and social emotions; Clarity and consciousness; Healing; Confronting reality; Positive self-self-relating; Experiencing and regulating emotion; Connection to nature and spirituality; Less impacted by cravings	Sense of meaning and purpose in life - Insight oriented/ cognitive: Confrontation with addiction, Insights into maladaptive psychological patterns, Self-awareness, Therapeutic instructions, Awareness of positive personal resources
Loizaga-Velder et al. (2023) Journal article	Quantitative and case studies Qualitative data source: qualitative interviews (medium NR) Analysis: NR	Ayahuasca Incilius alvarius	Substance use [disorder]; depression, mania, aggression and antisocial personality disorder; severe complicated grief N=3 (1 female) Age: early 20s–mid 30s Indigenous Yaqui peoples	Mexico	Outpatient treatment program; influences: traditional Indigenous practices; individual psychotherapy community activities	Set: NR Setting: NR Acute effects: Introspection; Cathartic release; Psychological insights; Purging Impact: Social connectedness; Better relating with others; Experiencing and regulating emotion; Confronting reality; Less impacted by cravings	NR
Molla (2021) Thesis	Qualitative only Qualitative data source: open-ended survey questions (typed or written) Analysis: thematic analysis	Ayahuasca	Substance use [disorder] N=11 (6 Female) Mean age=37 (range=20-54) Ethnicity NR	Ecuador Mexico The Amazon Italy Netherlands Austria US Canada	Ayahuasca ceremonies; guided by experienced leader or shaman	Set: Preparation Setting: Ritual, religious or spiritual context; Community; Safety; Integration and aftercare Acute effects: Healing; Psychological insights; Death or re-birth experiences	- Regard for ayahuasca - Love and gratitude: Relationship to self, Relationship to others - Trauma and healing Somatic aspects: Bodily experiences, Physical cravings - Cognitive aspects: Insight, Awareness - Transcendental experiences: Connectedness/ belongingness, Spirituality,

						Impact: Positive self-self-relating; Feelings towards others; Connection to nature and spirituality	Death experiences, Life transformations
O'Shaughnessy et al. (2022) Journal article	Qualitative only Qualitative data source: open-ended, exploratory interviews (in-person) Analysis: thematic analysis	Ayahuasca	Substance use [disorder] N=9 (0 Female) Mean age=28 (SD=6) South American (5), European (3), North American (1)	Peru	Specialised centre for SUD; influences: Peruvian traditional Amazonian medicine; Western techniques	Set: Preparation Setting: Community; Therapy Acute effects: Accessing and uncovering; Purging Impact: New perspective or outlook; Integrating insights	- Daily living environment - Experience with Amazonian medicine: Ayahuasca, Purges, Diets - Within-treatment changes
Prue (2008) Thesis	Qualitative only Qualitative data sources: semi-structured interviews (in-person), participant observations Analysis: not explicitly stated – thematic analysis?	Peyote	Substance use [disorder] N=7 (4 Female) Age NR Native American	North America	Religious peyote ceremonies (Native American Church)	Set: NR Setting: Community; Ritual, religious or spiritual context; Support and care during ritual Acute effects: Psychological insights Impact: Social connectedness	- Having a vast and supportive network - Being at the cross-roads of cultures - Blending of alcohol and drug abuse treatments and NAC - Spirituality and entheogenica - Gifts of peyote way involvement
Renelli et al. (2020) Journal article	Qualitative only Qualitative data source: semi-structured interviews (telephone) Analysis: thematic analysis	Ayahuasca	Eating disorders N=13 (12 Female) Mean age=30.1 (range=21-49) Ethnicity NR	NR	Retreats; influences: Amazonian tradition (Shipibo or Ashaninka); guided by a trained leader	Set: NR Setting: Therapy Acute effects: Accessing and uncovering; Re-living or processing; Psychological insights Impact: Healing; Positive self-self-relating	- Ayahuasca is an effective form of healing from an eating disorder - Ayahuasca allows deep healing - Ayahuasca allows the processing of intense emotions and/or memories - Ayahuasca allows embodiment of love, self-love and self-care - Bridging ayahuasca with modern psychotherapy
Talin and Sanabria	Qualitative only	Ayahuasca	Substance use [disorder]	Italy Brazil	Religious ayahuasca	Set: NR	NR

(2017) Journal article	Qualitative data sources: semi-structured interviews (in-person) and participant observations Analysis: ethnographic qualitative analysis		N=7 (Sex NR) Age NR Italian		ceremonies (Santo Daime); ayahuasca ceremonies in urban spiritual communities	Setting: Support and care during ritual; Community; Containing frame and orientation Acute effects: Purging Impact: New perspective or outlook; Less impacted by withdrawal	
Thomas et al. (2013) Journal article	Mixed methods Qualitative data source: semi-structured interviews (in-person or telephone) Analysis: content analysis	Ayahuasca	Substance use [disorder] N=11 (Sex NR) Age NR for all Canadian First Nations	Canada	Retreat for addiction and stress; influences: Peruvian indigenous tradition; group counselling	Set: NR Setting: NR Acute effects: Confronting reality Impact: Positive self-self-relating; Social connectedness; Connection to nature and spirituality; Less impacted by cravings	- Connection with self - Connection with others - Connection with spirit and nature - Substance use - Differed from past treatment or therapies
Reviews							
Breeksema et al. (2020) Journal article	Systematic review Data sources: qualitative studies Analysis: thematic analysis	Relevant papers studied ayahuasca	2 empirical articles on eating disorders, 2 empirical articles on substance use [disorder]		Ceremonial, religious or treatment contexts	Set: NR Setting: Trust and truth; Therapy Acute effects: Psychological insights Impact: NR	*Represented in articles studying ceremonial experience:* - Phenomenology of the experience - Perspectives on the intervention: Context and structure of the intervention, Comparisons with other treatments - Therapeutic processes: Insights, Altered self-perception, Connectedness, Transcendental experiences, Expanded emotional spectrum) - Outcomes of the intervention: Symptom relief, Perceptions of self

Gonçalves et al. (2023) Journal article	Systematic review Data sources: qualitative studies, clinical trials, in vivo and in vitro studies, studies investigating biological, bioactive and therapeutic effects Analysis: qualitative synthesis	Ayahuasca	2 empirical articles on substance use [disorder], 1 empirical article on eating disorders	Ceremonies, some in conjunction with therapy	Set: NR Setting: Ritual, religious or spiritual context; Containing frame and orientation; Support and care during ritual; Community Acute effects: NR Impact: NR	NR
Ledwos et al. (2022) Journal article	Systematic review Data sources: qualitative and quantitative studies (retrospective exploratory studies, prospective study, case reports) Analysis: qualitative synthesis	Relevant papers studied ayahuasca	2 empirical articles on eating disorders	Ayahuasca ceremonies; influence: Amazonian tradition; 'eclectic' ceremonies	Set: NR Setting: NR Acute effects: Re-living or processing; Psychological insights Impact: Positive self-self-relating; Shift in eating disorder cognitions; Experiencing and regulating emotions	NR
Lindegaard (2023) Journal article	Clinical review article Data sources: qualitative, quantitative and neurobiological studies Analysis: NR	Relevant papers studied ayahuasca	1 empirical article on eating disorders, 1 review with papers on eating disorders and substance use [disorder]	Ceremonial, religious or treatment contexts	Set: NR Setting: NR Acute effects: Psychological insights Impact: NR	NR
Maia et al. (2023)	Narrative review	Ayahuasca	7 empirical articles on substance use	Ayahuasca retreats and ceremonies	Set: NR Setting: Community	

Journal article	Data sources: clinical, cross-sectional, observational, qualitative, animal and in vitro studies Analysis: NR		[disorder], 2 empirical articles on eating disorders		Acute effects: Accessing and uncovering; Cathartic release; Psychological insights; Spiritual experiences Impact: Social connectedness; Healing; Positive self-self-relating; Experiencing and regulating emotion; Connection to nature and spirituality; Better relating with others
Mendes et al. (2022) Journal article	Non-systematic review Data sources: qualitative and quantitative (clinical studies, observational studies and case reports) Analysis: qualitative synthesis	Relevant papers studied ayahuasca and peyote	Ayahuasca: 3 empirical articles on substance use [disorder] Peyote: 2 case report articles substance use [disorder]	Religious ayahuasca ceremonies (Santo Daime); retreats incorporating therapy Religious peyote ceremonies (Native American Church)	Set: NR Setting: NR Acute effects: Introspection; Psychological insights Impact: Positive self-self-relating; Social connectedness; Connection to nature and spirituality; Less impacted by cravings
Orsolini et al. (2020) Journal article	Comprehensive mini overview Data sources: clinical trials, experimental and observational studies Analysis: qualitative synthesis	Ayahuasca	3 empirical articles on substance use [disorder], 1 empirical article on eating disorders	Ceremonies in religious, retreat and ‘eclectic’ contexts	Set: NR Setting: NR Acute effects: Psychological insights; Spiritual experiences Impact: Positive self-self-relating; Social connectedness; Better relating with others; Connection with nature and spirituality;

					Motivation and determination; Less impacted by cravings	
Sharma et al. (2023) Journal article	Systematic review Data sources: qualitative and quantitative studies Analysis: qualitative synthesis, quality appraisal	Relevant papers studied ayahuasca	2 empirical articles on substance use [disorder]	Ayahuasca retreats: ceremonies; group counselling	Set: NR Setting: NR Acute effects: Introspection; Re-living and processing Impact: Healing; Positive self-self-relating; Connection to nature and spirituality; Less impacted by withdrawal	NR
Valdiviezo-Oña et al. (2023) Journal article	Scoping review Data sources: qualitative and quantitative studies Analysis: quality appraisal, qualitative synthesis	Relevant papers studied ayahuasca	2 empirical articles on eating disorders	Ceremonial setting	Set: NR Setting: NR Acute effects: Psychological insights Impact: Healing; Positive self-self-relating; Experiencing and regulating emotion	

Note. NR = not reported.

Study Characteristics

Included primary research articles were published between 1974 and 2023. Most reported on ayahuasca ceremonies (n=14) (see Table 1) and were published from 2013 onwards. The older studies reported on peyote ceremonies (n=3, Albaugh & Anderson, 1974; Blum et al., 1977; Prue, 2008). All primary research articles were peer-reviewed and consisted of journal articles (n=12, Albaugh & Anderson, 1974; Argento et al., 2019; Blum et al., 1977; Cruz & Nappo, 2018; Daldegan-Bueno et al., 2022; Fernández & Fábregas, 2014; Lafrance et al., 2017; Loizaga-Velder et al., 2023; Loizaga-Velder & Verres, 2014; O'Shaughnessy et al., 2022; Renelli et al., 2020; Talin & Sanabria, 2017; Thomas et al., 2013), theses (n=3, Jordans, 2023; Molla, 2021; Prue, 2008), and book chapters (n=2, Fernández & Fábregas, 2014; Loizaga-Velder & Pazzi, 2013). Excluding the single-case report (Albaugh & Anderson, 1974), the non-single-case study primary research articles reported sample sizes ranging from 3-411 with a mean of 39.31 (n=16).

Reviews contained eligible articles focusing on ceremonial psychedelic experiences in the context of EDs (n=2, Ledwos et al., 2023; Valdiviezo-Oña et al., 2023), SUD (n=2, Mendes et al., 2022; Sharma et al., 2023), or both (n=5, Breeksema et al., 2020; Gonçalves et al., 2023; Lindegaard, 2023; Maia et al., 2023; Orsolini et al., 2020). In all reviews, only a subset of articles met eligibility for the current scoping review. Three focused exclusively on ayahuasca (Gonçalves et al., 2023; Maia et al., 2023; Orsolini et al., 2020), whilst the mixed psychedelic reviews either only contained eligible articles studying ayahuasca (n=5, Breeksema et al., 2020; Ledwos et al., 2023; Lindegaard, 2023; Sharma et al., 2023; Valdiviezo-Oña et al., 2023), or included articles studying ayahuasca or peyote (n=1, Mendes et al., 2022).

Methodology

Due to eligibility criteria, particularly the selection of studies on ceremonial psychedelic use, all primary research articles were observational and collected qualitative data about psychedelic treatments in naturalistic (typically, retreat) settings. The empirical articles can be categorised into two types: those collecting data from participants of specific retreats or ceremony sites, usually in-situ, through interviews, fieldwork, participant observation and case studies (n=10, Albaugh & Anderson, 1974; Argento et al., 2019; Blum et al., 1977; Cruz & Nappo, 2018; Fernández & Fábregas, 2014; Loizaga-Velder et al., 2023; O'Shaughnessy et al., 2022; Prue, 2008; Talin & Sanabria, 2017; Thomas et al., 2013), and those collecting retrospective data from a sample of individuals who attended any ceremony setting using interviews or surveys (n=7, Daldegan-Bueno et al., 2022; Jordans, 2023; Lafrance et al., 2017; Loizaga-Velder & Pazzi, 2013; Loizaga-Velder & Verres, 2014; Molla, 2021; Renelli et al., 2020).

Of the 17 primary research studies, most used only qualitative methodologies (n=14) whilst others utilized mixed methods (n=3), with semi-structured interviews being the primary qualitative data collection method (n=13) (see Table 1). Interviews were either conducted in person (n=7, Argento et al., 2019; Cruz & Nappo, 2018; Loizaga-Velder & Pazzi, 2013; Loizaga-Velder & Verres, 2014; O'Shaughnessy et al., 2022; Prue, 2008; Talin & Sanabria, 2017), by telephone (n=2, Lafrance et al., 2017; Renelli et al., 2020), by video call (n=1, Jordans, 2023) or by a combination of remote and in-person (n=2, Argento et al., 2019; Thomas et al., 2013). The remainder of studies using interviews did not report the medium (n=2, Fernández & Fábregas, 2014; Loizaga-Velder et al., 2023). Some of

the studies collecting data from specific sites used participant or field observation, participant documents or contextual resources, in conjunction with interviews (n=6, Cruz & Nappo, 2018; Fernández & Fábregas, 2014; Loizaga-Velder & Pazzi, 2013; Loizaga-Velder & Verres, 2014; Prue, 2008; Talin & Sanabria, 2017), or as the sole data collection method when reporting a case study (n=1, Blum et al., 1977). One article - also a single case study - did not report the data collection method (Albaugh & Anderson, 1974). Two studies used survey data, either completed online (Daldegan-Bueno et al., 2022) or by returning written responses (Molla, 2021).

Thematic analysis was the most reported method of qualitative analysis (n=8, Argento et al., 2019; Daldegan-Bueno et al., 2022; Fernández & Fábregas, 2014; Jordans, 2023; Lafrance et al., 2017; Molla, 2021; O'Shaughnessy et al., 2022; Renelli et al., 2020), followed by content analysis (n=3, Cruz & Nappo, 2018; Loizaga-Velder & Verres, 2014; Thomas et al., 2013) and ethnographic qualitative analysis (n=1, Talin & Sanabria, 2017). Some studies did not specify the specific analysis method, but it was possible to surmise from the results that thematic analysis was used (n=2, Loizaga-Velder & Pazzi, 2013; Prue, 2008). The remaining articles detailed case studies and so did not report analyses (n=3, Albaugh & Anderson, 1974; Blum et al., 1977; Loizaga-Velder et al., 2023).

Almost half of the nine reviews were systematic reviews (n=4, Breeksema et al., 2020; Gonçalves et al., 2023; Ledwos et al., 2023; Sharma et al., 2023). Also included were a scoping review (Valdiviezo-Oña et al., 2023), a clinical review article (Lindegaard, 2023), a narrative review article (Maia et al., 2023), a non-systematic review (Mendes et al., 2022), and a comprehensive mini-overview (Orsolini et al., 2020). Some reviewed both qualitative and quantitative research into psychotherapeutic outcomes for specific

conditions and provided a qualitative synthesis of findings (n=4, Ledwos et al., 2023; Mendes et al., 2022; Sharma et al., 2023; Valdiviezo-Oña et al., 2023), but only the latter two provided quality appraisal. Almost half included qualitative and quantitative studies as well as neurobiological, in-vivo, in-vitro or animal studies to explore broader effects of psychedelics, none of which assessed for quality of included articles (n=4, Gonçalves et al., 2023; Lindegaard, 2023; Maia et al., 2023; Orsolini et al., 2020). One review focused only on qualitative literature exploring psychedelic treatments for psychiatric disorders, using a systematic methodology and thematic analysis (Breeksema et al., 2020).

Participant Characteristics

Among the 17 primary research articles problematic substance use (including SUDs) was the most studied psychological disorder (n=13, see Table 1), followed by EDs (n=2, Lafrance et al., 2017; Renelli et al., 2020), and PTSD (n=1; Jordans, 2023). One article studied a sample with multiple diagnoses including SUD, depression, mania, antisocial personality disorder and severe complicated grief (n=1, Loizaga-Velder et al., 2023).

Four of the 17 primary research articles did not report participant sex (Loizaga-Velder & Pazzi, 2013; Loizaga-Velder & Verres, 2014; Talin & Sanabria, 2017; Thomas et al., 2013). In line with the preponderance of SUDs in men (McHugh et al., 2018), of the SUD studies reporting sex, three had a majority male sample (Argento et al., 2019; Cruz & Nappo, 2018; Fernández & Fábregas, 2014), whilst four reported a male-only sample (Albaugh & Anderson, 1974; Blum et al., 1977; Jordans, 2023; O'Shaughnessy et al.,

2022). Three SUD studies had a majority female sample (Daldegan-Bueno et al., 2022; Molla, 2021; Prue, 2008). Both ED studies had a majority female sample (Lafrance et al., 2017; Renelli et al., 2020) which aligns with the greater prevalence in women (Striegel-Moore & Bulik, 2007), whilst the study with multiple diagnoses had a majority male sample (Loizaga-Velder et al., 2023).

Four articles did not report age data (Albaugh & Anderson, 1974; Fernández & Fábregas, 2014; Prue, 2008; Talin & Sanabria, 2017), whilst two only reported the age of some participants (Blum et al., 1977; Thomas et al., 2013). Vague age ranges (e.g. “30s and 40s”) were reported in two studies (Jordans, 2023; Loizaga-Velder et al., 2023). Of the 17 primary research articles, nine reported mean age generating an overall mean age of 35.42, whilst age range was reported in six articles, giving an overall range of 19-56 (see Table 1).

Ethnicity was reported by 12 of the 17 primary research articles. Five studies, all of which studied specific ceremony sites or retreats in situ, reported samples of exclusively Indigenous North American participants (Argento et al., 2019; Loizaga-Velder et al., 2023; Prue, 2008; Thomas et al., 2013), one of which was a single-case study (Albaugh & Anderson, 1974). Four studies reported exclusively European (Fernández & Fábregas, 2014; Talin & Sanabria, 2017) and South American samples (Cruz & Nappo, 2018; Daldegan-Bueno et al., 2022), whilst four reported samples where multiple ethnicities were represented from Europe, North, Central and South America (Blum et al., 1977; Loizaga-Velder & Pazzi, 2013; Loizaga-Velder & Verres, 2014; O’Shaughnessy et al., 2022). Ethnicity data was not reported in four studies, including the two articles on EDs (Lafrance et al., 2017; Renelli et al., 2020), and two theses (Jordans, 2023; Molla, 2021).

Ingestion Setting and Location

In terms of geographic location, the three studies on peyote ceremonies were conducted in North America (Albaugh & Anderson, 1974; Blum et al., 1977; Prue, 2008). Studies into ayahuasca reported participants attending ceremonies in North America (n=3, Argento et al., 2019; Loizaga-Velder et al., 2023; Thomas et al., 2013), South America (n=4, Cruz & Nappo, 2018; Fernández & Fábregas, 2014; Loizaga-Velder & Verres, 2014; O'Shaughnessy et al., 2022) or various countries spanning Europe, North, Central and South America (n=4, Jordans, 2023; Lafrance et al., 2017; Molla, 2021; Talin & Sanabria, 2017). The remaining three articles on ayahuasca did not report the geographic location of the ceremonies (Daldegan-Bueno et al., 2022; Loizaga-Velder & Pazzi, 2013; Renelli et al., 2020).

The level of detail regarding the ingestion setting varied, with those recruiting from specific retreats and programs or religious communities tending to provide more information (see Table 1). Among these, the majority recruited participants from specialised retreats or programs for SUD plus other psychological difficulties which combined ayahuasca ceremonies with group and/or individual therapeutic support (n=5). Two such studies recruited from the same 4-day retreat for addiction and stress (Argento et al., 2019; Thomas et al., 2013), whilst others studied participants of distinct specialist centres or outpatient treatment programs for SUD and other mental health difficulties (Loizaga-Velder et al., 2023; O'Shaughnessy et al., 2022), one of which also incorporated syncretic religious influences, namely Santo Daime (Fernández & Fábregas, 2014). Other studies recruited participants of ayahuasca ceremonies occurring in the context of Santo

Daime, and urban spiritual communities which emerged from but have broken from such ayahuasca religions (n=2, (Cruz & Nappo, 2018; Talin & Sanabria, 2017). All included research into peyote (n=3) reported on ceremonies in the context of the syncretic Native American Church religion (Blum et al., 1977; Prue, 2008), one of which was within a specialised alcoholism rehabilitation centre which also included counselling (Albaugh & Anderson, 1974). The remaining articles presented findings from participants of any ceremony, rather than only from specific sites, all of which were ayahuasca ceremonies (n=7). Among these, some reported details about the roots and context of the ceremonies attended by participants including syncretic religion, indigenous tradition, neo-shamanic or specialised treatment centres or who led the ceremonies (n=5, Daldegan-Bueno et al., 2022; Lafrance et al., 2017; Loizaga-Velder & Pazzi, 2013; Molla, 2021; Renelli et al., 2020). Others provided vague statements such as “varied rituals/ settings” (n=2, Jordans, 2023; Loizaga-Velder & Verres, 2014).

Qualitative Findings

Most of the 17 primary research studies (n=12) and one of the review articles (Breeksema et al., 2020) - a qualitative systematic review - reported themes (see Table 1). Three of the primary research articles which did not report themes were case studies (Albaugh & Anderson, 1974; Blum et al., 1977; Loizaga-Velder et al., 2023), whilst the others employed content analysis as part of a qualitative reconstructive method based on symbolic interactionism (Loizaga-Velder & Verres, 2014) and ethnographic qualitative analysis (Talin & Sanabria, 2017). Themes spanned the phenomenology of the acute experience, longer-term outcomes, and key elements of the ceremony or treatment.

Therapeutic factors elicited from articles qualitative findings were grouped into clusters of factors relating to the *set, setting, acute effects* and *impact*. Each cluster was divided into themes, and some were divided further into subthemes (see Table 2).

Table 2

Therapeutic Factors: Clusters, Themes, Subthemes and Corresponding Articles

Clusters	Themes	Subthemes	Articles
Set	Preparation		Jordans (2023); Molla (2021); O'Shaughnessy et al. (2022); Cruz and Nappo (2018)
	Trust and truth		Breeksema et al. (2020); Albaugh & Anderson (1974)
Setting	Community		Prue (2008); Talin & Sanabria (2017); Gonçalves et al. (2023); Molla (2021); O'Shaughnessy et al. (2022); Cruz & Nappo (2018); Maia et al. (2023); Jordans (2023)
	Acts of care		Lafrance et al. (2017); Prue (2008); Gonçalves et al. (2023); Talin & Sanabria (2017)
	Containing frame and orientation		Talin & Sanabria (2017); Gonçalves et al. (2023); Loizaga-Velder & Pazzi (2014)
	Safety		Lafrance et al. (2017); Molla (2021)
	Therapy		Loizaga-Velder & Verres (2014); O'Shaughnessy et al. (2022); Renelli et al. (2020); Breeksema et al. (2020)
	Music		Loizaga-Velder & Pazzi (2014)
	Ritual, religious or spiritual context		Cruz & Nappo (2018); Prue (2008); Maia et al. (2023); Molla (2021); Gonçalves et al. (2023); Loizaga-Velder and Pazzi (2014); Prue (2008)
	Aftercare and integration		Jordans (2023); Loizaga-Velder & Verres (2014); Molla (2021); Lafrance et al. (2017); Loizaga-Velder & Pazzi (2014)
Acute effects	Psychological	Accessing and uncovering	Renelli et al. (2020); Lafrance et al. (2017); Loizaga-Velder & Pazzi (2014); Fernández & Fábregas (2014); O'Shaughnessy et al. (2022); Maia et al. (2023)
		Confronting reality	Loizaga-Velder & Pazzi (2014); Loizaga-Velder et al. (2023); Blum et al. (1977)
		Cathartic release	Loizaga-Velder & Pazzi (2014); Loizaga-Velder et al. (2023); Albaugh & Anderson (1974); Maia et al. (2023); Loizaga-Velder & Verres (2014); Jordans (2023)

		Introspection	Loizaga-Velder et al. (2023); Sharma et al. (2023); Mendes et al. (2022); Loizaga-Velder & Pazzi (2014)
		Re-experiencing and processing	Jordans (2023); Ledwos et al. (2022); Fernández & Fábregas (2014); Maia et al. (2023); Renelli et al. (2020); Lafrance et al. (2017); Loizaga-Velder et al. (2023); Sharma et al. (2023)
		Psychological insights	Loizaga-Velder & Verres (2014); Lindegaard (2023), Renelli et al. (2020); Lafrance et al. (2017); Breeksema et al. (2020); Ledwos et al. (2022); Maia et al. (2023); Valdiviezo-Oña et al. (2023); Prue (2008); Loizaga-Velder et al. (2023); Breeksema et al. (2020); Orsolini et al. (2020); Argento et al. (2019); Mendes et al. (2022); Loizaga-Velder & Pazzi (2014); Fernández & Fábregas (2014); Molla (2021); Albaugh & Anderson (1974); Jordans (2023
		Vulnerability	Albaugh & Anderson (1974); Loizaga-Velder & Verres (2014); Jordans (2023)
		Clarity and consciousness	Cruz & Nappo (2018); Blum et al. (1977); Loizaga-Velder & Pazzi (2014); Albaugh & Anderson (1974)
	Somatic	Purging	Fernández & Fábregas (2014); Jordans (2023); Talin & Sanabria (2017); O'Shaughnessy et al. (2022); Loizaga-Velder et al. (2023); Daldegan-Beuno et al. (2022); Loizaga-Velder and Pazzi (2014)
		Bodily connectedness	Loizaga-Velder & Pazzi (2014); Lafrance et al. (2017)
	Transpersonal experiences	Spiritual experiences	Loizaga-Velder & Verres (2014); Orsolini et al. (2020); Maia et al. (2023); Daldegan-Beuno et al. (2022); Fernández & Fábregas (2014); Argento et al. (2019); Jordans (2023)
		Death or re-birth experiences	Fernández & Fábregas (2014); Loizaga-Velder & Pazzi (2014); Molla (2021); Jordans (2023)
Impact	Cognitive and emotional	Experiencing and regulating emotions	Cruz & Nappo (2018); Lafrance et al. (2017); Ledwos et al. (2022); Maia et al. (2023); Valdiviezo-Oña et al. (2023); Loizaga-Velder et al. (2023); Loizaga-Velder & Pazzi (2014); Jordans (2023)
		Anxiety management	Daldegan-Bueno et al. (2022); Blum et al. (1977)
		Reduction in eating disorder cognitions	Ledwos et al. (2022); Lafrance et al. (2017); Renelli et al. (2020)
	Eased cravings and withdrawal		Daldegan-Bueno et al. (2022); Thomas et al. (2013); Loizaga-Velder et al. (2023); Argento et al. (2019); Loizaga-Velder & Verres (2014); Loizaga-Velder & Pazzi (2014); Mendes et al. (2022); Orsolini et al. (2020); Sharma et al. (2023); Talin & Sanabria (2017)

Psychological	Healing	Cruz & Nappo (2018); Molla (2021); Maia et al. (2023); Renelli et al. (2020); Valdiviezo-Oña et al. (2023); Fernández & Fábregas (2014); Loizaga-Velder & Verres (2014); Loizaga-Velder & Pazzi (2014); Blum et al. (1977); Sharma (2023)
	Positive self-self-relating	Cruz & Nappo (2018); Molla (2021); Renelli et al. (2020); Lafrance et al. (2017); Thomas et al. (2013); Ledwos et al. (2022); Maia et al. (2023); Valdiviezo-Oña et al. (2023); Loizaga-Velder & Verres (2014); Loizaga-Velder & Pazzi (2014); Sharma et al. (2023); Fernández & Fábregas (2014); Ledwos et al. (2022); Blum et al. (1977); Argento et al. (2019); Mendes et al. (2022); Orsolini et al. (2020); Jordans (2023)
	Motivation or determination	Daldegan-Bueno et al. (2022); Orsolini et al. (2020)
	New perspective or outlook	Talin & Sanabria (2017); Jordans (2023); Albaugh & Anderson (1974); O'Shaughnessy et al. (2022); Fernández & Fábregas (2014); Lafrance et al. (2017); Daldegan-Bueno et al. (2022)
Social	Social connectedness	Orsolini et al. (2020); Albaugh & Anderson (1974); Loizaga-Velder et al. (2023); Argento et al. (2019); Thomas et al. (2013); Mendes et al. (2022); Prue (2008); Molla (2021); Loizaga-Velder and Pazzi (2014)
	Social emotions and processes	Fernández & Fábregas (2014); Molla (2021); Jordans (2023); Loizaga-Velder & Pazzi (2014)
	Relational skills	Loizaga-Velder & Verres (2014); Loizaga-Velder et al. (2023); Maia et al. (2023); Orsolini et al. (2020)
Connection to nature and spirituality		Argento et al. (2019); Thomas et al. (2013); Maia et al. (2023); Mendes et al. (2022); Orsolini et al. (2020); Loizaga-Velder & Pazzi (2014); Sharma et al. (2023); Argento et al. (2019); Thomas et al. (2013); Mendes et al. (2022); Orsolini et al. (2020); Molla (2021); Prue (2008); Fernández and Fábregas et al. (2014)

Set

This cluster encapsulates factors relating to the mindset of individuals going into the ceremonial psychedelic experience. Studies discussed the importance of *preparation* ahead of the ceremonial psychedelic experience, which included intention setting (Cruz & Nappo, 2018; Jordans, 2023) and the diet, or dieta. The diet is a Peruvian Amazonian retreat-like practice which combines the intake of specifically prepared plant substances with periods of social isolation, sexual abstinence and alimentary restrictions (Jauregui et al., 2011; Luna, 1984). The diets were discussed as elevating the experience by producing cleansing effects, promoting introspection, emotional responses and dreams which held deep therapeutic significance (Jordans, 2023; Molla, 2021; O'Shaughnessy et al., 2022). *intention setting* ahead of the ceremony was discussed by Jordans (2023). Studies also discussed feelings of trust in, and connection with, ceremony leaders (Breeksema et al., 2020) as well as trust in the "profound truthfulness" of the ceremony teachings (Albaugh & Anderson, 1974) as important therapeutic aspects, captured by *trust and truth.*

Setting

Setting includes factors relating to the ceremonial setting and the broader context, both during and after the experience. The sense of *community* was discussed by several studies as an important therapeutic factor (Gonçalves et al., 2023; Talin & Sanabria, 2017). Studies discussed the therapeutic benefits of experiencing a religious community (Maia et al., 2023) and support system (Molla, 2021; Prue, 2008). Communal living was also discussed as therapeutically beneficial (O'Shaughnessy et al., 2022). The community

aspect was also discussed in the context of fostering social emotions (Jordans, 2023), self-esteem and social connectedness (Cruz & Nappo, 2018), discussed in more detail in *impact*. *Acts of care* include the care and support embedded within ritual structures and receiving non-directive support from facilitators (Gonçalves et al., 2023; Prue, 2008; Talin & Sanabria, 2017), particularly beneficial during moments of vulnerability and to promote healing (Lafrance et al., 2017). Other studies discussed the *containing frame and orientation* provided by the ceremony which was deemed important for making the experience spiritually or therapeutically meaningful (Gonçalves et al., 2023; Loizaga-Velder & Pazzi, 2013; Talin & Sanabria, 2017). Some studies discussed a sense of *safety* attributed to the ceremonial structures and the presence of doctors and psychologists (Lafrance et al., 2017; Molla, 2021).

A key feature of ceremony, *music*, was deemed important for summoning certain states of consciousness and emotional responses (Loizaga-Velder & Pazzi, 2013). Features and practices specific to the *ritual, religious or spiritual context* (e.g. praying, Prue, 2008) were described as therapeutic, for example by modulating psychedelic-induced entheogenic effects and a sense of union (Cruz & Nappo, 2018; Gonçalves et al., 2023; Loizaga-Velder & Pazzi, 2013; Maia et al., 2023; Molla, 2021). *Therapy o*ccurred around ceremonies in some studies. This combination, as well as therapeutic support during ceremonies, was discussed as making therapeutic processes quicker and more effective (Breeksema et al., 2020; Loizaga-Velder & Verres, 2014; O'Shaughnessy et al., 2022; Renelli et al., 2020). Finally, *aftercare and integration* were deemed important for integrating experiences between ceremonies or post-retreat (Jordans, 2023; Lafrance et

al., 2017; Loizaga-Velder & Verres, 2014; Molla, 2021) and preventing relapse in the case of SUD (Loizaga-Velder & Pazzi, 2013).

Acute Effects

Acute effects with therapeutic value reported in included studies were grouped into *psychological*, *somatic* and *transpersonal experiences*. *Psychological* effects included psychedelic-induced heightened levels of *consciousness and clarity* (Albaugh & Anderson, 1974; Blum et al., 1977; Cruz & Nappo, 2018; Loizaga-Velder & Pazzi, 2013) which may play a role in accessing unresolved or suppressed emotions, memories, trauma (Lafrance et al., 2017; Loizaga-Velder & Pazzi, 2013; Maia et al., 2023; O'Shaughnessy et al., 2022; Renelli et al., 2020; Thomas et al., 2013), or feelings otherwise anaesthetised by substances (Fernández & Fábregas, 2014). This, alongside psychedelic-induced *introspection* (Loizaga-Velder et al., 2023; Loizaga-Velder & Pazzi, 2013; Mendes et al., 2022; Sharma et al., 2023), was often discussed as allowing for healing trauma, by *re-experiencing and processing* the surfaced emotions (Lafrance et al., 2017; Renelli et al., 2020), memories (Fernández & Fábregas, 2014; Jordans, 2023; Ledwos et al., 2023; Maia et al., 2023; Sharma et al., 2023) or grief (Loizaga-Velder et al., 2023). Several studies discussed the *cathartic release* of emotion during ceremonies (Albaugh & Anderson, 1974; Loizaga-Velder et al., 2023; Loizaga-Velder & Pazzi, 2013; Loizaga-Velder & Verres, 2014; Maia et al., 2023), experienced as psychologically or spiritually cleansing. Most studies discussed the therapeutic benefit of *psychological insights* gained during the acute experience (see Table 3). Specifically, some studies mentioned the benefit of insights into the roots of their ED or SUD (Breeksema et al., 2020; Jordans, 2023; Lafrance et al.,

2017; Ledwos et al., 2023; Lindegaard, 2023; Loizaga-Velder & Verres, 2014; Maia et al., 2023; Renelli et al., 2020; Valdiviezo-Oña et al., 2023), as well as maintaining patterns of behaviour or thought, (Argento et al., 2019; Breeksema et al., 2020; Fernández & Fábregas, 2014; Mendes et al., 2022), and barriers to recovery from addiction (Argento et al., 2019; Mendes et al., 2022). Also deemed therapeutically meaningful were insights into the road to recovery from SUDs (Albaugh & Anderson, 1974; Molla, 2021) and EDs (Orsolini et al., 2020), as well as how life would look without drugs of abuse (Albaugh & Anderson, 1974; Mendes et al., 2022). Perhaps facilitating some of these processes, some studies discussed psychedelic-induced *vulnerability* or suggestibility (Albaugh & Anderson, 1974; Jordans, 2023), allowing the lowering of psychological defense mechanisms (Loizaga-Velder & Verres, 2014). Some studies also described *confronting reality* including such denial mechanisms, as well as the impact, seriousness or trajectory of addiction (Blum et al., 1977; Loizaga-Velder et al., 2023; Loizaga-Velder & Pazzi, 2013).

Studies discussed therapeutic *somatic* effects, including the *purging* of previously repressed feelings which was experienced as cleansing (Daldegan-Bueno et al., 2022; Fernández & Fábregas, 2014; Jordans, 2023; Loizaga-Velder et al., 2023; Loizaga-Velder & Pazzi, 2013; O'Shaughnessy et al., 2022; Talin & Sanabria, 2017). Some studies discussed the experience of *bodily connectedness* including augmentation of bodily awareness (Loizaga-Velder & Pazzi, 2013), and specifically in EDs, changes to the experience or understanding of one's body (Lafrance et al., 2017). Also discussed as therapeutically beneficial, *transpersonal experiences* include *spiritual experiences* which promote a sense of meaning, purpose and connection with something greater that can provide insights (Argento et al., 2019; Daldegan-Bueno et al., 2022; Fernández &

Fábregas, 2014; Jordans, 2023; Loizaga-Velder & Verres, 2014; Maia et al., 2023; Orsolini et al., 2020). *Death or re-birth experiences* were discussed as reminders of the value of life, the need to create profound change and as promoting healing (Fernández & Fábregas, 2014; Jordans, 2023; Loizaga-Velder & Pazzi, 2013; Molla, 2021).

Impact

Longer-lasting effects reported in the studies were grouped into *cognitive and emotional, eased cravings and withdrawal, psychological, social* and *connection to nature and spirituality.* Several studies discussed participants feeling more connected to their emotions and better able to experience and regulate difficult emotions leading to greater emotional stability (Jordans, 2023; Lafrance et al., 2017; Ledwos et al., 2023; Loizaga-Velder et al., 2023; Loizaga-Velder & Pazzi, 2013; Maia et al., 2023; Valdiviezo-Oña et al., 2023). Regarding SUDs, studies discussed reports of greater *anxiety management* (Blum et al., 1977; Daldegan-Bueno et al., 2022), reduced or eradicated cravings, better control over urges (Argento et al., 2019; Daldegan-Bueno et al., 2022; Loizaga-Velder et al., 2023; Loizaga-Velder & Pazzi, 2013; Loizaga-Velder & Verres, 2014; Mendes et al., 2022; Orsolini et al., 2020; Thomas et al., 2013) and attenuation of withdrawal symptoms (Loizaga-Velder & Verres, 2014; Sharma et al., 2023; Talin & Sanabria, 2017). One study described the intensity of the ritual making withdrawal more manageable (Talin & Sanabria, 2017). In ED populations the reduction in disorder-specific rigid thought patterns was deemed important to therapeutic change (Lafrance et al., 2017; Ledwos et al., 2023; Renelli et al., 2020).

Healing was discussed in relation to resolving trauma, psychological difficulties or inner conflicts (Blum et al., 1977; Cruz & Nappo, 2018; Loizaga-Velder & Pazzi, 2013; Loizaga-Velder & Verres, 2014; Maia et al., 2023; Molla, 2021; Sharma et al., 2023), regeneration following death experiences (Fernández & Fábregas, 2014), and spiritual healing (Renelli et al., 2020; Valdiviezo-Oña et al., 2023). *Positive self-self-relating* or self-perception was discussed in most articles (see Table 3) and included increased connectedness to self, self-directed love, acceptance, compassion, forgiveness, care and respect, as well as self-confidence, self-esteem and self-efficacy. Several studies discussed a *new perspective or outlook* as therapeutically beneficial following ceremonial psychedelic use. This included shifting away from self-blame or individual culpability in EDs (Lafrance et al., 2017) and SUDs (Fernández & Fábregas, 2014), as well as reconfiguring the meaning and experience of addiction (Talin & Sanabria, 2017). Articles also discussed shifts in values or beliefs, as well as a new perspective on trauma, life before treatment and the self in relation to the external world (Daldegan-Bueno et al., 2022; Jordans, 2023). *Motivation and determination* were also discussed as important in the context of abstinence or reduction in drug use (Daldegan-Bueno et al., 2022; Orsolini et al., 2020).

Several studies found enhanced *social connectedness* following ceremonial psychedelic use. Reported effects included increased connection or closeness with others, an expanded social circle, improved relationships and subsequently, reduced isolation (Albaugh & Anderson, 1974; Argento et al., 2019; Loizaga-Velder et al., 2023; Loizaga-Velder & Pazzi, 2013; Mendes et al., 2022; Molla, 2021; Orsolini et al., 2020; Prue, 2008; Thomas et al., 2013). Perhaps contributing to this, some studies discussed improved

relational skills including boundary setting, communication skills (Loizaga-Velder et al., 2023), improved interpersonal awareness (Loizaga-Velder & Verres, 2014) and manifestation of *social emotions and processes* such as empathy, love, forgiveness, trust and belonging (Fernández & Fábregas, 2014; Jordans, 2023; Loizaga-Velder & Pazzi, 2013; Molla, 2021). Finally, many studies discussed feelings of connectedness to a higher or spiritual power and nature as therapeutically meaningful (see Table 3). Spirituality was linked with anti-craving effects, cleansing or healing and as a guide to recovery.

Discussion

This scoping review surveyed qualitative research on psychedelic ceremonies in naturalistic settings in individuals with psychological disorders, using predominantly ayahuasca, and to a lesser extent, peyote. Ceremonies occurring in South, Central and North America and Europe. Most were published between 2013-2023 with the three oldest being empirical articles published in the 1970s and a thesis published in 2008 on the use of peyote. This brings into question the lack of modern research into peyote relative to other psychedelics (Oberhaus, 2018), especially given the reported benefits in the context of SUDs (Albaugh & Anderson, 1974; Blum et al., 1977; Prue, 2008). Clinical populations included predominantly SUDs and, to a lesser extent, EDs. Fewer studies still, focussed on the experience of ayahuasca in individuals with PTSD, depression, mania, aggression, antisocial personality disorder and severe, complicated grief. Sample sizes varied due to diverse study designs, including single-case studies, and data collection methods, including wide-reaching online surveys, participant observation and interviews. There was

overlap in the therapeutic factors discussed by the included studies, which pertained to the set, setting, acute effects and impact.

Ceremonial Frame

This review highlights the therapeutic value of the orientation provided by the ceremonial frame and features. Several studies discussed the care and support embedded within the spiritual or religious ceremonial structures and provided by facilitators. This led to a sense of safety during the experience and trust in the leaders and teachings of the ceremony. Previous work points to this being therapeutically meaningful. Pontual et al. (2022) found that adequate leadership and comfort during ceremonies is associated with higher self-reported levels of mystical experiences, which are thought to be key to symptom reduction and therapeutic change (Griffiths et al., 2006, 2008; Johnson et al., 2019; MacLean et al., 2011; Roseman et al., 2018; Yaden & Griffiths, 2021). This complements RCT evidence showing the importance of non-judgemental care and guidance to outcomes (Carhart-Harris, Roseman, et al., 2018; Johnson et al., 2008), along with quantitative findings showing a link between in-ceremony support or care and greater insights, spiritual experiences, growth in psychological well-being and mental health status (Perkins et al., 2021).

Several studies also discussed the therapeutic effect of the spiritual and/or religious context and ceremonial features (e.g. music and praying) by summoning certain specific states of consciousness. The combination of psychedelic-induced suggestibility, the period of pre-ceremony preparation - including intention setting - and in-ceremony

features such as trusted guidance, music and prayer, may lead to therapeutic change via expectancy effects. Positive expectancies and suggestibility have been shown to predict favourable mental health outcomes following psychedelic experiences (Agin-Liebes et al., 2022; Muthukumaraswamy et al., 2021; Uthaug et al., 2021) and are modelled through verbal instructions or suggestions (Bartels et al., 2014; Kirsch, 1985) as are present in ceremonial settings. The sense of trust in ceremony teachings and leaders may enhance these expectancy effects by increasing feelings of confidence in the experience (Pontual et al., 2022). The contribution of expectancy and placebo effects, however, does not undermine the efficacy of such experiences (Muthukumaraswamy et al., 2021) but rather highlights the important interaction between the mindset of ceremony participants, the ceremonial setting and drug-induced effects in modulating experiences and therapeutic change.

Social Connection

The sense of community was discussed as therapeutically beneficial in the context of both EDs and SUDs. This complements quantitative findings showing the social and community aspects of ayahuasca drinking had significant well-being and mental health benefits (Perkins et al., 2021). Loizaga-Velder & Pazzi (2013) describe the sharing of non-ordinary states of consciousness and managing what emerges as catalysing social processes relevant to recovery by creating group cohesiveness. This might be particularly important in the context of PTSD, in which support in response to vulnerability and re-living, or re-processing - and subsequent purging or catharsis - of previously repressed content, was discussed as therapeutically valuable. This may result from the combination

of the supportive communal environment and the increased ability to process traumatic memories as a result of the psychedelic-induced decrease in amygdala reactivity during emotion processing (Kraehenmann et al., 2015; Mueller et al., 2017), usually heightened in PTSD (Francati et al., 2007). This aligns with group psychedelic-psychotherapy findings suggesting communal settings can promote therapeutic change through the processing of emotionally intense experiences, fostering social processes, empathy and connectedness (Ponomarenko et al., 2023). This complements the key notion of fellowship in twelve-step approaches to SUD treatment like Alcoholics Anonymous (AA) which emphasises the importance of social support in achieving and maintaining recovery.

Again, it seems that the ceremonial setting may amplify psychedelic-induced effects such as empathy and connectedness (Amada et al., 2020; Bhatt & Weissman, 2024; Watts et al., 2017) to produce therapeutic effects. This has therapeutic implications, given the association between impaired empathy and psychological disorders (Cusi et al., 2011; Morrison et al., 2016; Parlar et al., 2014). The social emotions and processes manifested during the ceremony may facilitate the reported sense of social connectedness and closeness with others. The communal experience may further reinforce the sense of social connectedness through better relational skills, leading to improved relationships and reduced sense of isolation, also discussed as valuable in several studies. This is significant, given that individuals with EDs, for which social support is vital to recovery (Federici & Kaplan, 2008; Noordenbos & Seubring, 2006), report smaller social networks relative to non-ED controls (Tiller et al., 1997). Additionally, social isolation is key to the development and maintenance of SUDs (Christie, 2021) whilst individuals with stronger social support systems have better recovery outcomes and are

less likely to return to drug use (Dobkin et al., 2002; Ellis et al., 2004). This may relate to the sense of motivation and determination to abstain, discussed in relation to the communal aspect of the treatment. Furthermore, the relational skills such as boundary setting reported in the included articles might be particularly beneficial in the context of SUDs, where self-agency is needed to prevent oneself from the influence of negative relationships to remain abstinent (Pettersen et al., 2019).

Mind, Body and Spirit

Acute spiritual experiences and enhanced spirituality were discussed as therapeutically valuable for SUD recovery, providing meaning, purpose and connection to a spiritual energy to guide recovery. Such aspects are also highly valued in twelve-step approaches to SUDs (Bill, 2002), adding weight to their perceived therapeutic potential. Many SUD studies reported anti-craving effects and eased withdrawal experiences, some of which linked such effects to spiritual experiences. The anti-craving effects may result from spiritual and psychological processes triggered by psychedelic-induced non-ordinary states of consciousness, enhanced by spiritual setting factors (Loizaga-Velder & Verres, 2014). Ayahuasca's impact on neurological pathways implicated in craving (Liester & Prickett, 2012) suggests the anti-craving effects result from a combination of pharmacological and ceremonial context factors. This is important given the strong relationship between craving and relapse (Kharb et al., 2018).

Connection to spiritual energy was also discussed as providing insights into recovery, the root causes of psychological disorders, behavioural or cognitive maintaining

factors, and barriers to recovery in SUDs and EDs. Perhaps psychedelic experiences initiate subjective therapeutic processes, such as insights into causal and maintaining factors, which target the underlying elements of a psychopathology dimension, or p-factor (Caspi & Moffitt, 2018), which manifest differently as distinct psychological conditions (Breeksema et al., 2020). For example, positive self-self-relating or self-perception was discussed by most included studies, irrespective of psychological condition. This complements findings by Amada et al. (2020), who found participants experienced less biased self-perceptions and flaw-focused attention, following a psychedelic experience. This may hold therapeutic value given the relationship self-perception has with EDs (Mallaram et al., 2023) and SUDs (Yan et al., 2020).

Shifts away from self-blame and individual culpability were deemed therapeutic, emphasising self-relating aspects like self-compassion. This could be important given the cyclical relationship between shame and substance misuse (Dearing et al., 2005; Wiechelt, 2007) and the fact that the extent of self-blame ED remission (Petersson et al., 2021). Self-acceptance, self-compassion and self-forgiveness could, to some extent, counter the shame and stigma common in SUDs (Luoma et al., 2007; Room, 2005).

Gaps and Future Directions

Despite reports of the beneficial effects of naturalistic ceremonial psychedelic use on symptoms of depression and anxiety (Halpern et al., 2008; Lutkajtis, 2021), this review demonstrates the limited range of clinical groups in which qualitative research has been conducted. Investigating the influence of ceremonial psychedelic use on a boarder range

of mental health conditions is important, since the sense of community and support typical of such settings could be important to therapeutic outcomes regardless of diagnosis, given the impact of social support on mental health (Wickramaratne et al., 2022). This is particularly important given the findings around difficulties indicated in numerous psychological conditions such as impaired empathy (Cusi et al., 2011; Morrison et al., 2016; Parlar et al., 2014) and negative self-perception (Henriksen et al., 2017; Mallaram et al., 2023; Yan et al., 2020). In individual, controlled research settings, psychedelics have shown promise for the treatment of a broader range of psychological disorders, including PTSD (Mitchell et al., 2023; Mithoefer et al., 2018) and depression (Sanches et al., 2016). Given the therapeutic benefits of the drug-setting interaction in ceremonial settings, future work could supplement this controlled research, utilising naturalistic methodology to investigate the influence of the ceremonial setting in a broader range of conditions. Qualitative methodology should allow for a deeper understanding of the highly subjective experiences, phenomena and context (Cleland, 2017) being studied. However, it is essential to consider the growing interest and use of traditionally used psychedelics and the surrounding structures in the context of cultural appropriation (Tupper, 2009). The use of indigenous knowledge requires caution with regard to cultural sensitivity to avoid misrepresentation and lack of recognition (Ruffell et al., 2021; Williams et al., 2022).

Reporting

This scoping review identified inconsistencies in reporting, especially demographic details, including sex, age and ethnicity. Similar to findings from Michaels et al. (2018), there was poor reporting of race and ethnicity data. This is important since cultural context

can play a critical role in therapeutic outcomes and the indigenous roots of plant-based psychedelic rituals, which often go unrecognised in Western medicine (George et al., 2020). The discrepancies in reporting of race and ethnicity data highlighted in this review likely impact any efforts to increase recruitment of minority groups when designing, conducting and publishing psychedelic research (Michaels et al., 2018). Inconsistent reporting of qualitative analysis methods and qualitative findings posed challenges to the synthesis and comparison of findings and has implications for the reproducibility of research. This is particularly important, given the highly subjective nature of psychedelic experiences. To support the advancement of research in this field, qualitative studies should consider using the Consolidated Criteria for Reporting Qualitative Research (COREQ) (Tong et al., 2007), a checklist developed to promote transparent and thorough reporting of qualitative studies. Despite the documented association between the setting, the acute psychedelic experience and the subsequent longer-term outcomes (Carhart-Harris et al., 2018; Johnson et al., 2017; Roseman et al., 2018), details of the ceremonial setting were inconsistently reported across the included studies. Some, predominantly those using field methodology, gave comprehensive descriptions of the setting and context, whilst others gave little detail. Consistent reporting can facilitate the synthesis of evidence and the translation to practice. Therefore, future research in this area could consider using tools like the Setting Questionnaire for the Ayahuasca Experience (SQAE) (Pontual et al., 2022) to assess the setting component of ritualistic psychedelic use.

Limitations

This review is limited by its search strategy, which only included articles from selected databases and citation searching, potentially missing other relevant sources of evidence. Excluding papers not available in English may mean important research was overlooked, especially given the research being undertaken in South American countries (Mendes et al., 2022). Disparities between search terms and those used in relevant papers, along with variations in study methodology, the timing of data collection and reporting practices, may have affected the comparison and synthesis of evidence. Finally, factors identified as therapeutically beneficial were extracted from studies which did not conduct qualitative analyses or report themes. It is, therefore, possible that these findings were influenced by the author's perspective.

Conclusions

This scoping review aimed to map qualitative evidence on naturalistic ceremonial psychedelic use for psychological disorders and identify therapeutically valuable features. Included studies showed inconsistencies in methodology and reporting and covered a limited range of psychological disorders. However, there was some consensus on the therapeutic factors pertaining to set, setting, acute effects and impact of ceremonial psychedelic use. This review illuminates the therapeutic value of the ceremonial frame and communal experiences in fostering social processes and providing a sense of community. It also highlights the effect of ceremonial psychedelic use on factors specific to SUDs, including anti-craving effects, as well as effects implicated in many psychological disorders, including empathy and self-perception. Findings highlight a need for more

qualitative research on the experience of ceremonial psychedelic use in a range of clinical populations. Future work could explore this gap with sensitivity and regard for the roots of such knowledge.

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Part Two: Empirical Paper

“Lifting the Veil on the Social World”: Understanding How Classic Psychedelics Influence Autistic Adults’ Experience of the Social World

Abstract

Aims: Autistic individuals often experience social communication difficulties and are more likely to experience social anxiety. Whilst there is growing evidence of the wellbeing benefits of classic psychedelics in non-autistic populations, little is known about their impact on autistic individuals. This study aims to explore how classic psychedelics affect the social experiences of autistic adults.

Methods: A secondary analysis of an existing qualitative dataset was collected using a cross-sectional, retrospective online survey. Qualitative data was gathered from autistic adults with at least one experience with classic psychedelics (N=229). Reflexive thematic analysis was used to analyse free-text responses to six open-ended questions about perceived change following a specific "impactful" psychedelic experience. Brief responses indicating no change were quantified separately.

Results: The analysis identified six main themes, each comprised of three to five subthemes: *curating a personally fulfilling social life, being in the know, engaging differently, factors enhancing social experiences, shift in the social self,* and *social challenges*. Notably, many participants reported reductions in, or resolution of, social anxiety. Some participants reported no social change, and others, social challenges attributed to the psychedelic experience.

Conclusions: Findings suggest classic psychedelics could be used as a novel treatment for social anxiety in autistic adults, which could be explored using clinical trials. Classic psychedelics may reduce social anxiety by reducing concern about others' perceptions and increasing self-acceptance. Psychedelic experiences may also increase autistic adults' perceived social connectedness, competence and understanding but can also lead to social challenges. Findings highlight the importance of supportive social environments during psychedelic experiences and accepting networks afterwards. Future work is needed to understand the safety of such interventions in autistic people and to understand whether additional support may be required.

Introduction

Autism is a heterogeneous neurodevelopmental condition characterised by social communication difficulties and restrictive or repetitive behaviours. Autistic people [1] encounter difficulties with social interaction associated with reduced attention to social cues, atypical non-verbal social behaviours and a preference for non-social stimuli (Gale et al., 2019; Osterling et al., 2002; Sasson & Touchstone, 2014). This core characteristic of autism is associated with lower levels of involvement in social activities (Orsmond et al., 2004), social isolation (Orsmond et al., 2013) and loneliness (Ee et al., 2019). During social interactions with neurotypical individuals, autistic people often encounter negative reactions to their behaviour and personal characteristics (Kinnear et al., 2016; Sasson et al., 2017; Sasson & Morrison, 2019). Some autistic people modify their natural social behaviours to cope with or adapt to the predominantly neurotypical social world in a process called camouflaging or masking (Cook et al., 2022; Hull et al., 2017; Lawson, 2020), which results in psychological distress and exhaustion (Cook et al., 2021; Hull et al., 2017). Given these social burdens, it seems unsurprising that autistic people have higher rates of mental health conditions, including depression and anxiety (Hollocks et al., 2019; Lai et al., 2019; Rai et al., 2018), and that most seek mental health support (Baldwin & Costley, 2016; Gawronski et al., 2011). Notably, the autistic community have identified research into managing social and emotional difficulties as a high priority (Pellicano et al., 2014).

[1] There is no consensus regarding the language used to describe autism within the autistic community, however, a survey of autistic people found “autistic person” was preferable to “person with autism” (Kenny et al., 2016). As such, this language will be used throughout this study.

The prevalence of social anxiety is significantly higher in autistic people compared with non-autistic populations (Bellini, 2004; Maddox & White, 2015; Spain et al., 2016). Social anxiety is characterised by fear of negative evaluation by others and avoidance of social interactions (American Psychiatric Association, 2013). Spain et al. (2018) showed that social anxiety in autistic people is associated with poorer social skills and functioning as well as reduced social motivation. Together, autism and social anxiety likely makes engaging with others challenging and confusing, especially since social anxiety can reduce recognition of social information such as facial expressions of emotion (Antezana et al., 2023). Impaired social skills can also contribute to social anxiety (Beidel et al., 2010; Halls et al., 2015). Furthermore, the level of social interaction difficulties, social engagement, loneliness and extent of informal support networks have been identified as predictors of poorer mental health and quality of life (Hedley & Uljarević, 2018; Mazurek, 2014; Tobin et al., 2014). Although cognitive models (e.g. Clark & Wells, 1995) provide some basis for understanding social anxiety in autistic people, there is evidence to suggest differences in the experience of social anxiety in this population. Social skills, negative social experiences like bullying (Park et al., 2020), and masking, which are associated with social anxiety (Hull et al., 2021), may have a specific impact on autistic people, meaning the gap between their socially anxious thoughts and their social reality is different (Wilson & Gullon-Scott, 2023).

There is a resurgence of research investigating the psychotherapeutic use of psychedelics following the imposition of strict international controls on their use, which brought such research to a halt in the early 1970s. The term “classic psychedelic” encompasses those which act as serotonin 2A receptor (5-HT2AR) agonists and can induce alterations of consciousness, including profound changes in affective, somatic,

perceptual and cognitive processes (Gale et al., 2019; Osterling et al., 2002; Sasson & Touchstone, 2014). Examples include lysergic acid diethylamide (LSD), psilocybin and N,N-dimethyltryptamine (DMT). Several randomised controlled and open-label trials have confirmed pre-1970s research and provided more robust evidence to suggest psychedelics, alongside therapeutic support, are safe and effective for a range of psychological difficulties (Carhart-Harris et al., 2016; Griffiths et al., 2016; Palhano-Fontes et al., 2019; Ross et al., 2016).

In non-autistic populations, it is increasingly apparent that in addition to their well-characterised “entheogenic” effects, classic psychedelics also elicit acute and long-lasting changes in social behaviour and produce empathogenic effects (Markopoulos et al., 2022). Psilocybin and LSD have been shown to increase emotional empathy (Dolder et al., 2016; Holze et al., 2020) and decrease feelings of social exclusion acutely (Preller et al., 2016). Psilocybin has also been shown to increase extraversion and openness for up to 3-months in people with treatment-resistant depression (Erritzoe et al., 2018). Similarly, LSD has been shown to modify the processing of emotional information by reducing recognition of fearful and sad faces whilst increasing emotional empathy, desire to be with others, feelings of trust and closeness, as well as prosocial behaviour (Dolder et al., 2016). Such effects persist, with studies showing increases in pro-social attitudes and behaviours as well as improvements in relationship quality for up to 14-months after a single dose of psilocybin (Griffiths et al., 2011, 2018).

Despite the promising effects of psychedelics on social behaviour, much less is known about autistic people’s experiences of using psychedelics. Between 1959 and 1970, there were a series of trials administering LSD to children/ adolescents exhibiting autistic-like behaviours and characteristics, such as self-stimulation, muteness, repetitive

behaviours, and lack of eye contact. These studies reported increases in social behaviour such as desire to communicate, interest in the surrounding environment, eye and face-gazing and affectionate behaviour (Danforth et al., 2018). A review of these studies Mogar & Aldrich (1969) concluded that despite methodological inconsistencies, there was some agreement amongst effects (Abramson, 1960; Bender et al., 1962, 1963; Fisher & Castile, 1963; Freedman et al., 1962; Rolo et al., 1965; Simmons et al., 1966). These included improved speech behaviour in mute children, increased emotional responsiveness to others, positive mood including frequent laughter and decreased ritualistic and compulsive behaviour (Mogar & Aldrich, 1969). However, in the context of modern ethical and methodological standards, the studies have significant shortcomings, including considerable uncertainty about whether these participants would meet today's diagnostic criteria. This poses a substantial challenge when interpreting these older findings.

More recent work in autistic populations has focused on the atypical psychedelic, 3,4-Methylenedioxymethamphetamine (MDMA) whose prosocial and empathogenic effects are well documented (Dolder et al., 2018; Griffiths et al., 2018; Hysek et al., 2014; Kirkpatrick & Wit, 2015). Research in autistic people has so far focused on the impact of MDMA on social anxiety (Danforth, 2013; Danforth et al., 2016, 2018; Danforth, 2019). Danforth (2013, 2019) found that most autistic adults reported increased feelings of empathy/connectedness and ease of communication following non-clinical MDMA use. Thematic analysis indicated that MDMA catalysed changes in communication, courage, connection, communion and clarity (Danforth, 2013, 2019). Additionally, participants reported long-term transformation and healing from social anxiety and post-traumatic stress disorder (PTSD). The author discussed the potential for future clinical trials of MDMA-assisted psychotherapy with autistic individuals experiencing social adaptability

difficulties (Danforth, 2013, 2019). This led to a small-scale (n=8) placebo-controlled study that found that after two sessions of MDMA-assisted psychotherapy sessions, autistic adults experienced a significant decrease in social anxiety, which persisted at the 6-month follow-up (Danforth et al., 2018). Several participants also experienced increased ability to verbally express emotion, ease of initiating and maintaining conversation and more comfort with eye contact, which may support the hypothesis that anxiety interferes with social functioning in autistic people (Danforth et al., 2018). Participants also reported a reduction in barriers to successful social interactions and increased confidence in romantic relationships (Danforth et al., 2018). However, given the small sample size, these findings remain provisional and must be replicated in a large-scale randomised controlled trial (RCT).

Whilst there is evidence for the social effects of MDMA in autistic individuals and of classic psychedelics in non-autistic individuals, less is known about autistic adults' experience of using classic psychedelics. This is important since classic psychedelics have a different neural mechanism of action than MDMA (Holze et al., 2020). Anecdotally, autistic adults have reported the beneficial effects of classic psychedelics (Orsini, 2019). Two unpublished studies quantitatively investigated the experiences of psychedelic use in autistic adults and found long-term perceived reduction in social anxiety and loneliness, as well as increased social engagement and satisfaction with relationships (Stroud, in press). However, to date, there has been no qualitative work exploring the experiences of autistic adults who have taken classic psychedelics. Given that this is an emerging area with a highly heterogeneous population and diverse subjective experiences, qualitative work is needed to better understand the likely varied experience as a precursor to further hypothesis-driven studies. Given the documented social effects of classic psychedelics,

this study aims to address this knowledge gap by answering the following research questions:

1. How do classic psychedelics affect autistic adults' experience of the social world?
2. What are the factors understood to impact this?

Methods

Study Design

The present study is a secondary analysis of qualitative data collected as part of an ongoing study on the use of psychedelics and MDMA by autistic people. A cross-sectional, retrospective, mixed-methods online-based survey collected data on perceived change attributed to a selected experience with classic psychedelics in autistic people. This study was part of a joint project conducted with Hannah Krzyzanowski (Krzyzanowski, 2024) (see Appendix 2 for an outline of separate contributions).

Recruitment

The self-selecting sample was recruited through adverts on social media platforms (e.g. Twitter, Facebook, Instagram, Reddit), psychedelic forums and interest groups (e.g. the Psychedelic Society Newsletter) and autism-relevant forums (e.g. https://www.reddit.com/r/autism/) (see Appendix 3). Participants were also recruited by collaborating with the Autistic Psychedelic Community (APC, https://www.autisticpsychedelic.com/). Participants followed a link to the survey and were asked to read the participant information sheet and whether they consented to participate

in the research (Appendix 4). Participants answered questions to ensure they met the inclusion criteria (see Appendix 5).

Inclusion Criteria

To partake in the original study, participants had to be ≥18 years old, be professionally diagnosed or self-identify as autistic, be proficient in English and have taken a “classic” psychedelic, i.e. LSD, psilocybin, ayahuasca, peyote, DMT, 5-Me0-DMT and LSA (see Appendix 5 for complete drug list). Participants reporting polydrug use were included if this included at least one classic psychedelic. Responses from participants who did not submit to indicate consent were excluded without being analysed. For the current qualitative study, only participants who answered at least one of the six relevant qualitative survey questions were included in the sample.

Sample Characteristics

Demographic Information

Participants responded to questions and measures providing demographic and personal details as well as context for their most impactful psychedelic experience. This included the 10-item version of the Autism Spectrum Quotient (AQ-10, Hoekstra et al., 2011), whether they received a professional diagnosis, and if so, by whom, or self-diagnosed/identified as autistic. They were also asked about any current mental health conditions, including social anxiety, as well as the drug(s) they took in their most impactful psychedelic experience.

Of the 307 participants who submitted the survey and consented to the study, 51 did not report using a classic psychedelic, and 27 did not answer any relevant qualitative questions, leaving a total sample of N=229. Participant age ranged from 18-67 years (M=29.54, SD=9.26). At the time of taking the survey, 75.54% (n=173) of participants self-reported at least one mental health condition, which roughly aligns with the upper end of previously reported prevalence rates (Curnow et al., 2023) (see Appendix 5 for a complete list of conditions asked about). The prevalence of self-reported social anxiety in this sample was 30.57% (n=70), which is lower than previous estimates of up to 50% (Bellini, 2004; Maddox & White, 2015). However, it is important to note that such studies had significantly lower sample sizes (n=41 and n=28, respectively) and used measures to assess social anxiety symptoms. Furthermore, the current study did not ask about formal diagnoses of mental health conditions, so this information could not be verified. Demographic information is displayed in Table 1.

Table 3

Demographic Information

Characteristic	n (%)
Gender	
Male	110 (48.03%)
Female	57 (24.89%)
Non-Binary	47 (20.52%)
Transgender Female	4 (1.75%)
Transgender Male	3 (1.31%)
Other	8 (3.49%)
Ethnicity	
White	190 (82.97%)
Black	2 (0.87%)
Asian	6 (2.62%)
Mixed	22 (9.61%)
Other	8 (3.49%)
Missing	1 (0.44%)
Country of Residence	
United States	111 (48.47%)
United Kingdom	42 (18.31%)
European	39 (17.03%)
Australia	12 (5.24%)
Canada	22 (9.61%)
Other	2 (0.87%)
Missing	1 (0.44%)
Highest Level of Education	
Highschool (to age 16)	12 (5.24%)
Highschool (to age 18)	77 (33.59%)
Bachelor's degree (or equivalent)	85 (37.10%)
Master's degree (or equivalent)	39 (17.03%)
Doctoral degree (or equivalent)	8 (3.49%)
None of the above	8 (3.49%)

Note. N=229.

Autism

The 10-item version of the Autism Spectrum Quotient (AQ-10, Hoekstra et al., 2011) was used to assess current features of autism. This brief version of the original AQ, a 50-item measure, is shown to be significantly elevated in individuals diagnosed with autism (Baron-Cohen et al., 2001). The AQ-10 has good internal consistency and correlates strongly with the validated 50-item AQ (Baron-Cohen et al., 2001). Of the participants, 57.18% (n=131) reported receiving a professional autism diagnosis, whilst 42.81% (n=98) self-identified/self-diagnosed[2]. The diagnosing professional and diagnostic wording is displayed in Table 2. On the AQ-10, 78.60% (n=180) of participants scored ≥6, the published cut-off score indicating autism (Allison et al., 2012). Current AQ-10 scores are shown in Table 3.

[2] The self- and professionally diagnosed groups did not differ on any demographic or symptom measure or on AQ scores (all p-values >0.05).

Table 4

Professional Autism Diagnosis Information

Diagnosis detail	n (%)
Diagnosing Professional(s)	
Psychiatrist	44 (33.59%)
Clinical Psychologist	47 (35.88%)
Paediatrician	3 (2.29%)
Healthcare Team	15 (11.45%)
Other	8 (6.11%)
Not sure	2 (1.53%)
Not reported	12 (9.16%)
Wording of Professional Autism Diagnosis	
Asperger Syndrome	54 (41.22%)
Autism Spectrum Disorder	46 (35.12%)
Autism	6 (4.58%)
Autism Spectrum Condition	3 (2.29%)
Pervasive Developmental Disorder	5 (3.82%)
Other	10 (7.63%)
Not sure	6 (4.58%)
Not reported	1 (0.76%)

Note. N=131.

Table 5

Current AQ-10 Scores and Screening Cut-Off

Current AQ-10 Score	*M (SD)*
Whole Sample	7.29 (2.07)
Professionally Diagnosed	7.19 (1.96)
Self-identified/ Self-diagnosed	7.35 (2.12)

Note. N=229. AQ-10 = Autism Spectrum Quotient

Drug Information

Participants were included if they reported using at least one classic psychedelic during their most impactful experience. The drug type(s) and frequencies are shown in Table 4.

Table 6

Drugs Used in Participants' Most Impactful Psychedelic Experience

Drug(s)	n (%)
Single Classic Psychedelic	
Psilocybin	46 (20.09%)
LSD	37 (16.18%)
Ayahuasca	8 (3.49%)
DMT	7 (3.06%)
5-Me0-DMT	2 (0.87%)
Peyote/ San Pedro	1 (0.44%)
Other (Morning Glory Seed, 2C-B, LSA, NBOMe)	4 (1.75%)
Drug Combinations	
Multiple Classic Psychedelics Only	7 (3.06%)
Classic Psychedelic(s) + Cannabis	67 (29.26%)
Classic Psychedelic(s) + MDMA	10 (4.37%)
Classic Psychedelic(s) + Ketamine	4 (1.75%)
Classic Psychedelic(s) + MDMA + Cannabis	13 (5.68%)
Classic Psychedelic(s) + Ketamine + Cannabis	4 (1.75%)
Classic Psychedelic(s) + Ketamine + MDMA	2 (0.87%)
Classic Psychedelic(s) + Ketamine + MDMA + Cannabis	9 (3.93%)
Other Combinations	8 (3.49%)

Note. N=229.

Qualitative Questions

Participants were invited to respond in free-text boxes to six open-ended questions asking, *"Please describe any other long-term changes (lasting more than just a few days)*

in [social anxiety/ your social life/ your mental health/ the way you connect with others/ the way your emotions impact you/ features of autism] that you attribute to the selected psychedelic experience in as much detail as possible". The qualitative questions were designed by the research team as part of an ongoing project and were preceded by a quantitative measure assessing perceived change in the same construct (Stroud, 2022; Rice, 2022). Participants were asked to describe their most impactful psychedelic experience and their intentions for use (see Appendix 5 for wording). The current study only analysed responses to the first six questions, selected for their relevance to the research question and to distinguish from another project analysing the same dataset (Krzyzanowski, 2024).

Ethics and Research Governance

The University College London (UCL) Research Ethics Committee approved this study (Project ID: 20251/001, see Appendix 6). The information sheet informed participants that researchers did not endorse the use of psychedelics and emphasised the study's interest in the full range of psychedelic experiences, not just positive ones. Participants were informed that questions could bring up difficult feelings, and sources of mental health support were provided (see Appendix 7). Data was stored securely per UCL and General Data Protection Regulation (GDPR) guidance. Participant data was pseudonymised to mitigate identification risks. However, there may be a small risk of indirect identification through demographic details; however, since details like date of birth and IP address were not collected, definitive identification is unlikely.

Analysis

There was substantial variation in the length and detail of participant responses. To allow for a complete understanding of the data, extracted themes aim to represent the wide-ranging content and style of responses. The project supervisor blinded responses to prevent the risk of bias based on drug type or identifying information.

Reflexive thematic analysis (TA) (Braun & Clarke, 2006, 2021) was used to analyse the text-based responses. Reflexive TA aims to capture recurring patterns and meanings throughout the dataset and recognises this process as inherently influenced by the researcher's interests, experiences, values and context (Braun & Clarke, 2016, 2021). It acknowledges the researcher's active role in constructing, testing and refining themes during an iterative process rather than as having "emerged" from the data (Terry & Hayfield, 2020). This approach was chosen because of its adaptability to different data types, including text-based data, its ability to summarise key features of large datasets and facilitate in-depth exploration of diverse experiences or perspectives (Braun & Clarke, 2019, 2021; Nowell et al., 2017). The research questions favoured TA over one which aims to generate tentative theory, as with grounded theory, or an idiographic approach like interpretive phenomenological analysis, which was deemed inappropriate, given the large sample size and variation in length and detail. The analysis moved back and forth through the phases of reflexive TA (Braun & Clarke, 2021), shown in Table 5.

Table 7

Stages of Reflexive Thematic Analysis (Braun & Clarke, 2021)

1. **Familiarisation with the data:** repeated readings of the dataset through the lens of the research question facilitated immersion and familiarity with content.

2. **Coding:** NVivo 14 was used to assign meaningful labels to data which appeared relevant to the research question, giving rise to the initial set of codes. Codes were reviewed against their corresponding data throughout the coding process to ensure they continued to accurately reflect experiences in the data and to collapse repeat codes. Another member of the research team independently coded 10% participant responses after which similarities and differences between coding was reviewed in relation to the research question.

3. **Generating initial themes:** Microsoft PowerPoint was used to display codes and visually identify patterns of meaning across the data which gave rise to initial themes and subthemes.

4. **Reviewing themes:** initial themes were checked against the whole dataset to ensure they represented the story of the data in relation to the research question. A visual representation of themes and subthemes were discussed with the research supervisor in relation to the research question and coded dataset (Vaismoradi et al., 2013). Themes were collapsed, split or discarded where appropriate through the process of refinement.

5. **Defining and naming themes:** as part of the process, the scope and focus of the evolving themes were defined. This phase also involved assigning informative names to themes, during which language was reviewed by an expert by experience (AO), whose involvement with the project will be discussed in more detail in Part Three.

6. **Writing up:** data extracts were selected to support the narrative description of themes in relation to existing literature.

Quantifying Codes

Some responses consisted of brief comments, e.g. “none”, mainly reporting a lack of change. Because these responses lacked nuance and detail, they are only reported as frequencies rather than as a theme, which aligns with recommendations on TA applied

to brief-text responses (Robinson, 2022). Using frequencies also gives a sense of the number of participants reporting no change relative to those reporting change. It is essential to also capture and report neutral and negative outcomes, particularly in emerging areas of research into highly subjective experiences (Robinson, 2022). Challenging experiences following psychedelic use were, therefore, also quantified.

Reflexivity and Trustworthiness

According to reflexive TA, researchers cannot and should not free themselves of their epistemological stance and personal context, both integral to the analytic process (Braun & Clarke, 2006, 2021; Terry et al., 2017). I approached the research questions from a critical realist, inductive and mainly semantic manner. Critical realism (Guba & Lincoln, 1994; Willig, 1999) recognises the limitations of human knowledge in understanding the nature of a broader reality (Fletcher, 2016). This approach allowed for the exploration of participants' experiences of the social effects of psychedelics whilst staying connected to their reality and meanings. Simultaneously, it recognises that the experience does not represent reality as a universal truth and that the interpretative perspective inevitably shapes the understanding of these experiences (Smith & Shinebourne, 2012). This is particularly important given this emerging area of research focusing on highly subjective experiences in an extremely heterogeneous population.

I approached this study from the perspective of a non-autistic, 29-year-old White British woman. Growing up with an autistic father gave me an awareness of the challenge that comes with being neurodivergent in a neurotypical world, which has been solidified by working clinically with autistic people as a trainee clinical psychologist. I have also been struck by the remarkable but exhausting attempts made by autistic people to adapt to

such environments. I also have a personal interest in the use of psychedelics with therapeutic intention and hold hope for the eventual legal use of psychedelics in the context of psychotherapy.

Undoubtedly, such experiences and beliefs drew me to this project. To bring awareness to how this may influence the work and ensure the findings are trustworthy (Elliott et al., 1999; Graneheim & Lundman, 2004; Malterud, 2001), a bracketing interview (see Appendix 8) was undertaken with a researcher external to the project at the beginning of the analysis, and a reflective journal was kept throughout. These efforts aimed to bracket any pre-existing assumptions, experiences and expectations (Sorsa et al., 2015). Credibility was ensured by comparing portions of the analysis performed independently by BC and HK as outlined in Table 5, whilst verbatim quotes will be presented to represent participants' voices. As a neurotypical person, collaboration with AO was essential to bring a neurodivergent perspective. The impact of my personal context on the work and efforts to bracket this are discussed in more detail in Part Three.

Results

Thematic Analysis

This study aimed to understand how psychedelic experiences influence autistic people's social experiences. Six themes were generated by the analysis, each of which was made up of three to five subthemes. Table 6 shows the themes, subthemes and frequencies of participants endorsing each.

Table 8

Themes, Subthemes and Endorsing Frequencies

Theme	Subtheme	Frequency (n)
1. Curating a personally fulfilling social life	1.1. Putting myself out there	68
	1.2. Being true to myself	65
	1.3. The right people and conditions	58
	1.4. Respecting and expressing needs	46
2. Being in the know	2.1. De-mystifying others	54
	2.2. Processes fostering understanding	52
	2.3. Tearing down the “curtain of social convolution”	24
	2.4. Understanding social relationships	22
3. Engaging differently	3.1. Social competence	68
	3.2. Stronger connections	63
	3.4. Synergy and harmony	59
	3.5. Social agility	26
4. Factors enhancing social experiences	4.1. Social comfort and ease	77
	4.2. Reduced reliance on external validation	66
	4.3. Perceptions and perspectives	57
	4.4. New outlook and personal change	50
	4.5. Being present in the interaction	39
5. Shift in the social self	5.1. Increased sociability	52
	5.2. Belonging to the social world	52
	5.3. Enhanced feelings towards others	41
	5.4. Socially interested	39
	5.5. Reduced sense of difference	34
6. Social challenges	6.1. A sense of disconnect	35
	6.2. Barriers to interpersonal connection	19
	6.3. Fear of judgement or harm	13

1. Curating a Personally Fulfilling Social Life

This theme captures the creation of fulfilling social experiences following a psychedelic experience. Self-awareness and self-acceptance allowed selectivity in relationships and social environments, authentic self-expression, and the expression of

one's needs and boundaries to others. This, alongside more proactive social engagement, led to more fulfilling social experiences.

1.1. Putting Myself Out There. Participants reported reduced social avoidance and increased willingness to engage openly and vulnerably with others after their psychedelic experience. Some felt more open to new experiences and people, pushing the boundaries of their comfort zone, to "find what fits" in social environments and pursue connection despite anxiety.

"I don't feel the need to hide away from social engagements, instead relishing the opportunity to meet someone new." P129

Participants described an increased capacity to trust others, allowing them to share their inner world, which was crucial for meaningful connection.

"I'm more willing to trust others and to take the risk of being hurt by them" P117

1.2. Being True to Myself. Participants emphasised the importance of accepting, expressing and living according to their authentic identity to curate meaningful social experiences. Participants reported experiencing less shame about their autistic identity, which promoted "unmasking" and increased comfort with being perceived as different. Others described embracing their natural introversion rather than seeking social contact to satisfy societal expectations.

“Even though I’m definitely still very introverted and still feel different from everyone around me, I’m more okay with it. I’m more okay with never feeling like I fit in” P79

“…ayahuasca allowed me to feel more comfortable with who I am naturally. So in fact, I think some of my autism symptoms increased because I started masking less” P34

1.3. The Right People and Conditions. Participants described carefully selecting social networks and fulfilling social settings following their psychedelic experience. They re-evaluated their relationships, able to recognise and distance themselves from harmful ones. Some found a community, often bonded through neurodivergence and psychedelic experiences, prioritising fewer but more authentic connections.

“I am much more able to be selective in choosing my friends. I no longer try time and time again to connect with people who make me feel like shit. I can seek relationships with other autistic people and describe to others what my experience is like…If I’m awkward…anyone worth spending time with will not see that as a detriment.” P20

Participants also described their ability to socialise on their terms and recognised their autonomy in doing so.

“Even if it's something overwhelming for me like a party-I can go to the party and sit and have a good time with my best friend… and feel fulfilment from that.” P157

1.4. Respecting and Expressing Needs. Participants described respecting their needs and boundaries as facilitating meaningful social experiences. Some gained a deeper understanding of, and attunement to, their autistic identity and how this shapes their social needs or limits.

"Knowing when to push myself out of my comfort zone and when it is just not worth it…I do not have to be extroverted just because other people expect me to behave in that way." P198

Some experienced less shame around their needs, and felt more comfortable disclosing neurodivergence, enforcing boundaries and articulating their needs.

"…more relaxed about telling people that I have…autism and might find things overwhelming…asking for what I need from interactions (more clarity, or feedback if I feel tension but can't fully place it)" P33

2. Being in the Know

Participants attributed an increased understanding and awareness of the social world to their psychedelic experience, including of other people, social interactions and relationships. Some described processes that facilitated this understanding.

2.1. De-mystifying Others. Participants described a newfound or improved understanding of others, making navigating social interactions and relationships more

straightforward. They felt more attuned to social cues, enabling comprehension of, and hypothesising about, others' thoughts, intentions, emotions and behaviour.

"I notice facial features and body language more to gauge how people are feeling/reacting" P235

"I can even imagine why and how people come to believe and perceive things that would have been alien to me before" P83

2.2. Processes Fostering Understanding. Many participants described processes deemed necessary in facilitating a greater understanding of others. Enhanced empathy was frequently reported, along with increased abilities in perspective-taking.

"More than anything else it increased my capacity for empathy" P107

"Increased ability to see and understand different perspectives of a situation" P16

Some described being better able to understand others *because* they better understood themselves. These processes were discussed as facilitating an ability to view others in the context of their life experiences.

"I've gained so much insight on myself that it is far more easy to understand others and other peoples intentions and emotions or at least the reasons for those emotions" P163

2.3. Tearing Down the "Curtain of Social Convolution". Some described a newfound awareness of social dynamics and an understanding of social interactions, which felt more intuitive.

"…now, I find it extremely easy to break down interactions in the moment…I feel like I've tapped into some autistic intuition…it's easy to predict what's going to happen" P32

Others described access to non-literal meaning, implicit social communications, and humour, which were previously difficult to decipher.

"…much better at reading between the lines and understanding things that aren't explicitly spelt out" P121

A few also described being more in tune with social norms, expectations, and socially acceptability.

"I didn't know when it was appropriate to shake hands, hug, etc…I no longer struggle with that" P98

2.4. Understanding Social Relationships. Some participants described a deeper understanding of social relationships and of what is required for social connection. Some recognised connection as a collaborative process cultivated through mutual vulnerability and authenticity.

“Learning that you can't expect everyone else to do the work…If you want to build a relationship with someone, you have to put in effort and take risks.” P176

“Psychedelics…have showed me that living in the flow of your true self is all you need to connect with others in a meaningful way.” P44

Some expressed a shift in their understanding of emotions, emphasising their role in providing social information.

“I used to try to suppress my emotions…I realized why no one likes that…they're what make us human - without them people don't know how to interact with you” P121

3. Engaging Differently

This theme captures a shift in ways of approaching, engaging in, and experiencing social situations following a psychedelic experience. Participants felt more socially competent and agile, experiencing more collaborative and harmonious social interactions. This facilitated stronger connections with others.

3.1 Social Competence*.* Many participants felt more able to navigate social situations with confidence.

“I feel much more confident about the outcomes of my social interactions” P105

This stemmed from a perceived increase in conversational ability, tolerance and ability to engage in small talk and more eye contact. Some felt more socially self-aware, with improved impulse control and active listening during conversations.

“I’m showing more attentive listening and making proper eye contact much more often than I ever was.” P149

3.2. Stronger Connections. Many participants felt closer to others, making deeper and more authentic social connections. For some, this resulted in a greater ability to forge and sustain strong social relationships.

“I have connected with them more than ever on psychedelics, and such connections last.” P227

For some, this ability followed after developing a better connection with themselves.

“I connected with myself which allowed me to connect to others more” P192

3.3. Synergy and Harmony. Participants reported improved social interactions characterised by more harmony, tolerance, patience and reduced emotional reactivity. They attributed these positive changes to feeling more open-minded and “agreeable” as well as less competitive with others during conversations. Some noticed feeling more considerate of others.

“Very good for awareness of and concern for one's impact on others” P216

Participants were also more interested in others, translating into more conversational reciprocity.

“I find myself a lot more interested in others' lives and their interests.” P115

“…remembering to stop talking and let someone else have a turn.” P208

3.4. Social Agility. Participants described feeling felt more flexible and dynamic in their approach to social interaction. This manifested as smoother interactions, increased ability to interact with unfamiliar people and “go with the flow” when doing so.

“I feel a fluidity in the way I interact with people in general, it feels less crunchy and edgy” P200

Some described newfound or increased social adaptability and capacity for spontaneity rather than relying on formulaic or rigid ways of interacting.

“Before…most social interactions felt like a game. There was a script and a dialogue box. Say the right things, the other person responds…These fixations melted away” P114

A few described an ability to navigate social situations and “mistakes” with humour.

“I am not feeling like I am going to embarrass myself and if I do I usually make a joke about it and am able to move on.” P2

4. Factors Enhancing Social Experiences

This theme captures psychedelic-related changes which were deemed important for improving social experiences, including increased ease, presence, and reduced self-consciousness. Participants emphasised the impact of altered perspectives, perceptions, and improved mental health.

4.1 Social Comfort and Ease. Many participants reported some degree of relief from social anxiety, from long-term elimination to acute reduction, whilst others described feeling better able to tolerate social anxiety.

“What social anxiety?” P144

“Though I still feel tense and anxious in social settings and events, I could tolerate it more and don’t have to rely on alcohol to relax and feel more comfortable.” P174

Some participants also described feeling calm or at ease in social situations and more comfortable with physical touch.

“I am more comfortable being touched by others”

4.2. Reduced Reliance on External Validation. Many participants reported reduced concern about how others perceived them and social expectations. For some, this resulted in placing less importance on pleasing others or being judged as socially acceptable.

"I'm just living my little autistic life and if people find me weird or annoying or anything, I just don't care…no longer am worried about making my autistic traits 'acceptable' to others" P180

Some felt liberated by nihilism, and others experienced less sensitivity to rejection or criticism from others.

"I no longer isolate myself out of fear of rejection/cruelty from others" P8

Likely contributing to these changes, participants reported improved self-esteem and self-worth and feeling more self-assured.

"…not as dependent on others for self-worth" P99

4.3. Perceptions and Perspectives. Participants described disengaging from negative self-perception or rumination during social interactions, improving their social experiences.

"…it has alleviated the feelings of depression and self-hatred that impacted my perceptions of interactions with others." P244

For some this was facilitated by improved perspective-taking, which allowed for recognising the discrepancy between self-assessment and "reality" and re-evaluating the likelihood of others noticing or judging their social mistakes.

"LSD gave me the power to put myself into my perspective of other people…my post-psychedelic train of thought would be: If I saw someone else do the dumb-thing, would I think about it for more than a few seconds? No. Even if I did, do I think poorly about the other person? No" P199

4.4. New Outlook and Personal Change. Some participants associated a new worldview with better social experiences, whilst others described the acute psychedelic experience as providing a helpful marker of the heights of social connection possible.

"It gave me something to look back on and remember I can experience things socially in different ways" P225

Some attributed enhanced social experiences to psychedelic-related improvements in mental health, anxiety management and social trauma resolution. A few described relief from difficulties associated with autism.

“It helped me relax and see the world differently…I could trust my intuition, I wasn't as scared as I usually was” P186

4.5. Being Present in the Interaction. Some participants felt more present during interactions after their psychedelic experience because of reductions in overthinking, scripting, self-consciousness, and hypervigilance.

“Conversation flow is now natural, no more planning sentences or scripting” P220

Others observed reduced inward or performance-focused behaviours during social interactions along with an enhanced ability to shift attention and manage emotion. This increased their capacity to attend to social information.

“Less attachment to outcomes in social situations, therefore less stress/anxiety.” P86

“Instead of obsessing what others may be thinking of me, I learned to live in the moment and experience the present for what it is.” P78

5. Shift in the Social Self

This theme captures a shift in participants’ approach to the social world and ways of relating, marked by increased sociability, social interest and positive feelings towards others. Some described feeling more embedded in the social world and less different.

5.1. Increased Sociability. Participants described enhanced sociability or increased extraversion post-psychedelic experience, deriving more enjoyment from social interactions. They described increased social motivation, actively seeking connection and initiating social contact more frequently.

“I am more motivated to be social than before” P11

“I started reaching out to friends more and genuinely enjoying social interactions.” P196

5.2. Belonging to the Social World. Participants expressed feeling more connected to and included in the social world. They described a sense of belonging and identification with humanity, focusing on what connects them to others.

“I feel more part of the "humanity" and a bigger sense of belonging” P181

Some described increased spirituality contributing to this. As a result, participants felt less isolated and more understood, valued, and accepted by others.

“I do not feel like a social outcast…feel less isolated” P102

5.3. Enhanced Feelings Towards Others. Participants described a positive shift in their attitudes and approaches to others following the psychedelic experience. They expressed greater appreciation, regard, love and compassion for others as well as reduced judgement of others. A few described increased faith in humanity.

“I have been able to access compassion towards those who have hurt me before, experience love for them” P33

“I feel more accepting of people and all their flaws and differences” P118

5.4. Socially Interested. Participants described a more socially focused mindset, which manifested for some as an appreciation and wish for social connection and a desire to belong.

“…an increase in appreciation for the already existing connections in my life” P72

Others described efforts to improve social skills and positioned social interactions as opportunities for social learning and feedback.

“I also attribute learning from them helping me to connect with new people now” P110

Some described pro-social tendencies and a more socioemotional understanding of the world.

“the only thing that matters to me is to make the experience here as good and worry-free as possible for others and myself” P139

5.5. Reduced Sense of Difference. Participants described feeling less “alien”, instead experiencing a sense of commonality with humanity. This stemmed from an increased awareness of shared human fallibility and struggle, making them feel less alone.

“I feel like I can relate to other people a lot easier because I know that a lot of people are just about as anxious and insecure as I am.” P163

Some recognised the universality of uniqueness, altering their relationship to difference and increasing relatability with others.

“I see myself as another complex human as every other one that exists” P221

6. Social Challenges

This theme encapsulates social challenges experienced during or following their psychedelic experience, including feeling disconnected from others, barriers to engaging or connecting socially, and fear of judgement or harm from others.

6.1. A Sense of Disconnect. Some participants found it more challenging to connect with others after their psychedelic experience. This stemmed from a *heightened* sense of difference and subsequent challenges in relating to others or being related to by others.

“…it has been hard to process everything and interact socially because it's hard to find someone with similar experiences and challenges.” P155

"…psychedelic experiences have often highlighted to me how different my mind is from others" P124

Others' felt disillusioned with society, resulting in loneliness or isolation. Some described the acute psychedelic experience as introspective, rather than connecting.

"Not many social changes, it was more of an internal experience" P53

6.2. Barriers to Interpersonal Connection or Social Engagement. A few participants encountered barriers to social engagement and connection. Upon presenting their unfiltered self, some others found them more challenging to connect with or that doing so required more energy. This was associated with displaying previously repressed self-stimulating behaviours.

"…the subsequent process of unmasking does disconnect you from people, even close friends." P32

A few described losing touch with reality after the acute effects had worn off, leading to social withdrawal. They reported increased interpersonal challenges, difficulty with small talk, and reduced social desire due to a deeper understanding of others' inner worlds.

"…this further understanding of them made me like most people less" P195

A small number expressed concern that meaningful connection could only be achieved with psychedelics.

“That experience especially showed me how meaningful a connection can be but also made me feel as if I'll never experience it in the same way again.” P89

6.3. Fear of Judgement or Harm. For a time following their psychedelic experience, a small number experienced increased interpersonal anxiety, either manifesting as heightened self-consciousness or social anxiety.

“I am more self-conscious now?? I worry a lot about what people think of me” P127

Others described experiencing paranoid thoughts or feelings of unsafety in the social world.

“I have become more paranoid of other people (always thinking of how they will hurt me).” P222

A small number described concern about drug-related stigma following their psychedelic experience.

“I am more anxious about authority figures finding out about my...use of psychedelics because for them is morally repulsive or just against the law” P183

Other Challenges

Eleven participants reported challenging or frightening acute psychedelic experiences. These led to long-term effects like increased anxiety, paranoia, depression, psychosis, hopelessness, feelings of emptiness, existential fears, intrusive thoughts and flashbacks to the acute experience. Some also became disillusioned with, or more fearful of, psychedelics as a result. Additionally, six participants found understanding others and their emotions more difficult after the experience.

Neutral Experiences

Some participants reported no change in different areas, as shown in Table 7.

Table 7

Codes Capturing Participant Reports of no Change and Frequencies

Code	Frequency (n)
No change in features of autism	27
No change in connection with others	17
No or little change in social life	16
No or little change in social anxiety	15
Not affected by social anxiety	12
No change in the impact of emotion	12
No change in mental health	12
No change in social communication abilities (including small talk and implicit social communication)	9
No change in desire to socialise	4
No change in empathic ability	1

In addition, 13 participants expressed uncertainty around whether changes were attributable to their most impactful psychedelic experience, citing other potential causes, including ageing, life changes (e.g. marriage), starting anti-depressants or self-help efforts.

External factors like increased public awareness around autism were also mentioned. Some attributed positive effects to multiple psychedelic experiences, highlighting a limitation of the study.

Discussion

This study aimed to explore how classic psychedelics influence the social experiences of autistic adults. An inductive reflexive TA of text-based survey data identified six themes: c*urating a personally fulfilling social life, being in the know, engaging differently, factors enhancing social experiences, shift in the social self*, and s*ocial challenges*.

Social Ease and Understanding

A significant finding of this study is the increased comfort in communication and social settings after psychedelic experiences, captured by the subtheme s*ocial comfort and ease*. Participants described a greater understanding of others' emotions and inner world, captured by the theme b*eing in the know*. This aligns with similar research with MDMA, in which autistic participants reported greater comfort in social settings, ease of communication and a sense of how others feel and why (Danforth, 2013, 2019). Neuropharmacological studies also show increased empathy and increased responses to positive emotions in others following acute doses of MDMA (Bedi et al., 2010; Wardle & de Wit, 2014). This is important because social anxiety, more common in autistic individuals (Bellini, 2004; Maddox & White, 2015; Spain et al., 2016), is linked to poorer recognition of facial emotions (Antezana et al., 2023). Understanding others' emotions is

critical to navigating the social world, allowing individuals to accurately recognise others' intentions, foster appropriate responses, establish relationships and develop emotional reciprocity (Bal et al., 2010; Ekman et al., 1980; Ferretti & Papaleo, 2019), all reported in the present findings.

Linked to the preceding theme, e*ngaging differently* describes perceived improvements in social competence, including conversational ability, eye contact, reciprocity, active listening and social self-awareness. This is important since autism-related difficulties with social interactions often manifest as limited eye gaze and lack of social reciprocity (Lord et al., 1994). Some described a more intuitive understanding of social cues, norms, dynamics and communication. This perceived competence is significant since autistic people rate themselves as less socially competent than their neurotypical peers (Matson et al., 2007) and lower perceived competence is associated with greater social anxiety (Chen et al., 2024). Improved social understanding could reduce social anxiety and increase social comfort since autistic people experience anxiety when unable to interpret or anticipate social situations (Ramsay et al., 2005). Furthermore, s*ocial agility* includes reports of smoother interactions, marked by adaptability and fluidity rather than being defined by rigidity and formula. This could be key to improving social experiences since reduced ability to cope with environmental challenges is linked to increased social anxiety in autistic individuals Chen et al. (2024).

Social Connectedness

Stronger connections captures reports of increased connectedness after psychedelic experiences, in line with previous research on classic psychedelic use in non-autistic populations (Carhart-Harris et al., 2018; Preller et al., 2016; Watts et al., 2017)

and MDMA in autistic individuals (Danforth, 2013, 2019). In *belonging to the social world,* participants reported feeling part of the social world, feeling less different and more aware of universal human fallibility and struggle. Similar findings exist in non-autistic populations; for example, Amada et al. (2020) reported participants viewed their situation as part of a larger human condition rather than exclusive to themselves. It is thought that a general sense of connectedness may result in greater social connectedness, identification with others and more empathic encounters (Preller et al., 2016; Weiss et al., 2021), as reported in the current findings.

Studies in non-autistic populations show increased perceived social connectedness marked by authentic expression, openness and sociability (Belser et al., 2017; Watts et al., 2017). Similarly, in c*urating a personally fulfilling social life*, participants experienced greater and more genuine connection with others. Participants linked this to increased openness, vulnerability and authenticity and emphasised the importance of emotional expression. Their own emotions, and those of others, were positioned as a kind of "social tool" guiding their relational experiences, which now felt more intuitive. Authenticity and vulnerability were deemed to facilitate acquiring an accepting, understanding and like-minded social network, often made up of other autistic people also interested in psychedelics, which then, in turn, led to more fulfilling social experiences. The extent to which one feels accepted by others is associated with rates of mental health conditions (Cage et al., 2018). Participants discussed prioritising accepting relationships where they feel comfortable expressing their needs and boundaries, safe in the knowledge they will be respected. Similarly, in Amada et al. (2020) participants reported letting go of unhelpful relationships and enforcing personally meaningful boundaries. Participants described actively engaging with the social world, being more sociable,

stepping out of their comfort zones, and seeking connection despite anxiety. These findings map onto Danforth's (2013), whose theme entitled “increased courage” describes the loosening of internal barriers to social connection, leading to increased sociability, trying new things, reduced inhibition, and lifting of concerns.

This is consistent with neuropharmacological evidence showing that following acute doses of MDMA, participants are less able to detect the negative emotions of others (Bedi et al., 2010; Wardle & de Wit, 2014). This has been shown to increase social approach behaviour (Bedi et al., 2009; Porter et al., 2007). The open-mindedness, agreeableness, tolerance, interest in others, prosocial tendencies seen in *shift in the social self*, and the enhanced conversational reciprocity reported in s*ynergy and harmony* may also enhance social experiences. Weiss et al. (2021) concluded that enhanced extraversion and agreeableness, both traits linked to lower reactivity and antagonism, may amplify perceived social connectedness as individuals deepen prosocial engagement with the social environment. The current study also found a greater desire to belong and engage in the social world. Taken together, personally fulfilling social experiences with the “right people” and c*hanges to the social self* may positively reinforce social engagement. This has implications for the social and emotional wellbeing of the autistic community, in which social participation is low (Orsmond et al., 2013), and experiences of social isolation (Orsmond et al., 2004) and loneliness (Ee et al., 2019) are common and predict poor mental health (Mazurek, 2014).

Social Anxiety

Many participants reported reductions in, or overcoming, social anxiety following their most impactful psychedelic experience, consistent with Danforth et al. (2018) who

found rapid and lasting improvements in the social anxiety symptoms of autistic participants of an MDMA-assisted psychotherapy trial. The naturalistic settings of the psychedelic experiences described in this study highlights the fact that autistic people experience these effects, even outside of highly controlled clinical trial settings. Factors described as contributing to these effects map onto key hallmarks and maintaining factors of social anxiety (Clark & Wells, 1995; Hofmann, 2007; NICE, 2013).

Participants felt more present during social interactions, with less self-focused attention and rehearsal or scripting, contributing to greater authenticity in social interactions. Cognitive models posit that self-focused attention maintains social anxiety by reducing the capacity to focus on and effectively engage with social interactions, as well as increasing awareness of feared anxiety responses (Clark & Wells, 1995; Hofmann, 2007). Current findings suggest that psychedelics may reduce negative self-focused attention, increasing the capacity for attending to social information. Psychedelics may produce this effect by lowering self-consciousness and concern about others' perceptions, which represent critical features of social anxiety (Alomari et al., 2022), as evidenced in the subtheme r*educed reliance on external validation.* Participants also described reduced concern about social acceptability and societal expectations. This is significant since self-focused attention is likely compounded by masking and attempts to conform to non-autistic social norms in autistic people (Bejerot et al., 2014). This involves monitoring personal behaviours, the social environment and social reasoning (Livingston & Happé, 2017), which may further divert attention from social interactions. Likely reducing participants' concern for others' perceptions, *being true to myself* captured reports of increased comfort in authentic self-expression, unmasking and not blending in. Similarly, in Amada et al. (2020) participants felt more resistant to internalising the opinions of others,

less reliant on the affirmation of others and more able to separate from previously adopted and adapted to external influences. This left them feeling more aligned with their “true self”. In the current sample, this was most often in the context of masking and conforming to the neurotypical world, which is significant since masking is linked to increased psychological distress, anxiety and exhaustion in autistic people (Cook et al., 2021; Hull et al., 2017, 2021).

Perhaps facilitating authentic self-expression, participants experienced increased self-esteem, self-worth, self-acceptance, and reduced shame relating to their identity and needs (highlighted in c*urating a personally fulfilling social life* and r*educed reliance on external validation*). This aligns with prior research in autistic (Danforth, 2013, 2019) and non-autistic individuals (Amada et al., 2020). Negative self-perception is crucial to social anxiety and is reinforced by selective information processing (Bögels & Mansell, 2004; Clark & McManus, 2002; Clark & Wells, 1995; Heinrichs & Hofmann, 2001; Hofmann, 2007; Hook & Valentiner, 2002). Psychedelics may alter self-perception by promoting detachment from negative self-view and rumination by taking an external perspective, as noted in p*erceptions and perspectives*. Participants described an ability to distinguish between self-perceptions and reality. Similarly, Amada et al. (2020) showed psychedelic-related reductions in flaw-focused attention and biased self-perceptions, facilitated by de-centred and objective introspection and meta-perspective-taking. Such perspective-taking was also necessary to reduce fears of judgement and social rejection, consistent with prior research showing that psilocybin reduces feelings of social exclusion and rejection-related distress (Preller et al., 2016). This is important since perceived social rejection can negatively impact social cognition and lead to a vicious cycle of withdrawal and reduced support (Cacioppo & Hawkley, 2009; Preller & Vollenweider, 2019).

Facilitated by external perspective-taking, participants re-assessed the likelihood of social judgment. Previously research has shown substantial increases in perspective-taking following psychedelic use, specifically in a subset with lower baseline perspective-taking scores (Weiss et al., 2021). This is significant since perspective-taking difficulties are crucial to understanding autism-related social difficulties (Baron-Cohen et al., 1985, 1997; Happé, 1995). Changes in self-perception and perceived risk of social judgement, both key to social anxiety (Clark & Wells, 1995), may result from meta perspective-taking, facilitated by psychedelic-induced loosening of rigid, biased beliefs and maladaptive self-cognitions (Carhart-Harris & Friston, 2019). These findings are pertinent to the social wellbeing of autistic adults, as self-concept strongly shapes the experience of interpersonal relationships (Decety & Sommerville, 2003; Preller et al., 2016).

Social Challenges

The theme *social challenges* highlights several challenging psychedelic-associated social experiences. Some reported feeling disconnected from others, leading to loneliness and isolation, consistent with previous literature on adverse effects of classic psychedelics (Bouso et al., 2022; Evans et al., 2023; Simonsson et al., 2023). Others described disillusionment with or detachment from society, difficulty relating to, and being understood by, others and interpersonal difficulties like mistrust following negative social interactions related to their psychedelic experiences. These findings align with Evans et al. (2023) who explored long-standing psychedelic-related difficulties. Some participants in the current study reported heightened anxiety, including social anxiety, fear of judgment, harm or drug-related stigma. Increased anxiety or social anxiety has been noted previously in general (Carbonaro et al., 2016; Evans et al., 2023) and autistic populations

(Danforth, 2019). So, too, have concerns about psychedelic-related stigma or ostracism (Evans et al., 2023). Some participants described derealisation or disconnection from reality which influenced their social experiences, as evidenced previously (Bremler et al., 2023; Evans et al., 2023). A unique finding of this study was that autistic participants felt the process of unmasking and being more unfiltered made them more challenging to connect with. Relatedly, Danforth (2013) found that participants feared over-disclosure due to MDMA's reputation for encouraging open communication. Taken together, it is unsurprising that participants reported social withdrawal and avoidance, also documented by Evans et al. (2023).

Previous work has identified variables related to set and setting, which predict the extent and duration of challenging experiences, such as inadequate dosage knowledge, lack of preparation, absence of psychological support or guidance, disagreeable social or physical environments or pre-existing anxiety conditions (Bouso et al., 2022; Evans et al., 2023; Simonsson et al., 2023). This study highlights the importance of being around the "right" people, with participants endorsing having a community of autistic psychedelic users to whom they can relate and connect. This offers insight into important considerations for reducing the risk of psychedelic-related social challenges in autistic people, specifically in the context of integration support. Neurodivergent-specific peer support and integration spaces (e.g. APC peer support space https://www.autisticpsychedelic.com/) can encourage integration practices in which individuals do not feel othered or misunderstood. This, alongside increasing awareness of the importance of one's social environment, could reduce the risk of social disconnection following a psychedelic experience.

Strengths and Limitations

The use of an online survey enabled a large and geographically broad sample, allowing for a “wide-angle” view of the topic (Toerien & Wilkinson, 2004). This approach is particularly valuable given the prevalence of psychedelic use amongst autistic adults is unknown, and this is potentially a rare and difficult-to-recruit sample. This approach is also beneficial given the study’s focus on a heterogeneous population and highly subjective psychedelic experiences. Survey methodology also offers the most anonymity, potentially reducing inhibited responses due to psychedelic-related stigma (Jowett et al., 2011; Terry & Braun, 2017). Finally, using inductive, semantic TA enabled summarising and exploring the large, diverse dataset whilst staying close to participants’ experiences and perspectives when deriving meaning (Braun & Clarke, 2019, 2021; Nowell et al., 2017).

In line with the literature on gender diversity in autistic people (Warrier et al., 2020), the sample is diverse in terms of gender identity. However, it is predominantly Western, Educated, Industrialised, Rich, Democratic (WEIRD, Henrich et al., 2010) and White (82.97%). This mirrors broader trends in psychedelic research, which lacks generalisability to key clinical issues for people of colour (Michaels et al., 2018). Again, using an online survey avoids the limitations of narrow and localised recruitment. However, special efforts are required to adequately sample a diverse participant sample beyond the scope of available resources for data collection.

The sample was also self-selecting and partly recruited through psychedelics-related organisations, which likely led to an overrepresentation of positive psychedelic experiences, making findings difficult to generalise. The survey-based methodology may mean some “richness” was lost, compounded by being without opportunities for clarification and elaboration, which may have impacted interpretation. It is also difficult to

attribute effects solely to classic psychedelics, given the high proportion of drug combinations and uncertainties around purity. The naturalistic design made it impossible to control for set and setting-related factors known to influence psychedelic experiences (Hartogsohn, 2017). The social environment is critical, given the study's focus. This section will be expanded upon in Part Three.

Implications and Future Research

The implications must be considered in light of its limitations, particularly the biased oversampling of participants with a more favourable view of psychedelics based on positive experiences. Notwithstanding this caveat, these findings provisionally indicate the need for a clinical trial investigating the impact of classic psychedelics on social anxiety in this group. However, uncertainties remain regarding the safety and overall risk-benefit balance of the clinical use of psychedelics in autistic people. The study also sheds light on potential challenges associated with psychedelic use among autistic individuals. It highlights the need for future research to determine the necessary support and preparation required for autistic participants and any additional precautions needed to ensure their safety and suitability. Expected to provide some of these insights, recruitment is currently underway for a trial investigating whether the serotonergic targets of psilocybin function differently in autistic and non-autistic individuals (Whelan et al., 2024). This could indicate whether the safety in autistic people is comparable to that in non-autistic people and will inform future clinical trials psychedelic trials in autistic people.

The findings indicate a need for guidance around reducing the impact of social challenges such as disconnection and isolation following psychedelic experiences for autistic people. This could endorse the curating of suitable social environments and the

use of neurodivergent-specific psychedelic peer support and integration spaces. Future work could address the imbalance in this study by specifically studying challenging acute psychedelic experiences and their longer-term impact on autistic people. This may provide a fuller understanding of the risks of classic psychedelics in this group and contribute to the development of guidance around minismising this. Future research must prioritise recruitment of racially and ethnically diverse samples to ensure findings are generalisable to diverse clinical populations (Michaels et al., 2018).

Finally, the author cautions against any psychedelic research focused on reducing autistic characteristics. Aside from clinical concerns (Barnbaum, 2008), autistic people have warned against developing interventions which intend to “make people normal” (Pellicano et al., 2014).

Conclusions

This novel study aimed to understand the perceived impact of classic psychedelics on the social experiences of autistic adults. Classic psychedelics seem to reduce social anxiety in this sample, possibly due to increased self-acceptance and reduced concern about others’ perceptions and social acceptability. This may be related to reduced masking and self-focused attention, which may increase socially focused attention. Alongside the increased social understanding, this seemed to increase perceived social competence. Perspective-taking was deemed important in shifting self-perception and reducing the perceived likelihood of social judgment. Increased vulnerability, authenticity and empathy seemed to enhance the experience of social connection. As did the careful selection of accepting social circles and curation of personally fulfilling social situations.

Some participants reported challenging experiences resulting in social disconnection, avoidance and de-realisation. These findings highlight the potential for psychedelics to promote social wellbeing in autistic individuals. Future research could explore the utility of classic psychedelics as a novel treatment for social anxiety in autistic adults using a control-trial methodology.

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Part Three: Critical Appraisal

Introduction

The purpose of this chapter is to outline my experiences in conducting this research. I will reflect upon how my personal context, assumptions, and expectations interacted with the research and the efforts to manage this. I will also discuss how my epistemological position influenced my approach to this research. Some key strengths of the research methodology will be discussed, along with reflections on important limitations. The implications of these limitations will be examined in relation to the interpretation of the study's findings. Throughout this chapter, I will also make suggestions for future work which could address the limitations and build upon the findings of this research.

Positioning

Researcher Identity and Assumptions

Whilst it is not possible to eliminate assumptions for the purpose of qualitative research, it is important to explicitly acknowledge them and bring them to the forefront to allow for transparency and to enhance findings through the process of reflexivity. Certain aspects of my identity and experience undoubtedly shape some of my assumptions related to this project. Firstly, it feels important to acknowledge my longstanding personal interest in the therapeutic use of psychedelics, which has been fostered by engaging with anecdotal accounts, clinical research literature and media discussing the wide-ranging beneficial effects. This was first apparent in relation to this research when I selected a project in my first year. I remember reflecting in my bracketing interview (see Appendix 8)

that this was the only project that excited me and seemed to align with my imagined future in clinical research. Reflective journalling allowed me to recognise how this personal interest has translated into hope that the potential of psychedelics will be harnessed to reshape our understanding of and approach to psychological distress on a scale accessible to all. Going further into what sustains my interest in this area, reflective journaling revealed that my understanding of what psychedelics can make possible - alongside therapeutic support - aligns with what I perceive to be of key therapeutic value in my role as a clinician. I believe that developing a personally meaningful understanding of the roots of one's psychological distress is the most effective way of intervening therapeutically. I realise that this appeals to me as a clinician who has, at times, felt frustrated by the tendency for psychological services to focus solely on symptom management in the context of a resource-limited health service. Taken together, these assumptions made me vulnerable to hoping for 'positive' results, which highlighted the benefits of psychedelics for the social experiences of autistic people. Fostering and returning to awareness of these hopes and assumptions when approaching the analysis, interpretation and write-up of findings was important to avoid being pulled into my initial assumptions without reflecting upon and questioning these (Fischer, 2009). Given the current hype around the therapeutic potential of psychedelics in Western medicine, balanced and representative reporting of their impact is important, especially in the context of the social experiences of a population who experience high levels of social isolation.

Also important to reflect on in terms of my approach to and feelings about the research is my relationship to autism. I am not autistic myself but observing and hearing

of the experiences of my father, who is, has likely shaped the assumptions I hold and contributed to my being drawn to this project. My relationship with my father and my clinical work with numerous autistic individuals during training have emphasised to me the importance of creating the conditions to thrive. Through these experiences, I have been witness to the damaging impact of unaccepting and unacceptable educational, work and social environments created with only neurotypical people in mind. I have also been saddened to observe and hear of the exhausting ways in which autistic people adapt to such environments and what this takes from them. However, I have also been struck by their remarkable attempts to make such environments work for them and their capacity to keep on trying despite the countless barriers put in their way. Reinforced by such experiences, I naturally align with a social model of disability and hold frustration towards, and a desire to address, the societal barriers making access to and inclusion in the social world challenging. In a personal capacity, before beginning this research, I had heard autistic people speak of the benefits of using classic and atypical psychedelics in social settings, albeit in a recreational capacity, which may have influenced what I expected – and hoped – to find in the data. This is important to acknowledge because such experiences and assumptions around autism perhaps added to my enthusiasm for findings which could 'help' the autistic community in some way, which I reflected upon in my bracketing interview (Appendix 8). This followed a helpful conversation with our expert by experience, who noticed this enthusiasm and cautioned against overly positive reporting around psychedelics in general, but also specifically in autistic people, some of whom may consider going to great lengths to experience social connection. Despite my beliefs and assumptions, I had not anticipated that so many participants would speak to the many ways in which their psychedelic experiences had allowed them to curate fulfilling

social experiences. It was exciting to uncover the factors which seemed to facilitate this process following a psychedelic experience, including self-understanding, self-acceptance, self-worth and selectivity around sources of social connection. I feel excited about the idea of future work to build upon these findings and explore the relationship between these constructs in more detail.

Epistemology

I approached this project from a critical realist position. An important principle of critical realism is that the nature of reality is not reducible to our knowledge of reality, recognising that human knowledge represents only that which we can observe, and there are underlying mechanisms, structures and laws which cannot be observed (Gorski, 2013; Guba & Lincoln, 1994; Willig, 1999). Reflecting on my position throughout this research, I came to understand the combination of different experiences which have shaped this. A product of my post-graduate degree in medical sciences and my work in psychiatric epigenetics, my younger self likely aligned more with scientific realism. However, having studied and worked both as a clinician and researcher in the realm of clinical psychology for the past six years, I have come to appreciate the many unobservable forces influencing the reality of an individual, including cultural and socio-political influences. This critical realist stance influenced my approach to this research, from the generation of research questions to the analysis and interpretation of findings. This led me to focus on generating an initial understanding of autistic adults' subjective experiences of the social world following psychedelic use, as well as the factors which seemed important in participants' experiences of change. I hope that future work can build upon these findings through

qualitative interviews to allow for a deeper exploration of how psychedelic experiences can facilitate meaningful social connection.

Strengths

Methodology

A significant strength of the empirical project is the large sample size, which was made possible by using an online survey for data collection. As shown by Part Two of this thesis, online surveys can be far-reaching geographically, providing extensive and broad samples and generating a 'wide-angle' view of a topic of interest (Toerien & Wilkinson, 2004). This can be unusual in qualitative research and feels particularly important for this project, given the highly subjective nature of psychedelic experiences and the heterogeneity of the studied population. Furthermore, the prevalence of psychedelic use amongst autistic adults is unknown, making the sample potentially rare and difficult to recruit. Online surveys also offer the most anonymity for participants, which potentially facilitates responses that are less inhibited than face-to-face interviews (Jowett et al., 2011). This is important given the stigma - discussed by participants - which still exists around psychedelic use. Such stigma might have made identification a concern for participants and influenced their responses (Terry & Braun, 2017).

Collaboration

Another key area of strength is the involvement of Aaron Orsini, author and co-founder of the Autistic Psychedelic Community (APC), the project's expert by experience. Collaboration with Aaron was important in the very early stages when generating research questions, through to the final stages of analysis, guiding the use of language when generating theme names. Furthermore, Aaron's insight was paramount to the suggestions for mitigating the risks of social challenges following psychedelic use in autistic people. This included the importance of specific neurodivergent peer support and integration spaces, allowing for integration practices that do not feel 'othering' or leave autistic people feeling misunderstood. Aaron's input was particularly important considering my position as a non-autistic, outsider researcher conducting research into the experience of psychedelic use in autistic people. His knowledge and experience in the research topic focused on areas of importance to the community. His input also kept me grounded in my responsibility as a researcher to not get swept up in the emerging enthusiasm around the potential of psychedelics. It served to caution me against the dangers of overly positive psychedelic research. This is true of all psychedelic research, given the shift from stereotypes and overstatements of the risks of psychedelics to overwhelmingly positive hype in media reporting (Meling et al., 2024). This is particularly important, however, in the context of safety in an under-researched population who experience high levels of social isolation and mental health difficulties and so may be urgently seeking change.

Limitations

Sampling

A significant limitation of the empirical project, and psychedelic research in general (Bremler et al., 2023), is the biased sample from which the qualitative data was collected. Autistic people with positive experiences of psychedelics might be more likely to engage with psychedelic-related organisations such as the APC or online forums, from which the study's sample was partially recruited. This was likely compounded by the fact that those with positive experiences may also have been more likely to respond to the advert and partake in the study. As noted in previous research (Danforth, 2019), participants may have decided to participate in the survey to advocate for the therapeutic use of psychedelics. This is likely compounded by this study's reliance upon retrospective reporting of the psychedelic experience and associated effects since pre-existing beliefs or expectations may shape the memory of such experiences (Aday et al., 2022). Psychedelic experiences can be distressing (Carbonaro et al., 2016)and, as highlighted by the current study, bring longer-term challenges, making it unlikely that individuals with such experiences would volunteer to speak about these in detail. This likely resulted in a sample in which seasoned psychedelic users and those with positive psychedelic experiences were overrepresented, accounting for the predominance of positive narratives in this study. It is crucial to recognise that the findings are likely not representative of the population of autistic adults who have used psychedelic drugs. Instead, they reflect the subset of this population who were willing to respond to a long series of quantitative and qualitative measures. When interpreting the findings, this distinction is an important one, particularly given the history of exaggerated claims about the benefits of psychedelics (Giffort, 2020; Hall, 2022) and the sampling bias in psychedelic research (Bremler et al., 2023).

Another significant limitation of the empirical study is the overwhelmingly Western, Educated, Industrialised, Rich and Democratic (WEIRD, Henrich et al., 2010) and white sample. Having completed a secondary data analysis, I was not part of the recruitment process; however, it feels important to reflect on the impact of this unrepresentative sample when interpreting the findings and in the context of psychedelics research more broadly. The lack of ethnic diversity in our sample mirrors that in psychedelic research in general. A review of psychedelic-assisted psychotherapy literature found a much lower rate of representation of people of colour relative to non-Hispanic White people, and, in line with the findings of my scoping review, many studies failed to collect or report race and ethnicity data (Michaels et al., 2018). Reflecting on the potential reasons for this is important, given the improvements in traumatic stress, depression and anxiety related to racial trauma reported by people of colour following psychedelic use (Williams et al., 2021). Michaels et al. (2018) suggest that low ethnic minority participation in psychedelic research could also be related to aversion or resistance, stemming from the abuse and exploitation of minority research subjects by predominantly White researchers and government. This is significant given my context as a White researcher and the broader preponderance of White researchers in the field of psychedelics (George et al., 2020) since the high levels of fear around participating in research in minority groups stem from such events (Katz et al., 2006). Also likely contributing to lower participation, minority individuals who publicise psychedelic use face greater consequences due to longstanding discriminatory drug enforcement practices (Michaels et al., 2018). This is particularly important, considering cultural context plays an important role in therapeutic outcomes and the roots of psychedelic practices lie with Indigenous cultures. Whilst the use of an online survey has the potential to avoid the limitations that come with narrow recruitment,

special efforts are required to adequately recruit a diverse sample. Since this is an area of research I may wish to pursue following training, I have been reflecting on what these efforts might look like. Thrul & Garcia-Romeu (2021) suggest that research institutes must attempt to build trust with Black and Indigenous communities and people of colour and address institutional racism. This might include community outreach, paid advertising for studies, meaningful compensation for participants' time, cultural and anti-racism training, and greater, system-level efforts to increase diversity among researchers (Thrul & Garcia-Romeu, 2021). As a result of this major shortcoming, it is impossible to generalise the findings to key clinical issues of people of colour. This is problematic for many reasons, not least because psychedelics have shown promise in the treatment of racial trauma, and future work should address this through the methods above.

The Survey

There are several limitations relating to the survey that feel important to acknowledge, particularly since they were noticed by the participants of this study. Firstly, asking participants to report on a single, most impactful psychedelic experience may have influenced responses, as highlighted by participants' qualitative responses:

"My most powerful experience, the one on DMT, did relatively little to my social anxiety as the experience was concise and mostly internal, not involving much input from anyone else around me. My other psychedelic experiences, such as those on LSD, have

profoundly impacted my social experience, but this questionnaire has been worded so as to exclude those experiences." P213

As stressed above, the decision to ask participants to report on just one psychedelic experience meant missing out on experiences relevant to the research question because they did not relate to *the* single most impactful experience asked about. The previous research team who designed the survey decided to ask about one psychedelic expertise only because they wanted to use existing and widely used measures capturing the quality of the psychedelic experience (such as the Mystical Experience Questionnaire (MEQ30, Barrett et al. (2015). This would not have been possible would not have been possible had they asked about multiple experiences and allowed for quantitative comparisons with other studies. Whilst this decision benefited the quantitative aims of the previous research team, it has ramifications for the current qualitative study, highlighting a limitation of secondary qualitative analysis of data derived from a mixed-methods survey. However, on balance, since such a large number of participants took the time to provide qualitative responses to a lengthy survey - often in great detail - it is paramount that these experiences are heard. Furthermore, secondary data analysis is more ethical in difficult-to-reach populations since it allows for maximum extraction from studies that negotiate these obstacles to prevent over-researching specific populations (Tripathy, 2013). This is relevant here, given that the drug-related stigma makes this population potentially challenging to reach.

Secondly, the survey was lengthy (see Appendix 5), and some participants reported difficulty accessing some questions:

“Guys this survey is too long and some of the questions are hard to understand. Wish you did interviews.” P229

In addition to the information characterising the participants and the qualitative questions, the survey contained numerous qualitative measures that a previous research team analysed. These included measures assessing perceived change in different areas, including mental health difficulties, social isolation, and autistic traits, as well as details related to the psychedelic experience, such as the set and setting. This may have impacted findings by skewing the responses given and overrepresenting those people who were willing to complete the whole survey. This is important when considering balance in psychedelic research, given that those who completed the entire survey, including qualitative questions, may have been particularly motivated to do so because of a wish to advocate for the use of psychedelics (Danforth, 2019). Although an expert by experience was consulted on the wording of questions, the previous research team (Stroud, in press) acknowledged that this collaboration could have been initiated in the earlier stages of survey design.

Furthermore, given the heterogeneity of the autistic population, having multiple autistic people collaborate and feedback on the survey could have made it more accessible and easier to understand. As suggested by P220, these limitations could be addressed by conducting interviews with autistic people who use psychedelics to allow for the reporting of effects associated with multiple psychedelic experiences and to allow for

clarification upon misunderstanding. The findings of the empirical study could be used to design an interview schedule, alongside collaboration from a board of experts by experience, which aims to gain a more nuanced understanding of experiences which feel important to the autistic community.

Conclusions

This chapter reflects on aspects of my personal context and epistemological positioning which shaped the way I approached this research, namely my hopes for the potential therapeutic use of psychedelics in this country and my relationship to autism. It provided details about my process of bringing awareness to such aspects and attempts to prevent my initial assumptions from going unquestioned. I reflected upon the strength of this project, which lies with the large and geographically wide sample, made possible by the online survey as well as the contributions of our expert by experience. Methodological limitations were also acknowledged, including the sampling bias and lack of diversity, which means the findings are unlikely to be generalisable to the population of autistic people who use psychedelics. This was discussed in the context of a broader problem in the field of psychedelic research. Other important limitations pertain to the survey design and the difficulties with qualitatively analysing data derived from a survey designed by previous researchers with different priorities. Despite these significant limitations, I look forward to the research which builds upon the findings to develop a deeper understanding of the impact of psychedelics on the social experiences of autistic people.

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Appendices

Appendix 1 – Example of Search Strategy (PsychINFO)

Psychedelic Search Terms

1. exp Psychedelic Drugs/ or Psychedelic*.mp. or exp Psychedelic Assisted Therapy/ or exp Psychedelic Experiences/
2. exp Psilocybin/ or exp Psychedelic Drugs/ or exp Psychedelic Experiences/ or Entheogen*.mp.
3. exp Psychedelic Drugs/ or exp Lysergic Acid Diethylamide/ or exp Psilocybin/ or Hallucinogen*.mp.
4. LSD.mp.
5. lysergic acid diethylamide.mp. or exp Lysergic Acid Diethylamide/
6. DMT.mp.
7. exp Tryptamine/ or dimethyltryptamine.mp.
8. ayahuasca.mp.
9. hoasca.mp.
10. psilocyb*.mp.
11. psilocin.mp.
12. magic mushrooms.mp.
13. exp Mescaline/ or mescaline.mp.
14. exp Peyote/ or peyote.mp.
15. San Pedro.mp.
16. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15

Qualitative Methodology Search Terms

17. Exp Qualitative Methods/ or exp Qualitative Measures/ or qualitative*.mp.

Combined

18. 16 and 17

Appendix 2 – Outline of Separate Contributions to a Joint Project

Part Two of this thesis was part of a larger, joint project conducted with Hannah Krzyzanowski, also a DClinPsy trainee. Hannah and I worked together to decide which type of qualitative analysis would be most appropriate given the large sample and responses which varied greatly in length and detail. Whilst the qualitative data we analysed is derived from the same online survey and sample, the projects are distinct and have with important differences. Research questions were decided independently but then cross-checked to ensure little overlap. This thesis focused on the impact of classic psychedelics on the social experiences of autistic adults when analysing the data, whereas Hannah's focused on the relationship to the self. The thematic analysis was completed separately, apart from coding and comparing a portion of the transcripts for trustworthiness. Some ideas span the findings of both theses since there are overlaps in self-other and self-self-relating, but these ideas were approached through the lens of distinct research questions. Finally, the write-up stage was also completed independently.

Appendix 3 – Wording of Recruitment Advert

University College London (partnering with Autistic Psychedelic Community) is currently seeking autistic participants interested in completing a questionnaire exploring the self-reported benefits and challenges of naturalistic psychedelic use.

Any self-diagnosed and/ or clinically diagnosed autistic adults who have experience with psychedelic compounds are welcome to participate.

Aim: the current study aims to further our understanding of the experiences of autistic people who have used psychedelic drugs.

What you'll do: This study requires you to fill out a one-off pseudonymous online survey that takes approximately 30 minutes to complete.

Contacts for further information:
The study is being conducted by researchers from the Department of Clinical, Educational and Health Psychology at University College London.

Jack Stroud – [redacted]
Charlotte Rice – [redacted]
Prof Sunjeev – [redacted]
Prof Will Mandy – [redacted]

Appendix 4 – Information Sheet and Consent Form

RESEARCH DEPARTMENT OF CLINICAL, EDUCATIONAL AND HEALTH PSYCHOLOGY

Participant Information Sheet

UCL Research Ethics Committee Approval ID Number: 20251/001

PLEASE SAVE A COPY OF THIS INFORMATION SHEET

Title of Study: Autism and Psychedelics: exploring the experiences of psychedelic use in autistic people.

Department: UCL Department of Clinical, Educational and Health Psychology

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Name and Contact Details of the Researcher(s): Jack Stroud [redacted]
Charlotte Rice [redacted]

Name and Contact Details of the Principal Researcher: Prof. Sunjeev Kamboj (email: [redacted]

1. Invitation Paragraph

You are being invited to take part in a research project which is being conducted by University College London (UCL) as part of the researchers' doctoral thesis. Before you decide to continue, it is important that you understand why it's being done and what taking part will involve. Please take some time to read the following information carefully and discuss it with others if you wish. Please contact us using the above email addresses if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part and be aware that your participation is completely voluntary.

2. What is the project's purpose?

The current study aims to further our understanding of the experiences of autistic people who have used psychedelic drugs.

3. Why have I been chosen?

To take part you must be at least 18 years old, have a good understanding of the English language, have been given a diagnosis of autism by a healthcare professional and/or self-identify as autistic, and have used any classic psychedelic (for example, LSD or LSD derivatives, 'acid' (e.g. 1P-LSD, 1CP-LSD), Ayahuasca, DMT, 5-MeO DMT, Mescaline (Peyote, San Pedro), Magic mushrooms (psilocybin)), MDMA or ketamine at least once.

4. Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be asked to electronically give consent which confirms for us that you agree to take part in the study and understand what this means. You can withdraw from the study, at any time without giving a reason. If you are a UCL student please do not feel under any obligation from UCL staff to participate.

5. What will happen to me if I take part?

This study requires you to fill out a one-off pseudonymous online survey that takes approximately 30 minutes to complete. The survey asks you to answer questions about your background, autism, mental health and psychedelic drug use. It then asks about how you think the psychedelic experiences have impacted your life, autism and mental health. You can withdraw from the study at any point during the survey by simply closing the browser. For example you will asked questions like, 'during your psychedelic use did you experience loss of time and space' and 'please describe any changes in your mental health that you attribute to the selected psychedelic experience'.

We are aware that psychedelic experiences can be incredibly varied and are interested in hearing both positive and negative experiences, or anything in between. We do not advocate or endorse the use of psychedelics or any other illegal drugs, which can have harmful health, social and occupational consequences. If you would like advice on how to access for support for reducing problematic drug use, please follow this link: [Link to sources of support document, see appendices].

6. What are the possible disadvantages and risks of taking part?

Please be aware we will be asking questions about psychedelic experiences, mental health and historical drug use and that some people may find answering these distressing. As this is an online survey we are unable to provide support to people who are experiencing current mental health difficulties. If you would like to find out more about mental health and how to seek support please follow this link: [Link to sources of support document, see appendices]. You can exit the survey at any time. We appreciate the time you dedicate to this project.

7. 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 leave with the knowledge that you have contributed in some of the following ways:

- Autistic people are often overlooked in psychedelic research and we hope this research will contribute to understanding this under-researched area.
- You inform the scientific community about autistic people's experiences of psychedelics and their impact
- Your personal experience helps shape better theories about the relationship between psychedelic drug use, autism and wellbeing in autistic people
- The project has the potential to inform the development of future studies looking at wellbeing in autistic people

8. What if something goes wrong?

If you wish to raise a complaint then please contact Professor Sunjeev Kamboj (the Co-Principal Investigator for the study) at [redacted] or Professor Will Mandy (the Co-Principal Investigator for the study) at [redacted]. If you feel that your complaint has not been handled to your satisfaction, you can contact the Chair of the UCL Research Ethics Committee at ethics@ucl.ac.uk.

9. Will my taking part in this project be kept confidential?

The data you provide is very valuable to us. The data we will be collecting is considered pseudonymous. This is because although we will not collect data which could directly identify you (such as your IP address or date of birth) will be collecting demographic data such as (age, ethnicity) which if collated could present a small risk of identification. To prevent identification through collation of demographic data we will only publish

demographic information online in broad categories (for example age in 10 year bands). All data will be stored on the secure UCL network.

Due to the fact no directly identifying information is collected it is not possible to remove your responses once submitted, as we would be unable to identify which response was yours. So by submitting your completed survey you are consenting to take part in the study. If you do not complete the survey and then close the webpage, this will be considered as a withdrawal of consent and this data will be deleted prior to analysis.

The survey includes some open questions about your experiences where you can respond in free-text boxes. Please do not include any identifying information such as names, places, physical appearance etc. We will screen these responses for any potentially identifying information and delete this prior to analysis, data sharing and publication. The publication of study results will not include any data that can identify you. Brief, fully anonymised, quotes will be used in disseminated reports. You do not have to fill in these free-text boxes.

The data we collect from this study will help to advance the scientific understanding of autistic people's experiences of psychedelic drug use. To improve the transparency of scientific research on autism and psychedelics, we will make the pseudonymised data we collect in this study freely available online. Data in the form of numerical values from questionnaires will be made openly available so other researchers can confirm our statistical analyses. In addition, the fully anonymised free-text responses, following screening to ensure removal of any identifying information, will also be made freely available online. The findings of the study will be published in publicly available doctoral dissertations which will be available online approximately 18 months after data collection.

10. Limits to confidentiality

Confidentiality will be respected unless there are compelling and legitimate reasons to believe that you or someone is in serious danger or at risk of imminent harm. In such cases the University may be obliged to contact relevant statutory bodies/agencies.

11. What will happen to the results of the research project?

The results will be presented as scientific papers in peer reviewed journals, at conferences, and in student dissertations. You will not be able to be identified in any reports, publications, talks or media. The findings will be published on the UCL Clinical Psychopharmacology Unit's website.

The data we collect from this study will help to advance the scientific understanding of autistic people's experiences of psychedelic drug use. To improve the transparency of scientific research on autism and psychedelics, we will make the fully anonymous data we collect in this study freely available online. Data in the form of numerical values from questionnaires will be made openly available so other researchers can confirm our statistical analyses. In addition, the fully anonymised free-text responses, following screening to ensure removal of any identifying information, will also be made freely available online. The findings of the study will be published in publicly available doctoral dissertations which will be available online approximately 18 months after data collection.

12. Local Data Protection Privacy Notice

Notice:

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

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

- For the general privacy notice click here [Please see below Participant Information 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.

For this study, the categories of personal data collected will be as follows: Gender; Age; Ethnicity; Sexual Orientation or Sex Life; Mental Health and Drug Use information. Collection of such demographic information is important to our research because it helps us understand whether the respondents are representative of the autistic population as a whole and how people with different demographics might have different experiences. The survey aims to find out about psychedelic use so we need to ask participants about this.

We ask about mental health because we know that psychedelic use is associated with changes in mental health and we want to know autistic peoples experiences of mental health after using psychedelics.

The lawful basis for processing your personal data is the performance of a task in the public interest, and for scientific and historical research or statistical purposes. You can provide your consent for the use of your personal data in this project by completing the consent form on the next page.

Your personal data will be processed so long as it is required for the research project. Data will be pseudonymous from point of collection.

If you are concerned about how your personal data is being processed, or if you would like to contact us about your rights, please contact UCL in the first instance at data-protection@ucl.ac.uk.

To improve the transparency of scientific research on autism and psychedelics, we will make the fully pseudonymous data we collect in this study freely available online. Data in the form of numerical values from questionnaires will be made openly available so other researchers can confirm our statistical analyses.

13. Contact for further information

The study is being conducted by researchers from the Department of Clinical, Educational and Health Psychology at University College London.

Jack Stroud [redacted]

Charlotte Rice [redacted]

Prof Sunjeev [redacted]

Prof Will Mandy [redacted]

If you would like more information or if anything is unclear, please contact the researchers using the contact details above. If you decide to take part, please save a copy of this information sheet as well as your completed consent form (to be completed on the next page).

Thank you for considering taking part in this research. If you have any questions arising from the Information Sheet, please contact the researcher to ask them before you decide whether to join in. You are advised to save a copy of this Consent Form to keep and refer to at any time.

I confirm that by ticking the box below I am consenting to take part in this study. I am confirming that I have read and understood the information sheet and that I understand that once I submit the completed survey I will be unable to withdraw my data.

Appendix 5 – Complete Online Survey

Start of Block: Personal Information

Q1 How did you find out about this survey? (Multiple responses can be selected)

- Reddit
- Facebook
- Twitter
- Google
- Psychedelic related organisation mailing list / website
- Autism related organisation mailing list / website
- Other

Q2 Please indicate your age in years:

Q3 What gender do you identify as?

- Female
- Male
- Transgender female
- Transgender male
- Non-binary
- Other

Q4 What is your ethnicity?

(These categories are from the most recent UK census. If you're from outside of the UK please pick a category that is closest to how you'd describe your ethnicity, or pick 'other'.)

- White – British (English/Welsh/Scottish/Northern Irish)

- White - Irish
- White – Gypsy or Irish Traveller
- Any other White background (Please Specify):
- White and Black Caribbean
- White and Black African
- White and Asian
- Any other Mixed/Multiple ethnic background (Please Specify):
- Asian - Indian
- Asian - Pakistani
- Asian - Bangladeshi
- Asian - Chinese
- Any other Asian background (Please Specify):
- Black - African
- Black - Caribbean
- Any other Black /African/Caribbean background (Please Specify):
- Arab
- Other Ethnic Group (Please Specify):

Q5 What is the highest level you have been educated to?

(These categories are based on the UK education system. If you're from outside the UK please pick a category that is closest to the level you have been educated to)

- GCSE (or equivalent, i.e. education to age 16)
- A Level (or equivalent, i.e. education to age 18)
- Bachelors Degree
- Masters Degree
- Doctoral Degree
- None of the above apply

Q6 In which country do you live?

Q7 Have you been diagnosed with an autism spectrum condition (including ‘autism spectrum disorder (ASD)’, ‘autism’, ‘Asperger’s syndrome / disorder’, ‘atypical autism’ or

‘pervasive developmental disorder – not otherwise specified (PDD-NOS’) by a health professional?

- Yes
- No

Display This Question:

If: Have you been diagnosed with an autism spectrum condition (including ‘autism spectrum disorder (A... = Yes

Q8 Who made this autism diagnosis?

- Psychiatrist
- Paediatrician
- Clinical Psychologist
- Team comprised of some or all of the above (please give details):
- Other (please give details):
- Not sure

Display This Question:

If Have you been diagnosed with an autism spectrum condition (including ‘autism spectrum disorder (A... = Yes

Q9 What is the wording of your formal autism diagnosis (i.e. the diagnosis written in your diagnosis report)?

- Autism
- Autism Spectrum Disorder
- Autism Spectrum Condition
- Asperger Syndrome
- Pervasive Developmental Disorder - Not Otherwise Specified
- Other (please specify):

- Not sure

Display This Question:

If Have you been diagnosed with an autism spectrum condition (including ‘autism spectrum disorder (A... = Yes

Q10 Approximately how old were you when you received this diagnosis?

- Age in years:

Display This Question:

If Have you been diagnosed with an autism spectrum condition (including ‘autism spectrum disorder (A... = No

Q11 Do you self-diagnose or self-identify as autistic?

- Yes
- No

End of Block: Personal Information

Start of Block: Current Autistic Features (AQ-10)

Q12 Please state how much you agree with the following statements:

Definitely Agree (1) Slightly Agree (2) Slightly Disagree (3) Definitely Disagree (4)

- I often notice small sounds when others do not

- I usually concentrate more on the whole picture, rather than the small details
- I find it easy to do more than one thing at once
- If there is an interruption, I can switch back to what I was doing very quickly
- I find it easy to ‘read between the lines’ when someone is talking to me
- I know how to tell if someone listening to me is getting bored
- When I’m reading a story I find it difficult to work out the characters’ intentions
- I like to collect information about categories of things (e.g. types of car, types of bird, types of train, types of plant etc)
- I find it easy to work out what someone is thinking or feeling just by looking at their face
- I find it difficult to work out people’s intentions

End of Block: Current Autistic Features (AQ-10)

Start of Block: Most Impactful Psychedelic Experience and Drug and Dose

Q13 Please bring to mind the memory of the psychedelic experience that has been the most impactful on your life. By “impactful” we mean the one experience that was the most influential or memorable for you. How impactful was the experience?

1 = no more than routine, everyday experiences

2 = similar to impactful experiences that occur on average once or more a week

3 = similar to impactful experiences that occur on average once a month

4 = similar to impactful experiences that occur on average once a year

5 = similar to impactful experiences that occur on average once every 5 years

6 = among the 10 most impactful experiences of my life

7 = among the 5 most impactful experiences of my life

8 = the single most impactful experience of my life

Q14 How many years ago did this experience take place?

- Number of years ago:
- Within the past year

Q15 Which drug or combination of drugs did you use during your selected most impactful psychedelic experience? (Multiple responses can be selected)

- LSD/ Acid (and analogues) [LSD, or 1P-LSD, AL-LAD]
- ‘Magic’ mushrooms and truffles (not including Amanita) [Psilocybin, psilocin]
- Ayahuasca, yage [DMT+MAOIs together in a brew]
- DMT and Changa [DMT (inhaled/smoked)]
- Peyoté, San Pedro (and other cacti) [Mescaline]
- Psychoactive toad [5-MeO-DMT, Bufotenin]
- Iboga [Ibogaine]
- Salvia Divinorum
- NBOMe (25I-NBOMe, N-Bomb)
- MDMA
- Ketamine
- Cannabis
- Other (please specify):

Carry Forward Selected Choices from "Which drug or combination of drugs did you use during your selected most impactful psychedelic experience? (Multiple responses can be selected)"

Q16 Please estimate the dose of each selected drug (please skip this question if you feel unable to estimate the dose):

- LSD/ Acid (and analogues) [LSD, or 1P-LSD, AL-LAD]
- ‘Magic’ mushrooms and truffles (not including Amanita) [Psilocybin, psilocin]
- Ayahuasca, yage [DMT+MAOIs together in a brew]
- DMT and Changa [DMT (inhaled/smoked)]
- Peyoté, San Pedro (and other cacti) [Mescaline]
- Psychoactive toad [5-MeO-DMT, Bufotenin]
- Iboga [Ibogaine]

- Salvia Divinorum
- NBOMe (25I-NBOMe, N-Bomb)
- MDMA
- Ketamine
- Cannabis
- Other (please specify)

End of Block: Most Impactful Psychedelic Experience and Drug and Dose

Start of Block: Perceived Changes in Social Functioning

Q17 Do you believe your selected psychedelic experience has led to long-term changes (lasting more than just a few days) in the below? Please be aware the -5 to +5 rating scale in this question refers to your impression of an increase or a decrease in social contact rather than the exact number of relatives or friends.

-5 (Decreased very much) -4 -3 -2 -1 0 (No change) +1 +2 +3 +4 +5 (Increased very much)

1. How many relatives you see or hear from at least once a month
2. How many relatives you feel close to such that you could call on them for help
3. How many relatives you feel at ease with that you can talk about private matters
4. How many friends you see or hear from at least once a month
5. How many friends you feel close to such that you could call on them for help
6. How many friends you feel at ease with that you can talk about private matters
7. How often you feel that you lack companionship
8. How often you feel left out
9. How often you feel isolated from others
10. Satisfaction with your personal relationships
11. Satisfaction with your sex life

Q18 Please describe any other long-term changes (lasting more than just a few days) in your social life that you attribute to the selected psychedelic experience in as much detail as possible:

Q19 Do you believe your selected psychedelic experience has led to long-term changes (lasting more than just a few days) in the below?

-5 (Decreased very much) -4 -3 -2 -1 0 (No change) +1 +2 +3 +4 +5 (Increased very much)

1. Finding it easy to wind down
2. Being aware of dryness of my mouth
3. Not being able to experience any positive feelings
4. Breathing difficulties (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)
5. Finding it difficult to work up the initiative to do things
6. Overreacting to situations
7. Trembling (e.g. in the hands)
8. Feeling like I was using a lot of nervous energy
9. Worrying about situations in which I might panic and make a fool of myself
10. Feeling like I have nothing to look forward to
11. Getting agitated
12. Finding it difficult to relax
13. Feeling down-hearted and blue
14. Being intolerant of anything that kept me from getting on with what I was doing
15. Feeling close to panic
16. Being unable to become enthusiastic about anything
17. Feeling like I wasn’t worth much as a person

18. Feeling touchy

19. Being aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)

20. Feeling scared without any good reason

21. Feeling that life was meaningless

Q20 Please describe any other long-term changes (lasting more than just a few days) in your mental health that you attribute to the selected psychedelic experience in as much detail as possible:

Q21 Do you believe your selected psychedelic experience has led to long-term changes (lasting more than just a few days) in the below?

5 (Decreased very much) -4 -3 -2 -1 0 (No change) +1 +2 +3 +4 +5 (Increased very much)

1. Being afraid of people in authority

2.Being bothered by blushing in front of people

3. Parties and social events scaring me

4.Avoiding talking to people I don't know

5. Being scared of being criticized

6. Avoiding doing things or speaking to people for fear of embarrassment

7. Being distressed by sweating in front of people

8. Avoiding going to parties

9. Avoiding activities where I am the centre of attention

10. Talking to strangers scares me

11. Avoiding having to give speeches

12. Doing anything to avoid being criticized

13. Having heart palpitations when I'm around people

14. Being afraid of doing things when other people might be watching

15. Fearing being embarrassed or looking stupid

16. Avoiding speaking to anyone in authority

17. Being distressed by trembling and shaking it

Q22 Please describe any other long-term changes (lasting more than just a few days) in your social anxiety that you attribute to the selected psychedelic experience in as much detail as possible:

End of Block: Changes in Mental Health

Start of Block: Perceived Changes in the Features of Autism

Q23 Do you believe your selected psychedelic experience has led to long-term changes (lasting more than just a few days) in the below?

-5 (Decreased very much) -4 -3 -2 -1 0 (No change) +1 +2 +3 +4 +5 (Increased very much)

1. Preferring to do things with others rather than on my own

2. Finding social situations easy

3. Preferring to go to a library than to a party

4. Finding myself drawn more strongly to people than to things

5. Finding it hard to make new friends

6. Enjoying social occasions

7. Enjoying meeting new people

8. Finding that new situations make you anxious

9. Preferring to do things the same way over and over again

10. Getting upset if my daily routine is disturbed (
11. Enjoying doing things spontaneously
12. Frequently getting strongly absorbed in one thing
13. Finding it easy to keep track of several different people's conversations
14. Finding it easy to do more than one thing at once
15. If there is an interruption, switching back very quickly
16. Finding it easy to create a picture in my mind when trying to imagine something
17. Finding it easy to imagine what characters might look like when reading a story
18. Finding it easy to make up stories
19. Finding it difficult to work out the characters intentions when reading a story
20. Finding it easy to work out what someone is thinking or feeling
21. Finding it difficult to imagine what it would be like to be someone else
22. Finding it difficult to work out people's intentions
23. Finding it easy to play games with children that involve pretending
24. Usually noticing car number plates or similar strings of information
25. Being fascinated by dates
26. Being fascinated by numbers
27. Noticing patterns in things all the time
28. Liking to collect information about categories of things

Q24 Please describe any other long-term changes (lasting more than just a few days) in the features of autism that you attribute to the selected psychedelic experience in as much detail as possible:

End of Block: Perceived Changes in the Features of Autism

Start of Block: Perceived Changes in Camouflaging

Q25 Do you believe your selected psychedelic experience has led to long-term changes (lasting more than just a few days) in the below?

-5 (Decreased very much) -4 -3 -2 -1 0 (No change) +1 +2 +3 +4 +5 (Increased very much)

1. Spending time learning social skills from television shows and films, and trying to use these in my interactions

2. In my own social interactions, using behaviours that I have learned from watching other people interacting in real life

3. Learning how people use their bodies and faces to interact by watching television or films, or by reading fiction

4. Monitoring my body language or facial expressions during social interactions, so that I appear relaxed

5. Paying attention to what my face or body are doing in social interactions

6. Adjusting my body language or facial expressions so that I appear relaxed

7. Having to force myself to interact with people when I am in social situations

8. In social situations, feeling like I'm "performing" rather than being myself

9. When talking to other people, feeling like the conversation flows naturally

End of Block: Perceived Changes in Camouflaging

Start of Block: Changes in Connection and Cognitive Flexibility

Q26 Do you believe your selected psychedelic experience has led to long-term changes (lasting more than just a few days) in the below?

-5 (Decreased very much) -4 -3 -2 -1 0 (No change) +1 +2 +3 +4 +5 (Increased very much)

1. Painful experiences and memories making it difficult for me to live a life that I would value

2. Being afraid of my feelings

3. Worrying about not being able to control my worries and feelings

4.Painful memories preventing me from having a fulfilling life

5. Emotions causing problems in my life

6. Seeming like most people are handling their lives better than I am

7. Worrying gets in the way of my success

Q27 Please describe any other long-term changes (lasting more than just a few days) in the way your emotions impact you that you attribute to the selected psychedelic experience in as much detail as possible:

Q28 Do you believe your selected psychedelic experience has led to long-term changes (lasting more than just a few days) in the below?

-5 (Decreased very much) -4 -3 -2 -1 0 (No change) +1 +2 +3 +4 +5 (Increased very much)

1. Feeling disconnected from the world around me

2. Even around people I know, feeling that I don’t really belong

3. Feeling distant from people

4. Having no sense of togetherness with my peers

5. Not feeling like I relate to anyone

6. Catching myself losing all sense of connectedness with society

7. Feeling that even among my friends, there is no sense of brother/sisterhood (

8. Not feeling that I participate with anyone or any group

Q29 Please describe any other changes in the way you connect with others that you attribute to the selected psychedelic experience in as much detail as possible:

End of Block: Changes in Connection and Cognitive Flexibility

Start of Block: The Context of the Experience

Q30 Please bring to mind the memory of your selected most impactful psychedelic experience when answering the following questions.

Q31 Where did the majority of the experience take place? (Multiple responses can be selected)

- A psychedelic retreat
- As part of a ceremony or ritual
- Music festival
- Party
- Other social occasion
- My Home
- Someone else's home
- Urban environment
- Rural environment
- Inside
- Outside
- Other (please specify):

Q32 How many people were present during the majority of the experience?

- 1 (only myself)
- Between 2 and 5
- Between 6 and 15

- Between 16 and 30
- Between 31 and 100
- More than 100

Q34 Please state how much you agree with the following statements:

Strongly agree (1) Agree (2) Neither agree nor disagree (3) Disagree (4) Strongly disagree (5)

- The setting in which the experience took place was physically safe
- The setting in which the experience took place was supportive
- I was with people that I trusted
- There was someone responsible for looking after me during the experience
- The setting was designed with a therapeutic purpose in mind
- The setting was designed with a recreational purpose in mind

End of Block: The Context of the Experience

Start of Block: Mindset Prior to Experience

Q35 How much do you agree with the following statements regarding your mindset prior to the selected psychedelic experience?

Strongly agree (1) Agree (2) Neither agree nor disagree (3) Disagree (4) Strongly disagree (5)

- I felt comfortable about the upcoming experience
- I felt open to the upcoming experience
- I felt well prepared for the upcoming experience
- I felt anxious
- I was in a good mood
- I felt ready to surrender to whatever will be

- I was preoccupied with my work and/or life duties
- I had strong expectations for the upcoming experience
- I had a clear intention for the upcoming experience

End of Block: Mindset Prior to Experience

Start of Block: Motivation for use

Q36 Considering the selected most impactful psychedelic experience, what were your reasons/intentions for using the psychedelic drug(s) at that time?

Q37 In addition to the answer you just provided, please consider whether the reasons/intentions for taking psychedelics listed below are relevant for you.

Considering the selected most impactful psychedelic experience, what were your top three reasons/intentions for using the psychedelic drug(s) at that time from this list?

- For fun/recreation
- For personal growth
- To foster creativity
- For spiritual or religious reasons
- Out of curiosity/interest
- Social reasons (e.g. to connect deeply with others)
- To connect with nature
- To help manage or confront difficult emotions (including to help manage a specific psychological problem (e.g. depression, anxiety, trauma))
- To enhance cognitive performance (e.g. to improve attention)
- The reason given in my previous response
- Other reason (please specify):

Carry Forward Selected Choices from "In addition to the answer you just provided, please consider whether the reasons/intentions for taking psychedelics listed below are relevant for you. Considering the selected most impactful psychedelic experience, what

were your top three reasons/intentions for using the psychedelic drug(s) at that time from this list? "

Q38 Please drag and drop your selected top three reasons to rank them in order of importance:

End of Block: Motivation for use

Start of Block: Quality of the Experience

Q39 Please bring to mind the memory of your selected most impactful psychedelic experience when answering the following questions.

Q40 - Revised MEQ30 Instructions: Looking back on the entirety of your most impactful psychedelic experience, please rate the degree to which at any time during that experience you experienced the following phenomena. Answer each question according to your feelings, thoughts, and experiences at the time of the experience. In making each of your ratings, use the following scale:

0 – none; not at all, 1 – so slight cannot decide, 2 – slight, 3 – moderate, 4 – strong (equivalent in degree to any other strong experience), 5 – extreme (more than any other time in my life and stronger than 4)

1. Loss of your usual sense of time.
2. Experience of amazement.
3. Sense that the experience cannot be described adequately in words.
4. Gain of insightful knowledge experienced at an intuitive level.
5. Feeling that you experienced eternity or infinity. (
6. Experience of oneness or unity with objects and/or persons perceived in your surroundings.
7. Loss of your usual sense of space.

8. Feelings of tenderness and gentleness.

9. Certainty of encounter with ultimate reality (in the sense of being able to “know” and “see” what is really real at some point during your experience.

10. Feeling that you could not do justice to your experience by describing it in words.

11. Loss of usual awareness of where you were.

12. Feelings of peace and tranquillity.

13. Sense of being “outside of” time, beyond past and future.

14. Freedom from the limitations of your personal self and feeling a unity or bond with what was felt to be greater than your personal self.

15. Sense of being at a spiritual height.

16. Experience of pure being and pure awareness (beyond the world of sense impressions).

17. Experience of ecstasy.

18. Experience of the insight that “all is One”.

19. Being in a realm with no space boundaries.

20. Experience of oneness in relation to an “inner world” within.

21. Sense of reverence.

22. Experience of timelessness.

23. You are convinced now, as you look back on your experience, that in it you encountered ultimate reality (i.e., that you “knew” and “saw” what was really real).

24. Feeling that you experienced something profoundly sacred and holy.

25. Awareness of the life or living presence in all things.

26. Experience of the fusion of your personal self into a larger whole.

27. Sense of awe or awesomeness.

28. Experience of unity with ultimate reality.

29. Feeling that it would be difficult to communicate your own experience to others who have not had similar experiences.

30. Feelings of joy.

Q41 - The CEQ Instructions: Looking back on the entirety of your most impactful psychedelic experience, please rate the degree to which at any time during that experience you experienced the following phenomena. Answer each question according to your feelings, thoughts, and experiences at the time of the experience.

In making each of your ratings, use the following scale: 0 – none; not at all, 1 – so slight cannot decide, 2 – slight, 3 – moderate, 4 – strong, 5 – extreme (more than ever before in my life)

1. Isolation and loneliness
2. Sadness
3. Feeling my heart beating
4. I had the feeling something horrible would happen
5. Feeling my body shake/tremble
6. Feelings of grief
7. Experience of fear
8. Fear that I might lose my mind or go insane
9. I felt like crying
10. Feeling of isolation from people and things
11. Feelings of despair
12. I had the feeling that people were plotting against me
13. I was afraid that the state I was in would last forever
14. Anxiousness
15. I felt shaky inside
16. I had the profound experience of my own death
17. I felt my heart beating irregularly or skipping beats
18. Pressure or weight in my chest or abdomen
19. I experienced a decreased sense of sanity
20. I felt as if I was dead or dying
21. Panic

22. Experience of antagonism toward people around me

23. Despair

24. I felt isolated from everything and everyone

25. Emotional and/or physical suffering

26. I felt frightened

Q42 Please describe the selected psychedelic experience in as much detail as possible. For example, what emotions you experienced, what it felt like, what happened, how your body felt, whether your perceptions changed, how you related to other people or whether your experience of your senses changed:

End of Block: Quality of the Experience

Start of Block: Integration

Q43 How much do you agree with the following statements regarding the selected psychedelic experience?

Strongly agree (1) Agree (2) Neither agree nor disagree (3) Disagree (4) Strongly disagree (5)

- Someone who understood psychedelics was there to communicate with me about my experience afterwards
- Currently, I feel that I understand my selected psychedelic experience

End of Block: Integration

Start of Block: Personal information - mental health

Q44 Please select which, if any, of the following conditions you are currently experiencing:

- A depressive disorder (e.g. Major Depressive Disorder or Dysthymia)
- Social Anxiety Disorder
- Post-traumatic Stress Disorder (PTSD)
- Obsessive Compulsive Disorder (OCD)
- Panic Disorder
- Generalised Anxiety Disorder
- Bipolar Affective Disorder
- An eating disorder (e.g. Anorexia Nervosa or Bulimia Nervosa)
- A sleep disorder (e.g. Insomnia Disorder or Hypersomnolence Disorder)
- A substance use disorder (e.g. Alcohol Use Disorder or Opioid Use Disorder)
- A psychotic disorder (e.g. Schizophrenia or Schizoaffective Disorder)
- Attention-Deficit/Hyperactivity Disorder (ADHD)
- Other (please give details):
- Not sure
- None of the above

Carry Forward Selected Choices from "Please select which, if any, of the following conditions you are currently experiencing:"

Q45 Who made this diagnosis / these diagnoses?

- Professional Diagnosis
- Self-diagnosis

Q46 The next set of questions refer to past conditions. In the past have you experienced any of the following conditions? (Please select past conditions regardless of whether you are currently experiencing them or not).

- A depressive disorder (e.g. Major Depressive Disorder or Dysthymia)
- Social Anxiety Disorder
- Post-traumatic Stress Disorder (PTSD)

- Obsessive Compulsive Disorder (OCD)
- Panic Disorder
- Generalised Anxiety Disorder
- Bipolar Affective Disorder
- An eating disorder (e.g. Anorexia Nervosa or Bulimia Nervosa)
- A sleep disorder (e.g. Insomnia Disorder or Hypersomnolence Disorder)
- A substance use disorder (e.g. Alcohol Use Disorder or Opioid Use Disorder)
- A psychotic disorder (e.g. Schizophrenia or Schizoaffective Disorder)
- Attention-Deficit/Hyperactivity Disorder (ADHD)
- Other (please give details):
- Not sure
- None of the above

Carry Forward Selected Choices from " The next set of questions refer to past conditions. In the past have you experienced any of the following conditions?..."

Q47 Who made this diagnosis / these diagnoses? (This question refers to past conditions only)

- Professional Diagnosis
- Self-diagnosis

Q48 How would you rate your general mental health currently?

Extremely poor Extremely good

0 1 2 3 4 5 6 7 8 9 10

End of Block: Personal information - mental health

Start of Block: Historical Drug Use

Q49 Please estimate the number of times you have used the following drugs over your lifetime:

- LSD/Acid and analogues (LSD, 1P-LSD or AL-LAD)
- ‘Magic’ mushrooms and truffles (psilocybin or psilocin)
- Ayahuasca, yage (DMT and MAOIs together in a brew)
- DMT and changa (DMT inhaled or smoked)
- Peyoté, San Pedro and other cacti (mescaline)
- Psychoactive toad (5-MeO-DMT or bufotenin)
- Iboga (ibogaine)
- Salvia divinorum
- NBOMe (25I-NBOMe)
- MDMA (Ecstasy)
- Ketamine

Q50 Have you used any other psychedelic drugs not listed in the previous question? (please specify which drug or drugs and estimate how many times you have used each drug in your lifetime):

Appendix 6 – Letter of Ethical Approval

UCL RESEARCH ETHICS COMMITTEE
OFFICE FOR THE VICE PROVOST RESEARCH

17th August 2021

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

Cc: Charlotte Rice & Jack Stroud

Dear Professor Kamboj

Notification of Ethics Approval with Provisos
Project ID/Title: 20251/001: Autism and Psychedelics: Autism and Psychedelics: exploring the experiences of psychedelic use in autistic people

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 December 2023.**

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'
http://ethics.grad.ucl.ac.uk/responsibilities.php

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: https://www.ucl.ac.uk/srs/file/579
- 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 7 – Sources of Support Document

Mental Health Awareness &
How to Access Mental Health and Substance Misuse Services

This information sheet gives suggestions for people living around the world and for more specific information for people in the UK.

For people living outside of the UK:

- If you have concerns about your mental health or substance use you should get in touch with your General Medical Practitioner.
- If you have immediate concerns about keeping yourself safe please go to your local hospital emergency department and call emergency services.
- You can also look at this resource page from the World Health Organisation: https://www.who.int/news-room/feature-stories/mental-well-being-resources-for-the-public

For people living in the UK:

- Mental health services are free on the NHS.
- In some cases you'll need a referral from your GP to access them.
- There are some mental health services that allow people to refer themselves.

NHS Online

For local support and information services near you, you can search for:

- Mental health support services
- Drug and alcohol support services

- If you have concerns about your mental wellbeing, you'll find lots of tips and advice on dealing with stress, anxiety and depression at this link https://www.nhs.uk/conditions/stress-anxiety-depression/
- You can also try the mood assessment quiz, which is designed to recommend resources to help you better understand how you feel at https://www.nhs.uk/conditions/stress-anxiety-depression/mood-self-assessment/
- This quiz uses questions that GPs often use to assess whether someone is anxious or depressed. It also includes links to useful information and advice on mental wellbeing.
- You can compare mental health service providers using the services near you search tool. Enter the name of the mental health service or the service provider and your postcode at https://www.nhs.uk/service-search
- This includes therapies like cognitive behavioural therapy (CBT) for common problems like stress, anxiety, depression, OCD and phobias. You can refer yourself directly to a psychological therapies service without seeing your GP at https://www.nhs.uk/service-search/find-a-psychological-therapies-service/
- If you have concerns about your drug and alcohol use you can find advice on getting support here at https://www.nhs.uk/live-well/healthy-body/drug-addiction-getting-help/

Face-to-face

- You can also make an appointment with your GP.
- A GP will assess your circumstances and offer appropriate advice or treatment. They can also refer you to a psychological therapy service or a specialist mental health service for further advice or treatment.
- If you have had thoughts of self-harming or are feeling suicidal, contact someone you can trust immediately, such as a GP or a friend or relative.
- A mental health emergency should be taken as seriously as a medical emergency.

In an emergency

- Examples of mental health emergencies include thinking you're at risk of taking your own life or seriously harming yourself and needing immediate medical attention.
- Call 999 if you or someone you know experiences an acute life-threatening medical or mental health emergency.
- You can go to A&E directly if you need immediate help and are worried about your safety.

On the phone

You can call NHS 111 if you or someone you know needs urgent care, but it's not life threatening.
For example:

- if you have an existing mental health problem and your symptoms get worse
- if you experience a mental health problem for the first time
- if someone has self-harmed but it does not appear to be life threatening, or they're talking about wanting to self-harm

If you want to talk to someone, the NHS mental health helpline webpage has a list of organisations you can call for immediate assistance at https://www.nhs.uk/conditions/stress-anxiety-depression/mental-health-helplines/
These are helplines with specially trained volunteers who'll listen to you, understand what you're going through, and help you through the immediate crisis.
Whether you're concerned about yourself or a loved one, these helplines and support groups can offer expert advice.

Appendix 8 – Notes Summarising Bracketing Interview

Background and Motivation

"What inspired you to research the impact of psychedelics on social factors in autistic individuals?"
UCL gives a list and this was the one that grabbed my heart. Pre-training did have an interest in this area through reading and talking etc., so in an ideal world this would be thesis so when saw on list was excited. Personal experiences impact clinical perspectives; getting to the root of things; hasn't always been possible in reality/ in practice.

"How do your personal experiences or background inform your interest in this topic?"
Not neurodivergent myself, but know people who are, and who take substances to make social world more tolerable. Difficult experiences can come along with this too if not used in the right kind of settings. Met a few times with Aaron; went in quite excited it could help people; he had a good point that people reading this research might be quite desperate so need to be careful and pay attention to biases throughout research. Yes its exciting but we need to be serious and thoughtful about it as well.

Understanding of the Topic

"How do you define 'social factors' in the context of your research?"
A lot of people in the data were talking about social anxiety; and was a question that asked directly about SA; and another one relating to social communication so naturally people spoke a lot about this. In my mind I was wondering if there were changes in SA and increased social acceptance etc. so the link seems like it could be a thing in my mind. Not imposing that on the data.

"What are your initial hypotheses or beliefs about the impact of psychedelic experiences on these aspects?"
My ideas were that when people take psychedelics, during/after experience there is a drop in social monitoring (and linking to Hannah the acceptance of self and autistic traits). *Where do these beliefs might come from?* Worked clinically with a lot of children with autism and social anxiety - trying to unpick the difference between these two – and have also been reading a lot about it.

Research Approach and Challenges

"What challenges or uncertainties have you encountered so far in conceptualizing this study?"

- First thing that comes to mind; in this area feel like a bit of an imposter - don't know enough about this as haven't done research in this area before. Doing scoping review at the moment and reading lots of theses where people disclose their personal use; guess I feel a bit of an imposter as though like I shouldn't be doing this as its such important work. But this is the nature of the doctorate!

- Practical side of things; picking right kind of analyses as data is quite mixed (3 vs. 300 words); picked thematic analysis after lots of thinking. Didn't feel like making progress but now understanding is so much greater.

Bias and Neutrality

***"Can you identify any preconceptions you have about autism or psychedelic* experiences that might affect your research?" + "How do you plan to address and manage any biases you've identified in your approach to this research?"**

- Psychedelic angle; an area I feel holds massive, massive potential; strong desire and wish to get positive results in terms of what I want to find (i.e., it helps autistic people).
- Address: reflexive journaling about what reading/exposed to; friends involved in research; domain is quite biased. Process of scoping review has positive and negative. Paying attention to quoting people (balance of these quotes); weight to negative or neutral. Through process of doing scoping review acknowledge this balance in paper.

Reflexivity and Growth

"How has your understanding of the topic evolved since you began your research?"

- Massively, massively changed! Still probably not as balanced as I should be, but become more aware that it's not all sunshine and roses and this is the lens I went in this (e.g. miracle cure) as this is what I wanted to believe. Reading has made me understand things in a more nuanced way - a bit more balanced and still have a long way to go with this. Wider breadth of stories. This comes from looking at our data as well as other studies.
- Currently looking at scoping review; learning so much about different context psychedelics are used (e.g. setting being super important); this idea that its much less to do with the drugs themselves and more about the setting (the weight with which people will make this claim). This will inform empirical paper.

Impact and Implications

"What impact do you hope your research will have on the understanding of social factors in autistic individuals?"

- Ultimately (if completely honest) would love for this to be the groundwork for future work in this e.g. trials looking into how psychedelics can be used; difficult as autism cannot be treated; how this might look is difficult to imagine in this country. I guess this might be deemed not that important to some people who don't recognise the impact; hope somewhere along the line this actually changes the lives of ASD people who experience social anxiety.