

Altered States of Consciousness and Short-Term Psychological After-Effects Induced by the First Time Ritual Use of Ayahuasca in an Urban Context in Brazil†

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Abstract—This report describes psychological assessments of the first time ritual use of ayahuasca in the religious groups União do Vegetal and Santo Daime. Nineteen subjects who tried the beverage in Santo Daime rituals and nine subjects who tried it in União do Vegetal rituals were evaluated one to four days before their first ayahuasca experience in life and one to two weeks after this experience. Semistructured interviews and a structured psychiatric scale were used in the first evaluation to elicit set variables concerning attitudes towards the ayahuasca experience and to elicit mental health status. Mental health status was reassessed in the second evaluation, which also included a semistructured interview concerning the phenomenology of altered states of consciousness (ASCs). Predominantly positive expectancies concerning the ayahuasca experience were the most prominent findings concerning set variables. Visual phenomena, numinousness, peacefulness, insights and a distressing reaction were the most salient ASC experiences. A significant reduction of the intensity of minor psychiatric symptoms occurred in the Santo Daime group after the hallucinogen experience. Subjects in both groups reported behavioral changes towards assertiveness, serenity and vivacity/joy. The set and setting hypothesis, suggestibility processes, as well as the supposed unique effects of ayahuasca are used in discussing these findings.

Keywords—hallucinogens, psychiatric symptoms, religion, ritual, states of consciousness

Ayahuasca tea is a hallucinogenic beverage obtained from decoction of root bark and sometimes the stem cortex of the liana *Banisteriopsis caapi* (which contains harmful alkaloids harmine, harmaline and tetrahydroharmine) and

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N,N-dimethyltryptamine (DMT)-containing plants, such as the leaves of *Psychotria viridis* bush (Ott 1994). Ethnological data has described the ritual use of the beverage throughout the western Amazon Basin by Amerindian and mestizo populations (Luz 2002; Dobkin de Rios 1989). Its ritualized use among the Brazilian urban population results from the growth of two religious groups: the União do Vegetal (also known as UDV) and the Santo Daime. Both groups are characterized by a syncretism of Christian elements and beliefs in reincarnation. Since ayahuasca is viewed as a tool of spiritual development, ritual use of the beverage is an essential aspect of Santo Daime and UDV (Brissac 1999; Labigalini Jr. & Dunn 1995; MacRae 1992).

The introduction of ritual use of ayahuasca in urban contexts has raised serious concerns about potential adverse effects to mental health (Casenave 2000).

A well-known hypothesis about the psychological effects of hallucinogens argues that positive or adverse reactions to these substances would be a function of the setting—the physical and social environment in which the drug is consumed—and the set—the subject's emotional state, intentions, expectancies and beliefs concerning the use of the psychoactive substance (Szara 1967). Some studies have suggested that the religious and ritual settings of the UDV and Santo Daime could favor positive outcomes of ayahuasca use because within these settings the hallucinogen tea would be considered a sacrament, and its psychological effects would be ritually structured toward a self-enhancing and spiritually laden experience (Grob et al. 1996; MacRae 1992).

These studies performed assessments of long-term members of UDV or Santo Daime who were acquainted with the states of consciousness induced by the ritual use of ayahuasca as well as with the beliefs and values associated with this use. There is a significant gap in knowledge about a fundamental aspect involved in the religious introduction of ayahuasca in the urban context: knowledge about the first experience with the ritual use of ayahuasca in life, as well as the outcomes of this first experience. This is a moment of crucial importance, since ayahuasca-naïve subjects would neither be acquainted with the states of consciousness expected to be produced by ayahuasca, nor with the ritual settings of the UDV and Santo Daime and their repertoire of beliefs and values.

The present work investigates psychological aspects relevant to set and to mental health in the first experience with the ritual use of ayahuasca in life. Set variables related to religious beliefs, expectancies and intentions concerning the effects of the hallucinogenic tea were assessed before that experience. Mental health variables related to psychiatric symptoms and psychosocial behaviors were evaluated before and reevaluated after the ritual use of ayahuasca. Also, a phenomenological description of the altered states of consciousness (ASC) induced by that use was performed.

BACKGROUND INFORMATION: THE RITUAL SETTINGS OF UDV AND SANTO DAIME

The study was conducted in several Santo Daime and UDV temples located in two large cities in southeastern Brazil: São Paulo and Campinas. The rituals are characterized by the constant preaching of Santo Daime's and UDV's ethos and worldview. There are some significant differences between the rituals of these two religions. In Santo Daime, the preaching is performed by a collective performance of hymns and a synchronized dance called a *bailado*, which are accompanied by vigorous percussion and melodic

instruments. All participants are required to sing and dance during the ceremonies, which last four to 12 hours. In UDV, the preaching occurs through questions directed to the preacher by the participants, through popular songs with moral contents played on stereo equipment and also through hymns performed by single participants. During some periods silence predominates. The rituals invariably last four hours and the participants remain seated in a relaxed position most of time.

METHODS

Design

Twenty eight subjects were assessed prospectively from one to four days prior to the first ritual experience with ayahuasca (time 0 or T0) and between seven and 14 days after this experience (time 1 or T1). All subjects had only one ritual experience with ayahuasca between T0 and T1. Nineteen subjects tried ayahuasca in Santo Daime and nine subjects tried it in UDV.

Recruitment

Recruiting naïve subjects to make a group analysis was difficult because ritual opportunities to try ayahuasca for the first time were not frequent, and there were few novices per ritual. Therefore, it was decided to use whatever individuals were available. Novices were invited to participate in the research by elder members of Santo Daime or UDV who were responsible for instruction in the behavior to be adopted during the ritual. Those who accepted the invitation to participate in the research were directed to the researcher.

Parameters

Both structured and qualitative semistructured instruments were used in the evaluation of the subjects. The structured instruments included a sociodemographic questionnaire and a fully standardized psychiatric scale (Clinical Interview Schedule-Revised Edition [CIS-R]) that evaluated the outcome of the intensity of minor psychiatric symptoms between the T0 and T1. Qualitative semistructured interviews elicited expectancies and religious beliefs concerning the ritual use of ayahuasca, the outcomes of behaviors towards various psychosocial facets before and after the experience and the phenomenology of the altered states of consciousness. All semistructured interviews were audiotaped. Qualitative evaluations were used because they fit well with the need for a sensitive preliminary exploration of barely studied phenomena such as the first-time ritual use of ayahuasca in urban contexts. While structured instruments restrict the subjects' information to a previously-determined limited set of responses, qualitative evaluation grants to the subjects more autonomy and spontaneity in eliciting their information, allowing more sensitivity in eliciting potential novelties of untraveled

TABLE 1
Age: Group Differences and Total Sample

	N	Mean	Min	Max	Median
Santo Daime	19	33.0±12.4	18	56	31
UDV	9	41.9±10.8	27	56	42
Total	28	35.7±12.5	18	56	33.5

Note: Mann-Whitney U test; $p = .07$

fields of human experience (Kvale 1999). Therefore, the combination of structured and qualitative semistructured evaluations was made in order to try to meet both the needs of standardized evaluation as well as sensitivity to novel psychological and cultural aspects involved in the first-time ritual use of ayahuasca in an urban context.

Clinical Interview Schedule-Revised Edition (CIS-R).

Subjects were administered a structured psychiatric interview (CIS-R) in T0 and T1. The CIS-R is a scale which measures the intensity of minor psychopathological symptoms: somatic symptoms, fatigue, difficulties in concentration, sleep problems, irritability, preoccupation with corporeal functioning, depression, depressive ideation, worries, anxiety, compulsions, and obsessions (Goldberg et al. 1970). A Brazilian version of CIS-R was readily available at the time of the study (Botega et al. 1995).

Sociodemographic profile. Subjects completed a questionnaire on their level of education and occupation.

Inventory of intrinsic religious beliefs profiles. Subjects were asked to tell about their current beliefs in God, spiritual reality, reincarnation and spiritual beings. This was done in T0.

Inventory of expectancies/motivations. Subjects were asked to tell the motives that led them to decide to try ayahuasca, and to tell about their expectancies concerning the experience. This was done in T0.

Phenomenological mapping of the altered states of consciousness induced by ayahuasca. Subjects were asked about seven major dimensions of their ayahuasca experience—mood, thought contents and processes, sense of self, exteroception, interoception, volition/control, and sense of time and space—as well as interpretations of these dimensions of altered states. This semistructured interview was based on previous propositions of phenomenological descriptions of altered states (Walsh 1995; Metzner 1989).

Behavioral changes inventory. This is a semistructured interview designed to elicit possible changes in their attitudes towards relevant psychosocial aspects: family issues, occupational and financial issues, interpersonal issues, self-esteem, stressor events, and subjective experience concerning physical well-being. In T0, subjects were asked about their current attitudes towards these issues; in T1, subjects were asked about possible changes in these attitudes.

Analysis

Data collected by CIS-R were analyzed by the Statistical Analysis System version 8.2 (SAS Institute Inc 1999-2001). All variables were analyzed by considering the total sample and comparing Santo Daime and UDV separately. Categorical variables of sociodemographic data were analyzed according to Fischer's test. The Mann-Whitney U test was used in the analysis of the continual variables of age and minor psychiatric symptoms. The Wilcoxon Signed Rank test was applied to the analysis of the outcome of minor psychiatric symptoms in T0 and T1. All tests adopted $p < .05$ as a level of statistical significance.

Data collected through semistructured interviews underwent qualitative content and phenomenological analyses. Meaningful experiential patterns were identified in the subject's reports and were transformed into major categorical dimensions. In order to provide the reader with an overview of these dimensions they were converted into tables and presented in simple frequencies.

RESULTS

Sociodemographic Profile

Sociodemographic data are presented in Tables 1 and 2. A significantly greater percentage of unmarried subjects were found among Santo Daime subjects ($p = .01$) who also tended to be younger than UDV subjects ($p = .07$). A statistically significant difference was not observed in sex ($p = 1.0$), occupational category ($p = 0.393$) nor in level of education ($p = 0.114$) between the Santo Daime and UDV groups. All the subjects had completed high school.

Intrinsic Religious Beliefs Profile and Motivations/Expectancies, Phenomenological Mapping of Altered States of Consciousness, and Behavioral Changes After Use of Ayahuasca

Subjects' narratives concerning religious beliefs profile and motivations/expectancies before the use of ayahuasca, altered states of consciousness induced by ritual use of ayahuasca and behavioral changes after the use of ayahuasca are summarized in Tables 3, 4 and 5. Due to the dimensional nature of the data shown in these tables the categories are not mutually exclusive, i.e., several subjects'

TABLE 2
Other Sociodemographic Variables: Group Differences and Total Sample

Variable	Categories	Santo Daime N = 19	União do Vegetal N = 9	Total N = 28	p
Sex	Male	8 (42.1%)	4 (44.4%)	12 (42.9%)	NS
	Female	11 (57.9%)	5 (55.6%)	16 (57.1%)	
Marital status	Married	5 (26.3%)	8 (88.9%)	13 (46.4%)	.01 *
	Separated	4 (21.1%)	0	4 (14.3%)	
	Single	10 (52.6%)	1 (11.1%)	11 (39.3%)	
Education	< Bachelor's	11 (57.9%)	2 (22.2%)	13 (46.4%)	NS
	> Bachelor's	8 (42.1%)	7 (77.8%)	15 (53.6%)	
Occupation	Professionals: education, health business, law and communications experts	6 (31.6%)	6 (66.7%)	12 (42.9%)	NS
	Service/shop market worker: fortune teller, shop salesperson and demonstrator	4 (21.1%)	1 (11.1%)	5 (17.9%)	
	University students	3 (15.8%)	0	3 (10.7%)	
	Small business owners	1 (5.3%)	1 (11.1%)	2 (7.1%)	
	Others: technician, clerk, artisan, housewife, unemployed	5 (26.3%)	1 (11.1%)	6 (21.4%)	

Note: Fisher's test; NS = non-statistically significant

* $p < .05$

reports contained contents that were assigned to more than one dimension. That is the reason why the sum of the occurrences in the dimensions of Intrinsic Religious Beliefs Profile, Motivations/Expectancies (Table 3) and in Altered States of Consciousness (Tables 4) exceeded the number of subjects in the sample. Also, the totals shown for behavioral changes 7-14 days after the use of ayahuasca (Table 5) did not equal the number of total subjects of the sample because some dimensions were absent from some subjects' reports.

In Table 4, some of the dimensions listed for altered states of consciousness (in particular, Alleged Insights and Distressing Reaction) are highly descriptive because they need to transmit complex meaningful articulations involving subjects' biographies, ritual events and their motivations and expectancies. As these data are intended to transmit new information concerning this little-studied phenomenon, the responses given with low frequency convey new information about the phenomenon and so should be considered relevant information on their own.

Clinical Interview Schedule-Revised Edition (Minor Psychiatric Symptoms)

Data concerning minor psychiatric symptoms elicited by CIS-R are shown in Table 6. A significantly higher prevalence of symptoms was found in the Santo Daime group

than in the UDV group in T0 ($p < .05$). A significant reduction of the intensity of minor psychiatric symptoms can be observed in Santo Daime group between T0 and T1 ($p < .01$), which in turn influences the significant difference between T0 and T1 in the overall sample ($p < .01$). In the UDV group, the difference between the two times was not significant, due to its low score in T0 ($p = .88$).

DISCUSSION

Since a convenience sample was used and inasmuch as the number of subjects was small, and since a substantial part of the data were elicited and analyzed by means of qualitative procedures, a cautious attitude is required when generalizing the findings. Nevertheless, this is the first investigation which attempts to study variables related to set, altered states of consciousness and mental health status prior and after the first experience with the ritual use of ayahuasca. The results need to be considered a preliminary exploration towards this untravelled field. Certainly future studies must be compared to these preliminary findings in order to evaluate their significance.

The educational level of the subjects is well above the Brazilian and even above the more developed São Paulo State standards. While all subjects had completed high school level, only 16.3% of Brazilian and 18.4% of São

TABLE 3
Dimensions of Intrinsic Religious Beliefs Profile and Motivations/Expectancies Before the First Ayahuasca Experience: Group Differences and Total Sample

Dimensions	Santo Daime N = 19	UDV N = 9	Total N = 28
Intrinsic Religious Beliefs Profile			
Beliefs in reincarnation: Kardecist conceptions of spiritual and moral evolution throughout successive reincarnations (from Allan Kardec, the nineteenth century founder of this kind of spiritism).	13 (68.4%)	5 (55.6%)	18 (64.3%)
Metaphysical religiosity: Beliefs concerning supernatural beings, parallel dimensions, cosmic energy and eastern influences (e.g., the idea of chakras), and practices such as yoga and meditation.	12 (63.2%)	4 (44.4%)	16 (57.1%)
Unstructured religious beliefs: Beliefs in the existence of a spiritual reality with no structured ideas about this reality.	5 (26.3%)	2 (22.2%)	7 (25%)
Agnosticism: No belief in spiritual reality at all.	0	1 (11.1%)	1 (3.6%)
Motivations/Expectancies			
Self-knowledge: Search for self-knowledge.	9 (47.4%)	3 (33.3%)	12 (42.9%)
Spiritual latencies: Search for awakening of supposed hidden spiritual attributes (e.g., "the superior self").	7 (36.8%)	1 (11.1%)	8 (28.6%)
Curiosity: Desire to know about the effects of ayahuasca.	6 (31.6%)	1 (11.1%)	7 (25%)
Healing: Search for healing of psychosocial problems (e.g., family/marital, work, interpersonal and self-esteem problems).	6 (31.6%)	0	6 (21.4%)
Equilibrium: Search for improvement in general well-being and behavior.	5 (26.3%)	0	5 (17.9%)

Paulo State populations above 25 years of age have completed it (IBGE 2000). While 53.6% of subjects had a bachelors degree, only 6.4% of Brazilian and 9.4% of São Paulo State populations above 25 years of age possess one (IBGE 2000). The high proportion of professionals in the occupational category of subjects reflects their high educational level. High educational level and specialized occupation are major indices of social status pertaining to middle classes as opposed to the working classes of Brazilian society (IPEA 2000). Therefore, the subjects' sociodemographic profile is a sign that, despite the Amazonian origins of Santo Daime and UDV among working classes (Brissac 1999; MacRae 1992), the religious use of ayahuasca in southeastern Brazilian large cities seems to be a predominantly middle and educated social class phenomenon.

All but one category (curiosity) identified by the inventory of expectancies/motivations clearly reflect sensitivity to the supposed properties of the beverage as a medium of spiritual or psychological development and improved health. This affinity with UDV's and Santo Daime's conceptions corroborates a hypothesis that the search for an ayahuasca experience reflects a cultural change of desires of a part of the Brazilian urban middle class, which seeks in spiritual and mystical experiences an alternative way of life to the growing materialistic and utilitarian values recently developed in Brazilian society (Soares 1990). This is coherent with the prevalence of metaphysical religiosity elicited by the intrinsic religious beliefs inventory, which revealed a prior attitude of searching for practices and beliefs related to alterations of consciousness (Glick 1988).

TABLE 4
Dimensions of Altered States of Consciousness: Group Differences and Total Sample

Dimensions	Santo Daime N = 19	UDV N = 9	Total N = 28
Visual phenomena: extraordinary visual experiences, which included kaleidoscopic lights, geometric forms, tunnels, animals, humans and supernatural beings.	12 (63.2%)	6 (66.7%)	18 (64.3%)
Peace: a prominent sense of inner calm, silence and harmony.	7 (36.8%)	8 (88.9%)	15 (53.6%)
Numinousness: a mixture of terror and fascination, which results from the sense of a superior and powerful presence.	10 (52.6%)	2 (22.2%)	12 (42.9%)
Alleged insights: elucidating thoughts about biographic, existential and behavioral aspects; some insights were attached to great fascination and profundity and to a deep meaning of ritual events; frequently they were perceived as received "from outside".	9 (47.4%)	2 (22.2%)	11 (39.3%)
Alterations in self-body image: alterations such as fusions with the environment and separation between the conscious self and the body.	7 (36.8%)	2 (22.2%)	9 (32.1%)
Distressing reaction: an overwhelming affliction due to an experience of "being imposed" an ideation of a "prophecy" of an imminent personal tragedy; the prophecy was attributed to a supposed "superior self," which was a previously expected spiritual latency; idiosyncratically considered as part of the superior self, the ritual events were interpreted as an irrefutable confirmation of the prophecy.	1 (5.3%)	0	1 (3.6%)

TABLE 5
Dimensions of Behavioral Changes 7-14 Days After the Use of Ayahuasca:
Group Differences and Total Sample

Dimensions	Santo Daime N = 19	UDV N = 9	Total N = 28
Serenity: more serenity towards previous stressor psychosocial aspects.	6 (31.6%)	2 (22.2%)	8 (28.6%)
Assertiveness: more assertiveness towards previous psychosocial aspects.	4 (21.1%)	1 (11.1%)	5 (17.9%)
Vivacity/joy: more energy and happiness in daily life.	2 (10.5%)	2 (22.2%)	4 (14.3%)
Relaxation/Satisfaction: unusual satisfaction and relaxation the day after the experience.	2 (10.5%)	2 (22.2%)	4 (14.3%)
Worry: the subject who underwent the distressing reaction reported a lot of preoccupation.	1 (5.3%)	0	1 (3.6%)

TABLE 6
The CIS-R Scale: Group Differences and Outcome of Minor Psychiatric Symptoms in T0 and T1

N	Santo Daime N = 19		UDV N = 9		Total N = 28		p^b
	Mean	Median	Mean	Median	Mean	Median	
T0	11±8.8	13	2.6 ±2.5	2	8.3 ±8.3	5.5	.01*
T1	5.2 ±4.3	4	2.3 ±3.9	1	4.3±4.3	3	.03*
p^a	.007**		NS		.009**		

^aWilcoxon Signed Rank test: outcome of minor psychiatric symptoms in T0 and T1; NS = non-statistically significant

** $p < .01$

^bMann-Whitney U test: group differences

* $p < .05$

Since Christian principles and the idea of spiritual and moral evolution throughout successive reincarnations are present both in Santo Daime/UDV and in Kardecist-inspired ideas of reincarnation (Goulart 2002; Andrade 1995), the presence of the latter in the subjects' religiosity seems also to reveal the subjects' affinity with Santo Daime's and UDV's systems of religious beliefs. These findings suggest that, although the religious use of psychoactive substances is not a trait of western societies (Galanter 1989), some specific cultural changes in religious practices and beliefs in contemporary Brazilian urban contexts (e.g., the spread of the New Age movement and beliefs in reincarnation) contributed to the positive and optimistic attitudes of most subjects towards the ayahuasca ritual experience.

The score on minor psychiatric symptoms among the Santo Daime group previous to the ayahuasca experience is higher than the CIS-R score found by Botega and colleagues (1995) among patients in a general hospital setting in Brazil (mean = 7.6; median = 6; SD = 7.5). Significantly, the category concerning the search for healing elicited by the motivations/expectancies inventory was found only among Santo Daime subjects.

The experiential dimensions elicited by phenomenological mapping confirm psychedelic studies performed four decades ago, which qualified as invariant hallucinogenic effects phenomena like alterations in the sense of self, insightful and aesthetic visual experiences (Unger 1963) and which proposed mystical experiences as a consequence of hallucinogen consumption in religious set and settings (Pahnke & Richards 1971). Therefore, the pleasant feelings and sensations and personal and religious insights elicited by the phenomenological mapping seem to have been influenced by the subjects' positive expectancies and motivations and by the Santo Daime/UDV ritual settings. These settings would structure the altered states towards "positive" experiences through actualizations of altruistic and optimistic contents of their doctrinaire repertoires (MacRae 1992).

However, other findings suggest a more complex relationship between the ASCs and the set/setting, rather than

the unidirectional determination of altered states by the set/setting described above. The phenomena of attachment of deep meaning to ritual events and the idiosyncratic interpretations of these events, described respectively in the categories of alleged insights and distressing reaction, are examples of how ayahuasca-induced alterations in consciousness may influence the processing of ritual information, and seem to reflect two transcultural characteristics of ASC: suggestibility and impaired judgment (Ludwig 1966).

The experience of receiving cognitions and feelings from "outside," identified in the distressing reactions and in the "positive" dimensions of ASCs has been identified as a transcultural trait of ayahuasca states of consciousness, independent of the set and setting (Shanon 1999). Therefore, although the content of the ASCs may be explained by the set/setting hypothesis, the way this content is actualized in the subjects' experiences must take into account the radical cognitive and affective alterations induced by ayahuasca intoxication.

Retrospective studies confirm the occurrence of personal insights in the first experience with ayahuasca (Grob et al. 1996). Since the mid twentieth century, mental health professionals have proposed the use of hallucinogens as a psychotherapeutic adjunct because these substances would facilitate association and memory processes (Strassman 1995; Grinspoon & Bakalar 1979). According to the perspective of UDV and Santo Daime members, insights experienced during the ASCs are crucial to self-knowledge and spiritual evolution (Couto 1989). The alleged property of ayahuasca as an insight and self-knowledge inducer seems to be quite charming. However, data concerning the attribution of fascination and profundity to the insights are also signs of the suggestibility and impaired judgment discussed above. This observation demands a more careful interpretation of the alleged insights: Wouldn't subjects be attributing a greater importance to their thoughts than their real influence in the subjects' lives?

An intriguing finding in the phenomenological mapping was the occurrence of peaceful states as a prominent

trait of the ASCs. Although experiences of "peace" and "inner silence" have been described as a possibility of psychedelic experiences (Pahnke & Richards 1971; Barron, Jarvik & Bunnell 1964), the rate of 53.6% contrasts with predominant characterizations of hallucinogenic drugs as emotional liability, anxiety and excitement inducers (Fischer 1971; Szara 1967). It does appear that the mild sedative properties attributed to ayahuasca's β -carbolines act as modulators of the typical hallucinogenic properties attributed to DMT (Ott 1994), softening it and configuring the unique psychological effects of ayahuasca. Difference in the rate at which subjects expressed feelings of peace between Santo Daime (36.8%) and UDV (88.9%) suggests other problems concerning set and setting variables. It would appear that the significantly lower score on CIS-R of UDV subjects previous to the ayahuasca experience reflects more emotional stability than is seen in the Santo Daime subjects, which in turn would determine more proneness to stable experiences. Perhaps the seated and relaxed position of UDV rituals, the absence of percussion instruments and periods of silence facilitate the peaceful states, while the vigorous collective singing and dancing to percussion instruments of Santo Daime rituals would promote more typical hallucinogenic potentialities, such as numinous excitement.

The remarkable reduction of minor psychiatric symptoms evaluated by CIS-R and calmer, more assertive and vivacious behaviors elicited by the behavioral changes inventory suggest interpretations based on psycholytic and psychedelic therapy, which advocated that positive transformations in attitudes may result from insights induced by hallucinogenic drugs used in psychotherapeutic settings (Bravo & Grob 1989; Savage, Terril & Jackson 1962). More optimistic perspectives about ayahuasca's behavioral effects favor these models (Peláez 2002). Nevertheless, it would be prudent to raise two more parsimonious hypotheses concerning more superficial psychological phenomena which may also contribute to the interpretation of the data: the first concerns the rupture with daily life, and the second concerns suggestibility processes.

Extraordinary experiences may work, at least temporarily, as antidotes to boredom caused by the monotonous repetition of daily life, destitute of events which mobilize

enthusiasm. This hypothesis fits the data concerning motivations/expectancies, which reflects the desire to transcend everyday life. Another "salutary" effect of this rupture would be an abrupt interruption of distressing psychosocial aspects. During ASCs, these problems would be replaced by extraordinary and/or peaceful experiences, which would be extended to the following days. Hence, the improvement of emotional states would be a consequence of the repose or emotional catharsis which is substituted for the monotony and stress related to the subjects' daily lives.

The important role of suggestibility in ASC was mentioned above. Reports on motivations/expectancies and on experiences during and after ASCs suggest a synergistic combination of three suggestibility processes which may determine the emotional and behavioral improvement: (1) existential and spiritual searches elicited by the motivations/expectancies inventory would reflect subjects' wishes for changes in their relationships with the world and themselves; this seems to suggest to them to behave or at least to report behavioral changes according to those wishes; (2) emotional and perceptual excitement experienced in "exotic" ritual environments would satisfy the desire to transcend everyday life, working as pretext to concretize previously yearned-for behavioral changes; and (3) suggestibility to acceptance of morally and optimistically laden ritual contents during ASC would also be extended to following days, influencing the elicited reports on experiential changes.

A fundamental step towards explanatory models of the psychological effects of ritual use of ayahuasca is a follow-up investigation that is presently being conducted by the authors. Long-term maintenance or disappearance of emotional and behavioral improvement will throw some light upon the question of how profound or superficial these effects are. Also, such study will shed some light on possible adverse or positive mental health outcomes of this kind of experience. In subsequent studies the novel information and hypotheses involving data obtained from qualitative procedures should be standardized through structured instruments in order to corroborate, reformulate or refute them in a more rigorous way.

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