A Qualitative Study of Intention and Impact of Ayahuasca Use by Westerners

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Abstract

Ayahuasca has gained the attention of researchers over the past decade as psychedelic-assisted therapy for MDMA and psilocybin have progressed through FDA approved clinical trials. In spite of the increase in research, there are relatively few clinical studies of ayahuasca and little qualitative research on the therapeutic or healing uses of psychedelics in general. The present study included 41 Western participants who were interviewed about their participation in facilitated group ayahuasca experiences (e.g. in shamanic, neoshamanic, spiritual, and religious settings). Participants were interviewed about their intentions for participating, along with the perceived impact of the experiences. In particular, we focused on impacts that participants perceived to be sustained and enduring. We identified an impressive range of beneficial impacts, including improvements in areas that are often a focus of psychotherapy, such as mental health and substance use, health behaviors, interpersonal relationships, sense of self, attitude. Extratherapeutic effects were also observed in areas such as changes in creativity, somatic sensations, physical health/pain, sense of connection to nature, spirituality, and concern for the greater good. Two participants also reported problematic experiences, apparently related to set and setting. Implications for research and practice, along with a humanistic framework for interpreting these findings is provided.

Keywords: ayahuasca, DMT, psychedelic, shamanism, therapy, outcomes, transpersonal, set, setting, biopsychosocialspiritual

Introduction

Psychedelic substances have been described as being in a Renaissance (Sessa, 2018). Drug surveys in the United States, indicate that approximately 1.1 million people age 12 or older used psychedelics for the first time in each year from 2015 to 2018 (SAMHSA, 2019). Unfortunately, national surveys do not include ayahuasca, so it is difficult to determine changes in prevalence of use. Still, increased interest in ayahuasca has been observed online and in media (Palamar et al., 2018), as have concerns about ayahuasca tourism and the appropriation and globalization of ayahuasca shamanism (Fotiou, 2016).

Ayahuasca and Its Effects

Ayahuasca is a psychedelic brew of plants originating with the indigenous peoples of the Amazon. Various indigenous cultural groups created a rich and diverse tapestry of approaches and traditions that are still practiced, and which resist generalizations about indigenous ayahuasca use. Ayahuasca use has expanded over the years with Amazonian peoples, mestizo, and Christian influences within the culture (Labate & Cavnar, 2014). The term ayahuasca translates to “vine of the souls”, and consists of a brew of the *Banisteriopsis Caapi* vine along with a mixture of other plants, particularly the DMT containing *Psychotria Viridis* (McKenna, 2007). Congruent with this translation, various tribes have used Ayahuasca in response to illnesses that do not respond to traditional or Western medicines, through a framework of treating illness through the parallel world of spirits (Langdon & De Rose, 2014).

There is not much record of historical rituals prior to Hispanic colonization, and the historical development of ayahuasca use is disputed (Shepard, 2014). Recent archeological findings indicate that shamanic ritual tools show possible evidence of ayahuasca use over 1,000 years ago (Miller et al., 2019). For some indigenous tribes ayahuasca has been used in shamanic

settings for centuries throughout the Amazon basin, and in the early 20th century other religious groups in and around the Amazon began incorporating ayahuasca into their practices (McKenna, 2007).

The resurgent Western interest in psychedelics has been marked by an increasing focus on their therapeutic potential. Though psychedelics are not only utilized as clinical tools, they are also consumed as part of religious or spiritual practice, personal exploration, physical healing, recreation, and other personal and interpersonal uses. Interest in psychedelics spans the bio-psycho-social-spiritual model, with people consuming psychedelics with hopes of experiencing effects in multiple domains. Across a range of clinical, observational, and qualitative studies, the use of ayahuasca has been associated with a range of therapeutic and extratherapeutic effects, including positive psychological health and optimism (Barbosa et al., 2009), treatment of substance use disorders (Loizaga-Velder, 2014; Nunes et al., 2016; Thomas et al, 2013), treatment of depression (Palhano-Fontes, 2019; Sanches et al., 2016), treatment of eating disorders (LaFrance et al., 2017), reducing panic and hopelessness (Santos et al, 2007), enhanced creativity and problem solving (Frecksa et al., 2012), increased capacity for mindfulness (Soler et al., 2016), cognitive flexibility (Murphy-Beiner & Soar, 2020), and overall positive well-being, spirituality, and sense of purpose (Buoso et al., 2012). Unfortunately, the process of drug approval through the FDA utilizes a medical model approach, where a drug must be researched for treatment of a specific medical diagnosis. This is clearly limiting given the vast number of potential applications of psychedelics, including beyond the treatment of diagnoses.

It is interesting that a substance can be associated with such a broad range of effects, across a range of cultures and contexts, from lab and medical settings to religious and shamanic ceremonies. Other psychedelics, with a variety of different chemical properties, have shown a

similar range of effects. Still, the great majority of the recent research on psychedelics has focused on the biochemical effects of the substances. In the last decade there have been a handful of qualitative studies with identifying user experiences of and impact of psilocybin and LSD use in Western-style therapeutic settings, (Barret et al., 2017 Belser et al., 2017, Gasser et al., 2014 and Swift et al., 2017). Overall are few qualitative psychological studies on psychedelics, or on ayahuasca specifically. This appears an important area for additional research considering that the effects of psychedelics are so varied, experiential, and influenced by “set and setting”. Set is defined as the attributes of the individual, such as cognitive, emotional, biological, attitudinal, and expectation factors, while setting is defined as external factors, such as the setting for use (e.g. music, other people, facilitators, ceremony), larger social factors (e.g. sociocultural norms), stressors, and supports (Denning & Little, 2011). Within this framework, psychedelics can be seen as disrupting status quo mental processes and creating a pivotal state (Brouwer & Carhart-Harris, 2020), where change in a beneficial or harmful direction is possible, depending on the quality of the holding environment (i.e. set, setting, and post-experience support).

In the current study, we sought to capture participants' self-stated intentions and the self-reported impact of their experiences with ayahuasca. We found intention to be an important starting point both for understanding why people consume ayahuasca, and as a component of one's “set” (the conditions within an individual) going into their experience with ayahuasca (Hartogsohn, 2017). While we started with a broad interest in settings where ayahuasca was consumed, we only found one participant who had consumed ayahuasca exclusively outside of group religious, indigenous shamanic, or neoshamanic contexts (which we defined as an eclectic range of spiritual practices with their roots in indigenous shamanism). Therefore, we chose to focus our analysis on use in these contexts.

Method

Participants

We interviewed 41 participants, whose demographics are listed in Table 1. With respect to Ayahuasca use, 53.7% ($n = 22$) of the sample had partaken from 1-10 times, 24.4% ($n = 10$) 11-25 times, 14.6% ($n = 6$) 26-49 times, and 4.9% ($n = 2$) more than 50 times ($M = 13.87$ uses, $SD = 15.1$). Participants' most recent use of ayahuasca averaged 13.34 months ($SD = 18.12$, range = 0 to 80 months) prior to our interview. The average dropped after recalculating without six outliers whose most recent use was at least four years ago ($M = 9.76$ months, $SD = 13.76$), though we did not limit our inquiry to their most recent experience. As such, our findings can be interpreted as sustained long-term effects for most participants. With regard to use of other psychedelics, participants had taken psilocybin mushrooms 68.3% ($n = 28$), LSD 63.4% ($n = 26$), MDMA 58.5% ($n = 24$), DMT 43.9% ($n = 18$), Mescaline/Peyote 34.1% ($n = 14$), Ketamine 34.1% ($n = 14$), Salvia 14.6% ($n = 6$), and Ibogaine/Iboga 5.0% ($n = 2$). Despite the level of experience with psychedelics in our sample, participants typically attributed their self-reported outcomes to specific administrations of ayahuasca, or to specific moments of realization within those administrations.

Table 1. Participant sociodemographic characteristics

Sociodemographic characteristics	n (%) / M (SD)
Age	38.44 years (12.32)
Gender	
Male	25 (61.0%)
Female	15 (36.6%)
Genderqueer	1 (2.4%)
Race	
White/European American	31 (75.6%)
Asian American	4 (9.8%)
Hispanic/Latinx	4 (9.8%)
Black/African American	1 (2.4%)

Multiracial	1 (2.4%)
Sexual orientation	
Heterosexual	33 (80.5%)
Queer	3 (7.3%)
Gay/Lesbian	3 (7.3%)
Bisexual	1 (2.4%)
Pansexual	1 (2.4%)
Highest Education Level	
High School	1 (2.4%)
Some College	7 (17.1%)
Associate's Degree	3 (7.3%)
Bachelor's Degree	18 (43.9%)
Advanced/Graduate Degree	12 (29.3%)

Recruitment

We recruited participants through announcements at venues where ayahuasca would be discussed, in person and online. This included an ayahuasca Reddit discussion group, in person psychedelic discussion groups, and screenings of documentaries about ayahuasca. Following our initial recruitment, we utilized snowball sampling by asking each participant if they would like to refer others to participate. Inclusion criteria included being at least 18 years old and having consumed ayahuasca at least once in a facilitated group setting (e.g., indigenous shamanic, neoshamanic, ayahuasca religion, or other organized group). Because many of our participants had participated in international ayahuasca retreats, we were able to obtain participants from seven countries, spanning four continents: the United States, Canada, Mexico, Columbia, Australia, Italy, and the United Kingdom.

Data Collection

We conducted phone interviews utilizing an initial semi-structured interview focused on the key research questions of intention (their purpose for trying ayahuasca) and impact (as perceived by self or through feedback from others). The only revision to our interview involved adding an

open-ended question after interviewing the fifth participant (“Is there anything else you would like to add that you haven’t said yet about your experiences with ayahuasca?”). Due to the sensitive and potentially illegal nature of participant substance use, informed consent statements were stored separate from data. To provide greater assurance of confidentiality, interviews were transcribed in real time rather than recorded. Demographic data and a drug use history questionnaire were stored separate from the interview transcripts.

Data Analysis

The present study employed a phenomenological approach called Sort and Sift, Think and Shift (Bush et al., 2019; Fryer et al., 2016). This approach provides several strategies to analyze qualitative data through an iterative process of diving into the data and stepping back to evaluate the bigger picture and what has been learned. We utilized the six core phases: data inventory (the team created a moniker of each participant response using their words or the essence of their words, such as “ego death”), written reflection (the team kept notes throughout the analytic process, including writing “topic memos” and “what I know so far” memos at multiple points in the analysis to come to consensus understanding of the data), reflective diagrams (to visually reorganize data), categorization (codes were generated to identify themes and subthemes via consensus), bridging (reflecting on emerging stories that connect within and across interviews), and data presentation (capturing the story/stories that emerge from analysis).

Results

Eleven major themes related to the longstanding impact of experiences with ayahuasca in ceremonial/ritual/facilitated settings were identified, which were lasting impact on the user’s mental health, substance use, physical health/somatic feeling, self-care practices, relationship to oneself, attitude and perspective, work or creativity, interpersonal functioning, connection to

nature, concern for the greater good, and spirituality. Three additional themes provided context for their experiences, which included intention for ayahuasca use, reflections on set and setting, and comparisons to other healing modalities. All participant names are pseudonyms.

Intention for Ayahuasca Use

Nearly all participants reported that they went into their ayahuasca experiences with healing or growth-focused intentions. Specific intentions included a desire to improve one's mental health ($n = 17$), improve their relationships or feel more emotional connection to others ($n = 9$), learn more about themselves or change their relationship with themselves ($n = 6$), heal from physical ailments or pain ($n = 5$), augment creative or professional abilities ($n = 4$), manage their substance use ($n = 1$), have a spiritual experience ($n = 2$), or to have a new experience ($n = 1$).

It is important to note the nuances between the outcome of participants' ayahuasca use and how it connected to their intentions. Many participants felt their intentions were fulfilled, for example, many who sought to improve their mental health (e.g., depression or anxiety) experienced corresponding improvement. Other participants stated that they eventually obtained their desired outcome, but in less direct ways. For example, one participant intended to attend an ayahuasca ceremony in order to better understand, and to improve, her relationship with her daughter. Instead, she was able to process her emotions and gain patience, which has led to progress in improving the relationship:

I have a better understanding and that I have to be patient and wait, and that [my daughter] is in a process too. I am taking steps little by little that I wasn't able to take before because there were so many emotions. I am taking steps. I know it won't be easy. I

don't have expectations, but I am not feeling hurt anymore. (Victoria, 47, Latinx, heterosexual, female)

Other individuals intended to change one aspect of their lives but experienced a significant change in a different aspect of their lives instead or in addition to the intention, which was sometimes valued more than the original intention. For example, one participant set an intention of figuring out whether he should stay in his current romantic relationship. Instead of receiving clarity about this relationship, he instead felt he gained more autonomy and confidence in himself:

Before I was quite insecure, or I have to constantly get affirmation from other people to verify if I thought something correctly. The continuation of the ego death [in ceremony] taught me not to have to check in, that it's okay the way it is. I don't need approval from anyone. The only approval I need is myself, as long as I can be at peace with it.

(Lawrence, 41, Taiwanese-American, heterosexual, male)

Changes in Mental Health

Change in mental health was the most common intention and the second most common outcome of participants' ayahuasca experiences ($n = 27$). This theme was characterized by four subthemes: (1) less reliance on psychotropic medication; (2) improvements in specific conditions (e.g. depression, anxiety, or healing from a past traumatic experience); (3) greater depth or understanding of one's emotion or use of anger; and (4) post-use acute mental health symptoms.

Less Reliance on Psychotropic Medication

Three participants reported no longer requiring medication to manage their mental health symptoms, including mania, depression, anxiety, and ADHD. It is noteworthy that although

some still had symptoms, they became more manageable, or that they related differently to their symptoms.

But one of the most profound things is the physiological, to give you an example, I had been taking prescription Adderall up until the first time I took ayahuasca, and after taking ayahuasca, I never took it again. Ayahuasca affects my ability to motivate and focus on tasks, so that may be part of it, but I also didn't find my relationship with Adderall to be acceptable anymore, so I changed it. This was very immediate. (August, 28, White, pansexual, genderqueer)

Improvements in Specific Conditions

Participants reported significant improvements in their depression ($n = 8$), anxiety ($n = 8$), traumatic experiences ($n = 5$). These effects ranged from partial improvements to complete resolution of symptoms. Reductions in depression and increased in happiness appeared to stem from changing how they respond to thoughts and emotions, being more resilient to stress, making sense of their depression within the contexts of their lives, or feeling a direct lifting or release of depression. One participant who participated in an ayahuasca retreat to help cope with his depression that stemmed from the suicide of his twin two decades ago:

I think I was depressed. It was gone. I haven't felt this way in 20 years. A weight is lifted off my back. I smile easier, I make small talk easier. The grief for my brother was completely gone. I was a wreck crying all the time. He was my soul mate, and my grief is gone. The total acceptance and forgiveness of him and my family. So much forgiveness for everything. Even I saw what I was doing wrong in all of my relationships, with crystal clarity. And I saw how much love people have for me and the sacrifices they made for me. (Greg, 38, White, heterosexual, male)

Participants identified improvements in a number of forms of anxiety (e.g., generalized anxiety, obsessive-compulsive disorder, death anxiety, panic attacks, etc.). Most participants reported either facing fears during their ayahuasca experience or shifting their perspective to see their fears from a new perspective, which led to reductions in avoidance of fear.

Ayahuasca just kind of broke that compulsive anxious cycle that keeps me enslaved, and I was able to kind of rise above my demons and anxieties and problems, and still notice they were there, but still be above them and notice them from a more detached vantage point. And it was me doing it. I was just able to think more lucidly about it, and it was more productive. That experience helped me figure out a meditative technique for myself where I was envisioning my anxieties as demons, and breathing and imagining them below me...I remember that and it's still very real to me. (Alyssa, 25, White, heterosexual, female)

Some participants reported dramatic examples of healing from traumatic experiences. Similar to the effect of ayahuasca use on other mental health struggles previously discussed, these participants reported that their relationship to their past traumas were changed, that they felt a separation from the trauma experience, or that they were better able to reframe how and why the trauma took place.

I'm able to talk to myself in the same way aya would talk to me in ceremonies. I can utilize that in my normal waking consciousness. In terms of facing old trauma, I'm better able to conceptualize the traumas and understand who was involved and why. Not necessarily less painful but I can understand it in a new way and its helping me resolve those old traumas. I believe it's a process but it's changed the way I've approached my trauma history in a positive way. (Alia, 39, multiracial, heterosexual, female)

Another theme that arose during interviews was a description of ayahuasca as an autonomous entity that conveyed wisdom or that helped participant to face their psychological issues, leading to sometimes dramatic positive changes.

What she [ayahuasca] took me into was a very big trauma and I re-experienced it. It was a very terrifying time, but what I recognized is that she doesn't allow you to dissociate.

You relive the experience without the dissociation, which means that you have to deal with it in a different way than you did at the time. So, it took the terror out of it because I couldn't escape from it. (Bree, 55, White, heterosexual, female)

Relationship to Emotions

Three participants endorsed experiencing greater depth and understanding of emotion following their ayahuasca experiences. Julian's (30, Latinx, heterosexual, male) account is representative of this subtheme:

I can tap into feelings more clearly, which is good even if they're not pleasant. Say if I feel sadness or fear, I can tap into the whole range of emotions and feel them more clearly. They're not muddled, which I think is a good thing. I should be able to feel that.

Two participants reported a significant change in their anger after the use of ayahuasca. With regard to anger, participants did not necessarily experience less frequent anger, but reported being better able to process it when it arose or changing their relationship to anger in an adaptive way.

My dad left our family when we were young and I had a lot of feelings about that event and feeling abandoned. During the ceremony several times I've revisited that circumstance and discovered my dad had left. In one of those I experienced all of the depression my dad had when he left. I think the biggest change is I have a lot more

control over my emotional states now. Before I would get stuck in anger loops where I would get angry, couldn't shut it off, and felt powerless toward it. That would bother me for a day or two, and now I can shut it off. I can stop those things before they spiral. I'm not cut off in a bad way, just more control over my emotional state. When I get angry I can just let it go. For me that's a huge change. I think it's really dramatically changed my life. (Nicole, 39, White, heterosexual, female)

Post-use Acute Mental Health Symptoms

Two participants reported negative impacts on mental health. One participant reported a sexual assault by another participant during a ceremony, which is addressed in the “set and setting” theme. Another participant reported what he described as a “low-grade psychotic experience”, characterized by visual phenomena, dissociation, disorientation, and fear, occurring almost daily for three months, and which required temporary use of antipsychotic medication before resolving. He reported no prior experiences of such symptoms despite extensive use of psychedelics. His experience may have met criteria for Hallucinogen Persisting Perception Disorder, and was described to him by an ayahuasca expert as a “shamanic initiation”. Interestingly, this participant was also one of the only who had consumed ayahuasca alone, in addition to participating in several ceremonies.

For the next 3 months I would go in and out, have normal days, but pretty much every day I would have these “flushings.” I could be talking to someone and all of the sudden it would come on and feel like a repeat of this altered state...At times I felt like my brain was being cleaved in half and going two different ways. It was disorienting. I had some levels of depersonalization, dissociation. After 3 months it started tapering off. Then I

went 3 months normal, other than I hope that doesn't happen again. (Rick, 51, White, heterosexual, male)

Changes in Substance Use

Related to improvements in mental health was a theme of changes in substance use following experiences with ayahuasca ($n = 11$). Participants reported moving toward moderation or abstinence from alcohol ($n = 5$), cannabis ($n = 8$), or substances in general, including opiates, sedatives, cocaine, amphetamines, ketamine, and nicotine ($n = 4$). Some participants reported that their ayahuasca experience interrupted decades of problematic substance use. Of interest was the diversity of explanations for the change in substance use, including feeling that substances were no longer needed after resolving other issues, receiving spiritual messages to change or stop their use, changing one's relationship to substances, or even physiological changes.

I ran out of the morphine my last day there. But what is strange is I haven't taken it since then, and I've had no withdrawal symptoms. When you were on opiates as long as I have been, you take them just not to feel awful. But I didn't feel like shit from not taking them. It seems like the ayahuasca helped me get off the dependency. (Greg, 38, White, heterosexual, male)

Another stated that most substances were no longer capable of making her high, even though opiates still worked for pain relief.

Apart from cannabis I can't make any drug work anymore. I can't get drunk and I can't get high. I've pretty well tested it. My pain killers worked in the hospital, but the ones I took home from the hospital don't work, and I don't need them now so that's fine.

Someone put out a pile of cocaine on the table to cut into lines and I just took the entire

lot and they were firstly worried about me and then they were baffled it wasn't having any effect whatsoever. Nothing does. (Margaret, 55, White, heterosexual, female)

One participant who struggled with his alcohol use reflected on how alcohol no longer felt necessary, which made it easy for him to abstain.

After the first ayahuasca ceremony I quit drinking for about 7 months and I'd never done anything like that before. It was effortless. I was going to bars sober and not feeling like I was missing out on anything. It was strange because I'd never had that experience, ever. (Dominik, 37, White, heterosexual, male)

Some participants described spiritual and psychological experiences that impacted their view of their substance use: "I stopped marijuana use as a result of ayahuasca. The spirit in the plant tells me I've used it as a tool long enough. It spoke to my unconscious mind in childhood. I have no craving to use marijuana." (Raj, 22, Indian, heterosexual, male)

Changes in Physical Health/Somatic Experience

Nine participants reported that they experienced lasting changes in their physical health or somatic experience after consuming ayahuasca. This theme was characterized by three subthemes, including; 1) reduction in physical pain; 2) healing from illness or disease; and 3) somatic changes in relationship to one's body.

Reduction in Physical Pain

Five participants reported they experienced lasting physical pain relief following their participation in an ayahuasca ceremony, including chronic knee, foot, and shoulder pain related to injuries.

During the last three years I broke my left foot twice. And as a consequence of this, the adjustment in walking, and so on, I developed a nasty pain in both knees. That seems to

have completely disappeared in the last couple of days, and that's really impressive.

(Arthur, 50, White, heterosexual, male)

Healing From an Illness/Disease

Some participants sought to treat physical illnesses or conditions (e.g., parasites, rashes, and cancer). Related to this subtheme, four participants reported recovering from illnesses or diseases following ayahuasca ceremonies. Bree (55, White, heterosexual, female) stated, "I had this tumor in my liver, and I felt this pinch that really hurt. Nothing will convince me that it didn't take the tumor out. I was in the hospital recently and they can't find one."

Somatic Changes or Relationship to One's Body

Ten participants reported a range of experiences of feeling different in their body after ayahuasca, including feeling less chronic stress in the body, feeling more in tune with bodily sensation, experiencing relief from motor tics or muscle twitches, feeling lighter or more comfortable in their own skin, feeling more energy, or feeling a release or unblocking of energy. Julian (30, Latinx, heterosexual, male) stated, "I felt very content, grounded, more whole. I didn't feel this pressure, this block in my heart. I just feel more well. Physically and energetically there was a block in my chest I would feel." Another stated, "I've come way from these experiences feeling very cleansed, purged, reset as far as feeling vibrationally some sense of improvement." (Tracey, 54, White, female)

Changes in Self-care Practices

Following their use of ayahuasca, 11 individuals reported that they were able to implement significant changes to their self-care practices. Four subthemes emerged from this theme, including: 1) reconnecting through mind-body practices; 2) improvements in

diet/nutrition; 3) increased mindfulness in daily activities; and 4) stopping/reducing unhealthy habits.

Reconnecting Through Mind-Body Practices

Eight participants reported they increased their use of mind-body practices, increased or more focused meditation, and other related behaviors to improve daily wellness. Changes in meditation and yoga were the most common mind-body practices discussed.

I've noticed the most change of everything I've done through meditation, through daily meditation. I could never meditate before, but started transcendental meditation after ayahuasca and it worked for me. Meditation has really leveled me out. I needed some daily practice to stay connected to that place that ayahuasca brought me to. It makes me feel connected and spiritual. (Brett, 30, White, gay, male)

Improvements in Diet/Nutrition

Five participants reported that they implemented lasting changes in their eating habits. An attitude espoused by multiple participants was that because one already had to undergo dietary changes in preparation for ayahuasca ceremonies, they found it easier to maintain their healthy diets afterward: "Some say the whole dieta is a gringo idea anyway, but I just decided on my return to America that I didn't want to eat pork products anymore. I just gave it up." (Tracey, 54, White, heterosexual, female)

Increased Mindfulness in Daily Activities

Four participants reported that following their ayahuasca use, they were generally more intentional and mindful in their daily lives. One participant, provided an illustrative account of the shift in mindset to live more intentionally:

What I came up with from working through ayahuasca was trying to get that positive intention in a day-to-day basis. [Ayahuasca] talked to me a lot about discipline, and it's something that got me into meditating and trying to eat better. (Antonio, 30, Mexican, heterosexual, male)

Stopping/Reducing Unhealthy Habits

Three participants noted that they were able to end their engagement in various unhealthy habits, which improved their wellness. Common behavioral changes included unhealthy eating habits, unhealthy media consumption, or implementing better hygiene practices.

I didn't have a job before ayahuasca, and afterward I focused on what I needed to do to make that happen, to make myself stable. A lot of my issues stemmed from bad habits, and this helped me to see what those bad habits were in order to see my life, even literally like brushing my teeth, and basic things. I wasn't doing those as frequently as I should, and it showed me that those things are helpful, and I can do them now. (Xavier, 27, White, gay, male)

Changes in Creativity and Career

Thirteen participants reported lasting changes in their creativity or in their professional status, following their ayahuasca use. This theme was characterized by three subthemes: 1) changes in career path; 2) enhanced career or work performance; and 3) access to creative expression.

Changes in Career Path

Twelve participants identified that they made decisions to permanently change their career paths following their ayahuasca use. An overwhelming majority of participants who

reported career changes reported working in the corporate sector before consuming ayahuasca, with many moving into helping professions.

The biggest change was my career path. I became a life coach. [I came from] sales.

Ayahuasca really fundamentally transformed my everything. It took me...I wasn't a lost soul, but I was looking for the next thing to evolve in to. I found my purpose and my purpose was helping people transform their own lives. That's what coaching is. (Richard, 38, White, heterosexual, male)

Other professions that participants elected to enter were counseling, shamanism, massage therapy, arts, and agriculture and sustainability. Another participant's intention of attaining more career direction was achieved:

I quit my job. I worked in a corporate tech job and was unhappy there. I had always wanted to make documentary film since I was a teen. I never had the courage to do it but I quit my job to study documentary film. I've always wanted to make films and it gave me the courage to follow that. (Nicole, 39, White, heterosexual, female)

Enhanced Career or Work Performance

Five participants reported that certain aspects of their career or work performance improved after using ayahuasca. One participant, who worked as a therapist with homeless youth, noted a lasting impact in his ability to understand his clients. He reported, "Now when I see youth not doing well I feel like I can empathize with them more and whenever someone else is feeling sick for some reason I always think of the ayahuasca." (Brian, 27, White, heterosexual, male).

Access to Creative Expression

Four participants highlighted that consuming ayahuasca allowed them to feel more confident or motivated enough to express themselves creatively, such as through art, dance, singing or music.

Another impact is I started playing an instrument, and I started singing. That was a thing I always wanted but it was always blocked when I was in my childhood. Now I can sing, at least for me and for friends, I have a rhythm and I have a voice. That's something that would have been outrageous, never. My music professor said he doesn't believe I never sing in my life, and I said, "No it's true!" [...] I had no ability, no rhythm, my voice couldn't come out even. [...] Now I am having fun, just having fun, that's enough for me.

(Victoria, 47, Latinx, heterosexual, female)

Relationship to Self

Twenty-five participants reported that they experienced enduring positive changes in how they related to themselves following their ayahuasca experiences. This theme was comprised of five subthemes: 1) self-understanding and authenticity; 2) self-appraisal and efficacy for change; 3) new relationship to one's mind; and 4) trusting intuition and purpose.

Self-understanding and Authenticity

Twelve participants reported increased self-understanding and authenticity, which was defined as having developed an increased commitment to one's values, being less self-conscious, desiring to know oneself better, and having a greater sense of personal boundaries and rights. One participant explained how his experience with ayahuasca allowed him to be more confident being authentic about his sexuality and self-expression.

It also helped me accept my sexuality more as a gay man. I mean I already accepted it, but whatever conflicts I still had from growing up feeling guilty about my sexuality or

situations where I felt like I couldn't be open, it took that away. I'm just me now and I don't try to downplay it for anyone. (Lorenzo, 26, Black, gay, male)

Similarly, another participant discussed the following his ayahuasca experiences, he became less self-conscious, and more content and confident in himself and his lifestyle:

I know my path and don't follow out of fear of not being accepted anymore. In my college days I was seeking a lot of acceptance from others. There's some changes people notice now, like I don't follow anybody else out of wanting to be accepted. I'm so clear now of my own path and choices. (Devin, 29, Asian-American heterosexual, male)

Self-appraisal and Efficacy for Change

This theme was characterized by being open to looking at one's limitations and mistakes, critically reflecting about oneself without judgment, and increased self-efficacy ($n = 12$). One participant explained that following her ayahuasca use, she became more insightful and able to reflect in a more honest way:

My ayahuasca experiences themselves have involved very good confrontations of myself, having honest conversations with myself in which I look hard and authentically at my decisions and choices and see them in a new way than I would have seen them before. I, soon after taking ayahuasca, changed professions and altered my personal relationships, romantic, sexual, and otherwise. (Nicole, 39, White, heterosexual, female)

Another participant reported that his ayahuasca use created an opportunity for him to critically reflect on areas for self-improvement, despite not having the profound ayahuasca experience that he expected:

To be honest, maybe the experience I had was, perhaps more the lack of a profound experience that I had expectations for. So my integration was more realizing that it's

more up to me to figure it out for myself rather than try to find an external solution. So maybe it took that for me to find out I didn't need it. Maybe I just had to rely more on myself. (Frank, 42, Korean-American, heterosexual, male)

New Relationship to One's Mind

Five participants reported that they experienced shifts how they relate to their mind, or the ability to see the mind and thoughts as something that can be observed, apart from the self.

Ayahuasca gives you a perspective on this sort of egocentric default setting that your experience and your emotions and your feelings are the only thing that matters. It sort of widens that circle, while at the same time reassuring you that, yes, everything is going to be fine. It diminishes the ego, while also giving you a sense of self-empowerment, because you realize your place within it all. (Austin, 29, White, heterosexual, male)

Trusting Intuition and Purpose

Eleven participants spoke of feeling like they gained access to a sense of personal meaning or purpose in living, or gained the ability to trust their intuition when seeking direction. For example, Antonio (30, Mexican, heterosexual, male) stated "I think in terms of decision-making it has made me feel more clearly. Trusting my intuition has been a big thing that has happened." Others stated that their ayahuasca experiences helped them to discover their life's purpose: "Being much more clear and powerful, I'm not holding myself back anymore, I understand the full scale of my purpose here and I'm empowered to do that, whereas before I didn't really have my eyes open, so to speak." (Jasmine, 33, White, queer, female)

Changes in Attitude

Many participants acknowledged that they experienced changes in their basic attitudes about themselves, others, or life following their experiences with ayahuasca ($n = 20$). Three

subthemes emerged within this theme: 1) acceptance and surrender; 2) gratitude and appreciation; and 3) hope and optimism.

Acceptance and Surrender

Fifteen participants provided accounts of acceptance or increased ability to let go of the need to have control. Examples included accepting change, loss, one's mortality, forgiveness, or day-to-day aspects of living.

I realized it was my mind that needed to be in control, and when I surrendered my mind and accepted I'm not in control, that I was okay. It was a place of total acceptance and surrender. [...] I'm at a point now where I'm better able to accept and recognize there's very little I have control over in life. Even if you're in a rut, not where you want to be, just be with it, be aware of it, accept it and keep moving. It's like weather. The storm will pass and there's sunshine on the other side of it. (Justin, 28, White, heterosexual, male)

Another participant connected the task of surrendering oneself to the discomfort of an ayahuasca experience to the parallel act of accepting issues one cannot control in real-life:

In the ceremonies there are times when you're transported into deep dark shadows or transformations and the name of the game is surrender and listen to what the experience is trying to teach you. That's translated into the idea that life is a ceremony. So I can use that similar ability throughout day-to-day life. (Devin, 29, Asian-American, heterosexual, male)

Gratitude and Appreciation

Six participants explicitly identified new attitudes about life subsequent to consuming ayahuasca, characterized by a new enthusiasm, curiosity, and openness about their existence.

Multiple participants acknowledged their gratitude for being alive and their appreciation for “the little things in life.”

And during this experience, both at the time and the take home message, was I was feeling pathetic for feeling depressed and I learned to feel grateful that I am alive and well in this world, and better off than many people on this planet. It shook a lot of sense into me [...] It's made me appreciate how amazing life is and how the smallest things in life can change the world over. (Lorrie, 36, White, heterosexual, female)

Hope and Optimism

Five participants reported a general increase in feelings of optimism and hopefulness, including when under stress. For example one participant, in summarizing her optimism, stated, “I seem less apprehensive about the future. And certainly more optimistic. (Alia, 39, multiracial, heterosexual, female). Similarly, another reported that the change was apparent to others as well. “My colleagues, who don't know what I do, often comment that I'm so calm and optimistic.” (Bree, 55, White, heterosexual, female).

Changes in Interpersonal Functioning and Connection

Beyond individual level changes, a significant portion of our sample ($n = 28$) reported long-term positive changes in their interpersonal relationships or connection to others subsequent to their ayahuasca experiences. This theme was comprised of six subthemes including: 1) sense of community or solidarity; 2) improved interpersonal relationships; 3) understanding attachment and relationships; 4) deeper empathy; 5) access to love; 6) capacity to connect.

Sense of Community or Solidarity

Participants reported lasting close friendships or gained a sense of community with other attendees at ayahuasca ceremonies ($n = 9$). These often expressed that it felt natural to form life-

long friendships with fellow attendees. Other participants formed a deeper bond with significant others who attended ceremonies with them. Furthermore, multiple participants underscored that attending the ceremonies facilitated their interest in finding other supportive communities.

Another impact is the setting, as so much is defined by the environment and the people around me. And because I've taken it in ceremonial and ritual settings, I experience being a part of a community of others who are committed to being a part of it. And this creates a solidarity and kinship [...] that is long-lasting. (August, 28, White, pansexual, genderqueer)

Improved Interpersonal Relationships

Nine participants expressed that their relationships with specific and important individuals in their lives had significantly improved following their ayahuasca experiences. One participant, who reported an Asperger's diagnosis, insisted that his ability to be comfortable in an intimate relationship with his significant other was due to using ayahuasca. He stated: "Well I got married a couple years ago and I don't think I could've gotten married or lived with someone before my ayahuasca experiences." (Jeremy, 64, White, heterosexual, male)

Another participant reported being able to interact with work colleagues with more enthusiasm and confidence. One participant noted that his relationship with his romantic partner became "solidified" subsequent to his ayahuasca use, due to the increased capacity to be present in the relationship. Finally, participants highlighted that they formed closer connections with family members.

It completely changed the way I interact with other people, particularly those close to me. With three adult sons, I had fallen into a bad habit of, not control, but I think I had expectations of them that were more in line with what was important for me. I have been

able to really surrender that need to have them do things my way. And that's been an incredible gift for our relationship. (Alia, 39, multiracial, heterosexual, female)

Understanding Attachment and Relationships

Five participants reported that after ayahuasca, they gained a deeper understanding of dynamics in their relationships. Consistent among each of these participants was increased concern for their impact on others. Participants affirmed that they became more thoughtful of others, more aware of how others impacted them, and were more mindful of why others may act in certain ways: "I saw what I was doing wrong in all of my relationships, with crystal clarity. And I saw how much love people have for me and the sacrifices they made for me." (Glenn, 22, White, heterosexual, male)

Deeper Empathy

Four participants reported that their ability to empathize with others improved significantly following the use of ayahuasca. Most individuals interviewed described that their stronger ability to understand the feelings of others was also associated with increased compassion, patience, and desire to help other people.

I recognize now that to arrive at consensus or truth, you have to be able to listen and put ego on the shelf, to truly understand someone else's perspective. If you indicate that you're willing to listen, they're more willing to listen to you even if you don't agree. (Justin, 28, White, heterosexual, male)

Access to Love

Three participants explicitly attributed a lasting changes in their ability to love others to their ayahuasca use. Participants remarked that significant others noticed they were more loving following their ayahuasca use, and stated that they placed more value on love: "I have a clearer

insight into why we're all here. [...] It's simple. We're just all here to love each other. To learn how to love and do that properly." (Margaret, 55, White, heterosexual, female)

Capacity to Connect

Seven participants reported that they became aware of positive changes in their social behavior. One participant conveyed the insight that his negative tendencies in social contexts have decreased, remarking, "I'm less sarcastic. I think more about others, like I don't disparage people behind their backs as much as I did." (Austin, 29, White, heterosexual, male)

Two participants reported that following their ayahuasca use, they became more interested in engaging in social interaction, including becoming less introverted.

I'm more socially integrated now than I ever was. I'm an introvert by nature so some of the biggest challenges have been related to stepping outside my comfort zone and be more outgoing. Now I'm fascinated by people and the environment around me. (Justin, 28, White, heterosexual, male)

Connection to Nature

Following their experiences with ayahuasca, ten participants reported feeling closer to or more connected to nature. They reported a range of experiences, such as feeling they have a closer relationship to plants, feel more connection or concern for animals, feel more connection to the elements, feel more awe and respect for nature, or feel a general sense of connectedness and closeness to the natural environment. Paula (33, Latina/Columbian, heterosexual, female) stated, "You get more connected. You can see the beauty and the life in the trees, and you connect with them. And with the elementals. I always talk with the water when I take a shower." Many expressed a desire to spend more time in nature, such as through living closer to nature, visiting nature, having more plants at home, or growing their own food.

I have a very deep connection with nature that I didn't have before. I have an orientation to work with nature and serve nature. We decided to live in nature. We live in a shed in the middle of the rain forest, with simple means to be connected to the external world. We dedicate our lives to the teaching and learning of plants. (Christina, 30, heterosexual, White, female)

Concern for the Greater Good

Eleven participants reported a significant change in focus beyond themselves and their relationships following their experiences with ayahuasca, expressing more concern for the greater good of the planet, animals, and humankind. Subthemes included: 1) awakening to a wider perspective; 2) taking action to create change; 3) transformative potential of ayahuasca.

Awakening to a Wider Perspective

Participants reported concerns about a range of problems, such as materialism, consumerism, environmental destruction, and various forms of oppression and social control. One participant spoke about how their ayahuasca experience changed their views of consumerism and materialism.

I feel like my priorities have changed. So many people are walking in a trance and we're living to be consumers. I'm talking like a hippie, but the hippies are right about so much stuff. I haven't taken much action yet, but working to accrue more money to have more possessions seems like a waste. It's worth noting that after having your eyes opened up, it can be tough acclimating back to this crazy world afterwards. (Greg, 38, White, heterosexual, male)

Taking Action to Create Change

Four participants indicated that their experience with ayahuasca motivated them to become more active in improving the world. Multiple participants endorsed that they were more motivated to become environmental activists and devote their time to improving the lives of homeless individuals following ayahuasca use. A general theme of “giving back”, or taking on a larger role to improve their communities, emerged. One participant remarked that her experience with ayahuasca increased her awareness of what she could do to have a positive impact on the world:

I’m no longer doing a random job for money. The plants [...], have connected me with the reality of what’s going on with the planet with bioregional ecosystems, and I feel like a lot of those life systems are in emergency mode, and the plants have been revealing to me that that is the case. So I have now devoted my daily work into building and directing a business that focuses on repairing ecological systems and helps look at the economic and political and cultural systems that cause people and other species here to be sick. I feel like plants recruited me or guided me into alignment with the planet instead of being in my own head or stuck in the weird linear culture of money that is America. (Jasmine, 33, White, queer, female)

Another spoke about becoming more actively involved in addressing environmental issues that she already cared about:

I put aside my spiritual practices where we pray to heal the earth and humans, but I have picked up a more warrior like mentality to activism. Instead of praying about it I’m doing more about it, so maybe it did propel me more to activism. I felt like prayer wasn’t enough in healing myself and protecting myself. I wasn’t an environmental activist before that. I was a checkbook activist. I would write checks to Sierra Club or WWF or

whatever, but wouldn't actively participate in stopping the destruction and rape of the world. (Maryanne, 41 White, queer, female)

Transformative Potential of Ayahuasca

Six participants spoke about the impact ayahuasca could have on the world if used properly, or about concerns of misuse. These participants developed a strong belief that the consumption of ayahuasca could help make society a better place if used properly.

I will say this, I do wonder just how deep the transformative power of ayahuasca can go in our society. In many ways it's just now getting started in the western world. (Karl, 45, White, heterosexual, male)

Three additional participants spoke about their concerns that ayahuasca tourism or greed associated with the commercialization of ayahuasca could negate the potential benefits.

I have a lot of fear around the consumerist culture that's developing around ayahuasca. A lot of really unknowledgeable people have started to profit off of this, and whether it's here in the States or very unknowledgeable people in South America. (Jennifer, 22, White, queer, female)

Changes in One's Spirituality

Sixteen participants reported that they experienced significant changes in their spirituality, which were sometimes hard to put into words, following their ayahuasca experiences. This theme was characterized by three subthemes: 1) transcendent mystical experiences; 2) changes in the level of one's spirituality; and 3) shifts in spiritual belief systems.

Transcendent Mystical Experiences

Seven participants described transcendent spiritual experiences facilitated by ayahuasca that led to new spiritual realizations. Some participants indicated that that they became aware of

their soul or “higher part” of themselves, that their experiences confirmed the supernatural or transpersonal to them, or that they experienced a sense of spiritual immortality and interconnectedness that continues to impact them.

The first time I did ayahuasca, I realized who I am on the whole on a spiritual level.

We’re multidimensional. We’re always here and everywhere. We have higher and lower selves, true self and false self. I would be going in and out of different states of consciousness. I went through a space where we’re all one, another space with the ego self where I’m all alone. There would be a part of myself that was angry and I could see that part of me on a higher spiritual level and understand it. I could see it as a limited self, my ego self. My feelings would align across these different spiritual levels – it’s hard to explain. (David, 36, White, heterosexual, male)

Changes in the Level of One’s Spirituality

Six participants reported becoming more spiritual after their ayahuasca experiences, though this may be an undercount, as many more discussed profound spiritual experiences without stating whether or not they became more spiritual afterward. One participant stated that she had not been very spiritual and had always subscribed more to empirical and scientific reasoning before having a spiritual experience in an ayahuasca ceremony:

I am a bit more spiritual. I’ve always been a more skeptical person. And as a scientific person, I always have doubt but my interaction with the shamans and what they were able to tell me about my past. And what they were able to access about me washed away my doubt. (Lorrie, 36, White, heterosexual, female)

Change in Spiritual Belief Systems

While many participants discussed their spiritual beliefs as they related to their experiences with ayahuasca, we did not explicitly ask whether their beliefs had changed from a prior belief system. Many participants reported becoming more spiritual, with at least five reporting that their ayahuasca experience was a catalyst for changes in the nature of their beliefs. Three participants moved from atheist to spiritual, as Greg (38, heterosexual, male) did, “My spirituality, I went in as an atheist. And now I still think religion is ridiculous, but I saw the intelligence in everything. [...] I have spirituality where I had none.” Others moved from believing in a religion to being spiritual but not religious:

Spiritually, it's led me to a place where I don't attach myself to belief systems and what I think I know anymore. I would say I'm very spiritual, but not religious at all. There's a bit of dissonance there because I think we have souls, but I think we may not have souls. I don't feel there has to be a meaning to life anymore, a reason or an explanation for everything. It's greater than any specific religion. Buddhism and ayahuasca and shamanism resonate with me and I've grown profoundly since doing it. (Justin, 28, White, heterosexual, male)

While we cannot say how many participants had shamanistic or nature-based belief systems prior to their ayahuasca experiences, 15 participants reported beliefs in shamanism, plant spirits, or other nature-based spirituality, such as Julian (30, Latinx, heterosexual, male), who stated, “It plays into spirituality...there's plants. After that experience I started to look at [plants] like they have an actual spirit.” In other cases it appeared there was change in beliefs, but was less definitive, as with Paola (33, Latina/Columbian, heterosexual, female):

The last night I was there, it was amazing, amazing, amazing. [...] I connected with the Earth. I put my forehead on the Earth and I got connected. Then I saw a net all around

me, like a net that connects everything. I understood why the people say a leaf from a tree doesn't fall without the permission of god. I understood that doesn't mean there's a god looking down. It's that everything is connected. It was bright green that connected the trees with the sky, with everything. It was so beautiful. I knew we were all part of the same, all connected, all energy.

In addition to the spiritual subthemes outlined above, six participants account suggest that their new spiritual attunement profoundly affected their daily living. A portion of these participants expressed gratitude for being alive, approaching life with more humility, and no longer fearing death. In addition, participants attributed being more mindful, more expressive to others, and more appreciative of all of their life experiences, to their spiritual growth.

Comparison to Other Treatment Modalities

Beyond the outcomes of their experiences, twenty-four participants made comparisons between the effectiveness of ayahuasca as a treatment tool in comparison to other treatment approaches. According to most accounts, other treatment modalities were perceived as weaker (though not necessarily ineffective) relative to ayahuasca. Participants compared the following approaches to ayahuasca: 1) mental health therapy, 2) psychiatric medications, and 3) mind-body and meditative practices.

Mental Health Therapy

Eight participants reported that they experienced significantly more improvement in their mental health from consuming ayahuasca as compared to long-term psychotherapy. A common idea among participants was that using ayahuasca was an equivalent to compressed and accelerated therapy, though typically still requiring work afterward to integrate the experience.

It feels like years of therapy condensed into a couple of hours. You learn so much about your personality, behavior patterns, your interactions with friends and family, how life experiences effected who you are today, how it takes a different course or turn. You learn so much about your own psyche in a couple of hours. You can do regular therapy, which is expensive, or you could take this psychedelic and not take five years. It's not really a shortcut. You still have to do hard work, you will be traversing the hard environment that is your psyche. (Raj, 22, Indian, heterosexual, male)

Psychiatric Medications

Five participants reported that ayahuasca was a more effective and lasting treatment for their mental health struggles, compared to prescription medication (e.g., anti-depressants, benzodiazepines), whereas none found medications to be more effective. Furthermore, multiple users emphasize their appreciation for how ayahuasca did not cause the negative side effects often associated with prescription medication.

The difference is that you're comparing ayahuasca medicine to a prescription. Ayahuasca is permanent healing; other medications are a bridge. It's a medicine. It's helping to, ayahuasca in one ceremony, is like ten years of therapy. It's a deep connection to spirit; it's a spiritual experience. [...] Prescription medication does not work long term [...] The medication didn't serve me properly. (Karen, 46, White, heterosexual, female)

Mind-Body and Meditative Practices

Similar to other treatment modality comparisons, eight participants identified that they found ayahuasca more effective than meditation or yoga, at least in the short term, in improving one's wellness.

I meditate and do yoga regularly, at the very least twice a week, but usually more. I practice different dreaming techniques. [...]. These usually help with my anxiety too, but not to the same effect. Ayahuasca is definitely the main, most helpful in facing the most difficult things, the most hard to look at, the things that I was not looking at before, larger scale change. (Xavier, 27, White, gay, male)

It is noteworthy that several participants highlighted that meditation, yoga, and Reiki were complementary to ayahuasca. They individuals explained that engaging in these practices allowed for tapping into a similar state of consciousness, and aided their integration of beneficial ayahuasca experiences.

My experience of energy is now very visual, I can feel energy flowing, I can see it, and it interacts well with Reiki. I would describe doing Reiki as doing an altered state of consciousness, in which I have the opportunity to do psychological work on myself. So it is similar to ayahuasca in that way, and has benefitted from it. (August, 28, White, pansexual, genderqueer)

Importance of Set and Setting

Additionally, participants overwhelmingly spoke to the importance of set and setting in shaping their experiences with ayahuasca. When asked if they would recommend ayahuasca to others, nearly all did, but with qualifiers. Many stated that one should feel a sense of “calling” and a readiness to participate in an ayahuasca ceremony. With regard to setting, participants regularly warned that the experience may be too intense to try without an experienced facilitator, supports, and a safe setting. One participant reported a sexual assault, followed by a separate physical assault by the same participant, during two consecutive ayahuasca ceremonies, which illustrated a dramatic example of the importance of setting:

One of the other participants decided, while I was in what felt like a paralyzed state, decided to fondle me and touch me inappropriately. [...] Aya spoke and she said, “you will not take this medicine again”. When I came out of the paralysis I knew what happened and I was stunned. I didn’t know how to handle it and I didn’t know how to deal with conflicts like that. As a victim you blame yourself, and I questioned whether I brought it with my energy. The third night I decided I would just hold space [not drink ayahuasca]. That gentleman took 3 doses. He decided to take a large dose and was taking off his clothes. He was trying to drag me out of the maloka into the jungle and I had to scream to get somebody else to stop him from dragging me out. So it was not a good experience for me and I regret going alone. [...] It altered me going forward. [...] I think I became a lot less naïve, and it took away some of my innocence and my ability to be as loving, because now there’s a much thicker wall between me and going to any type of ceremony. I’m not as open. (Maryanne, 41, White, queer, female)

Other participants, who reported positive experiences, reported a desire for more diversity among participants in ceremonies, such as a desire for a gender balance or more racial/ethnic diversity: “I’m not saying everyone needs to be Black, but when I did it, there was one person from South America and I was the only Black person out of like 30 people.” (Lorenzo, 26, Black, gay, male).

Lastly, many participants spoke to the importance of the shaman or facilitator in creating a safe and healing space. Many cited the importance of the music or icaros (medicine songs) during ceremonies, usually played or performed by the facilitator. Several reported needing to rely on the support of designated helpers during the ceremony when going through difficult or uncomfortable experiences. Many spoke to the impact of consuming ayahuasca in a group

setting, and the important role played by the presence of other attendees in creating a sense of connection and community. Finally, participants often cited the unfolding nature of change, sometimes continuing long after their ayahuasca experience, and sometimes requiring time to continue to work through temporary emotional dysregulation or disruption of their usual psychological state. These comments on set and setting highlighted that their ayahuasca experiences were influenced by many elements beyond the substance itself.

Discussion

The present study captured a diverse range of outcomes resulting from participation in various types of facilitated, group ayahuasca experiences. There has been a resurgence of interest in psychedelics as adjuncts to psychotherapy. A meta-analysis of the published randomized controlled clinical outcome studies has found “very large” effects across a range of mental health conditions, using a range of psychedelic substances in combination with psychotherapy (Luoma et al., 2020). Our findings align with many of the findings of ayahuasca research, such as positive changes in psychological health, increased: mindfulness, spirituality, sense of well-being and sense of purpose, reduction in substance use, and improvement in mental health conditions. Our findings also align with other psychedelic research findings utilizing MDMA, LSD, psilocybin, and iboga, in treating PTSD, addiction, and other mental health disorders (Belser et al., 2017, Gasser et al., 2014, Oehen et al., 2013), along with improvements in interpersonal relationships and increases in mystical, spiritual, or meaningful experiences (Hartogsohn 2018). Our study also provides important insight and nuance to empirical studies, and captures effects beyond the clinical.

Relationship between Intention and Impact

Impressively, the wide range of positive impacts were accomplished in relatively few ayahuasca sessions for most participants, with the majority consuming ayahuasca on ten or fewer occasions. It is interesting to note that while most participants had intentions for healing, their intentions were much broader than would be typical for a single Western medical or therapeutic intervention, including biological/physical, psychological, behavioral, interpersonal, spiritual, and career/personal growth. The impacts of the ayahuasca experience were even broader than the participants' intentions, and often played out in surprising ways. Participants overwhelmingly reported going into each ayahuasca experience with a single intention, but typically reported an impact in multiple domains. This suggests that ayahuasca use, at least in particular contexts, impacts the individual system as a whole, rather than a singular part. For example, while only one participant stated a goal to change their substance use, eleven reported a reduction in their use. The revelatory nature of the ayahuasca experience seemed to show some participants the need to change, while for others, problematic substance use appeared to be a functional response to cope with deeper issues, consistent with the "self-medication" hypothesis (Khantzian, 2013).

Changes in the themes of spirituality, interpersonal functioning, relationship to self, attitude, creativity and career, connection to nature, and concern for the greater good were also substantially more frequent in impact than intention. It is notable that many participants made statements that reflected their openness to the ayahuasca experience, such as emphasizing their willingness to trust the medicine or a belief that ayahuasca is benevolent. This may be an important component of one's set that allows a wider range of changes to occur than participants initially intended, though it is unclear whether this openness is more reflective of one's immediate attitude going into the experience or a longstanding personality trait. Either way, future research might examine the impact of degree of Openness on the psychedelic experience

itself and on outcomes, to build upon prior research that has shown use of psychedelics can cause increases in Openness (MacLean et al, 2011).

Also of interest is that there were no participants who reported use for “recreational” reasons, a stigmatizing term typically referring to use for pleasure or escape (Bathje et al., 2019). The fact that participants all had therapeutic or healing intentions, despite not screening for such participants, suggests that ayahuasca may be seen as less of a recreational substance. There may be an expectation effect of healing, which could influence set and outcomes.

Nature of Change

The rich descriptions of our participants demonstrate that narrow clinical labels and symptoms cannot fully capture the nature of the change process. Participants often reported surprising and novel paths to resolving longstanding issues, while receiving emergent insights or teachings. This also highlights the limits of comparing the psychedelic experience to “years of therapy”, when the experience is fundamentally different.

In the *Variety of Religious Experiences* (James, 1902), William James discussed transformational change and “conversion experiences” as being capable of rapidly unifying the divided self. These experiences are characterized by submission or surrender to a transcendent experience, a sense of perceiving truths not known before, and a shift toward temporarily perceiving the world with new perception, in awe of its beauty. Many, if not most, of our participants seem to describe such experiences of rapid change in foundational areas like attachment, beliefs, attitudes, and perspectives, with many additionally describing their experiences in spiritual terms. Modern research on psychedelic induced mystical experiences has begun to confirm that the degree of mystical experience (characterized by the 11 dimensions of the Mystical Experiences Questionnaire) correlates with the strength and duration of positive

changes on a variety of outcome measures (Roseman et al, 2018). James (1902) also asserted that conversion experiences are not diminished by relapses, but can be reinforced by persistent efforts to integrate the experience. Importantly, change and relapse are viewed dialectically rather than as mutually exclusive, and integration is recognized as an intentional process. While transformational changes can be permanent, the recipient remains identified with them despite relapses into old behaviors.

An orientation toward values and ethical behavior was evident for some participants, demonstrating an interest in bringing forth into the world the healing they had experienced in themselves. We observed a concern for the greater good and change in orientation toward prosocial values, such as love, connection, environmentalism, and justice, and away from materialism. The sense of connection to truth, and corresponding disruption of inauthentic parts of self, may have led some to question harmful socialization and aspects of their culture, while allowing more comfort with being “different” in following their internal compass as opposed to conforming to perceived sociocultural norms.

Relevant to this theme, Mithoeffer (2016) has described the role of our innate inner healing intelligence in psychedelic experiences. This person-centered concept suggests that psychedelics help us access our natural tendencies to move toward healing, growth, and wholeness by temporarily disrupting our conditioned patterns of responding and protecting ourselves. This unconscious healing intelligence might be observed in participants statements about an intuitive sense of direction, spontaneous insights, and feeling guided through their experiences with ayahuasca.

Substance, Set, and Setting

Each of our participants experienced one or more variations of shamanic, neo-shamanic, Western spiritual, or ayahuasca religion ceremonial group setting. As our participants stated many times, ayahuasca provided an experience unlike any other, with that experience thoroughly shaped by set and setting. Our participants influenced their set (attributes of the individual), through dietary preparation leading up to ceremonies, by setting intentions for the experience, by approaching the experience with openness, and by researching ayahuasca to find a setting or experience that felt right for them. Participants also highlighted aspects of setting, such as the influence of music, icaros, facilitators, helpers, other participants, and of the natural environment. It is important to highlight that some participants expressed a preference for specialized settings, such as women only or people of color focused ayahuasca experiences. Psychedelic-assisted therapy research trials have been critiqued for lacking racial/ethnic diversity among therapists (George et al., 2020), which may present less than ideal settings for some participants, particularly if they have faced discrimination or wish to explore issues that involve social identity-related transference.

An aspect of one's set that has received relatively little attention in research is intention setting. Setting an intention for the psychedelic experience may serve a priming effect, bringing the participant more quickly into contact with issues of focus. Our participants overwhelmingly reported that their intentions were either met by their ayahuasca experience or led into deeper dynamics. However, it is also noted that the impacts of the experience were much more broad and varied than the intentions that participants set, suggesting that setting a clear intention may have helped bring focus to pressing concerns, but did not give them control or allow them to steer the experience.

Taken together, the range of impacts and the importance of set and setting in shaping the experience suggest that a narrow biomedical model is a poor fit for understanding the effects of psychedelics, and therefore may also be of more limited value in structuring healing experiences with psychedelics. Our participants largely received their experiences in settings that were indigenous or influenced by indigenous knowledge and practices. Based on our findings, we conclude that shamanic models of psychedelic facilitation, which have developed over hundreds or thousands of years, may have much to offer Western treatment models that are often narrowly focused on symptoms within the individual to the exclusion of the psychodynamic, systemic, or environmental/contextual etiology of their symptoms. One model that may be capable of incorporating at least some of the nuance of shamanic models is the biopsychosocial-spiritual model, with its inclusion of individual, interpersonal, spiritual, and social factors (Hatala, 2013). Clinical trials of ayahuasca in the treatment of depression have already occurred in Brazil, where researchers have attempted to include some of these aspects, such as having an ayahuasca church brew the ayahuasca used in the study, setting up the research space to have a living room-like feel, incorporating the use of music, and offering psychological support (Palhano-Fontes et al, 2019).

Risks

The physical risks of ayahuasca in combination with certain medications has been well documented. One participant did report ongoing antidepressant use while participating in ayahuasca ceremonies, apparently without adverse effect, but which could have caused serotonin-shock syndrome (Gable, 2006). MAOIs like harmine have been found to have potentially risky interactions with tyramine (an amino acid found in foods like aged cheese and cured meats), noradrenergic agents (such as SNRIs and stimulants), and serotonergic agents

(Grady & Stahl, 2012). Modern psychedelic clinical trials have also excluded participants with certain categories of mental health disorders, such as psychotic disorders and bipolar disorders. It remains to be seen how risky psychedelics are for these populations, whether they may have benefit for some, and whether excluding people from clinical practice creates risk via prohibition from legal therapy settings. Historically, prohibitionist policies have restricted information, necessitated secrecy and stigma, and caused people to rely on an unregulated, illegal drug supply (Denning & Little, 2011). These risks should be further evaluated in research, and balanced in practice against the risks of the drug itself.

As described in the results, one participant reported experiencing possible HPPD and another reported experiencing sexual assault during her ayahuasca retreat. This speaks to the importance of providing safe settings, good support, and strong ethics in facilitating psychedelic experiences, regardless of setting. In addition, resources are needed to support those who experience harm or adverse experiences during psychedelic experiences. Instances of sexual boundary violations or abuse by facilitators have been reported in all settings with psychedelics, whether by indigenous shamans (Peluso, 2014), Western facilitators (Mayorga & Smith, 2019), or therapists in research settings (MAPS, 2019), but have rarely ever been addressed in academic writing. Peluso (2014) identified multiple accounts of sexual abuse in ayahuasca circles in which shamans reportedly used their power and status to exploit particularly vulnerable users in a manner that caused psychological harm to victims and observers. She also identified that scholars and participants also commit sexual abuse. Sexual abuse and other boundary crossings should be of concern whether in workplaces, therapy/medical settings, academic settings, religious/spiritual settings, or other settings where power dynamics or inability to consent are present. High doses of psychedelics have the power to diminish the boundaries of participants

and render them unable to consent, so it is essential that facilitators have a strong sense of ethical boundaries, clear boundary agreements with participants, awareness of their own countertransference when facilitating such experiences, and ability to respond ethically to the transference and behaviors of participants. ~~We were unable to identify any published research on these topics in relation to psychedelics.~~ The Council on Spiritual Practices, has developed a Code of Ethics for Spiritual Guides (CSP, 2001), with an eye toward facilitators of psychedelic experiences, which may serve as a useful foundation for a more expansive exploration of these topics.

While our focus was on intention and impact rather than the psychedelic experience itself, it should be noted that at times participants found the process to be challenging, frightening, confusing, humbling, painful, emotionally and physically uncomfortable, or overwhelming. Adequate guidance and support is needed for such high dose experiences. For many, the importance of set and setting was also evident in the days and weeks following their ayahuasca experiences. While their experiences were often beautiful, joyful, transcendent, spiritual, our cathartic, participants sometimes reported feeling emotionally vulnerable and raw after revisiting traumas, experiencing “shadow” content, disrupting their defenses and coping mechanisms, or feeling their minds were disrupted or restructured. While these pattern disrupting aspects of the experience might account for much of the therapeutic value, many participants spoke to the need for a period of reflection and support to integrate these powerful experiences. We propose that psychedelics create a “liminal state”, defined in anthropology as a state of disorientation that occurs in the middle stage of a rite of passage, where the pre-ritual status is disrupted, but where transition to a new state has not yet occurred (Turner, 1974). Within this framework, a therapeutic set and setting may be seen as similar to Winnicott’s (1964) “holding

environment” that nurtures growth from this vulnerable state, rather than harm or regression that can result from a poor set and setting. Most of our participants commented on the importance of the facilitator and physical space, and demonstrated giving some attention to integration through improvements in their wellness practices, ongoing participation in psychotherapy, ongoing spiritual practices, creative/artistic practices, or participation in supportive communities, though some reported losing touch with the beneficial aspects of their experience without adequate space and assistance with integration.

Limitations

Several limitations of our study must be noted. All participants come from Western societies/regions (as contrasted to Eastern or indigenous), and therefore should not be assumed to be representative of all ayahuasca users or all settings. Because participants were voluntary, we could have an overrepresentation of those with experiences that they wanted shared with others (whether positive, negative, or neutral). Our study was retrospective, which could impact participant ability to accurately recall their experiences, though a number of participants reported reviewing journal entries written immediately after their experiences, with some even reading quotes to us from their journals. Additionally, many of our participants had significant experience with other psychedelics, which could raise questions about which substance caused the reported effects. Still, our participants were able to identify specific changes they attributed primarily or entirely to ayahuasca as compared to other psychedelics.

Conclusion

Overall, we were impressed by the diversity and depth of impacts reported by our participants, with changes reported at individual, interpersonal, social, and transpersonal levels. Ayahuasca appears to have tremendous healing potential, for individuals and societies, if used

appropriately. We echo the concerns of our participants in hope that as ayahuasca continues to enter into Western societies, research settings, and business models, that adequate attention and credit will be given to knowledge and practices of the indigenous peoples of South America who have worked with ayahuasca for generations, with attentiveness to issues of colonization and cultural appropriation. The results reported in this paper were clearly not just caused by the biological effects of ayahuasca use, but of the effects carefully facilitated ayahuasca experiences, informed partially or entirely by indigenous practices. Lastly, we would like to express gratitude for our participants, for being willing to share very personal and powerful accounts of their history and experiences.

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