

Mediation of Self-rumination on Mental Health Related Aspects: A Multidimensional Approach

José Arturo Costa Escobar^{1,2}, Antonio Roazzi¹
Bruno Campello de Souza¹ & Aleksandro M. do Nascimento¹

¹Graduate Program on Cognitive Psychology, Federal University of Pernambuco, Brazil.

²Grupo de Estudos sobre Álcool e outras Drogas, Federal University of Pernambuco, Brazil.

E-mail: jac_escobar@yahoo.com.br

Abstract: Private self-consciousness refers to the functional level of consciousness where the focus of attention is turned to intangible events, such as thoughts, feelings, sensation and perception, values, goals, beliefs, memories, and so forth, i.e., to the internal factors that relate the self to itself (Morin, 2004, 2006; Nascimento, 2008). Self-focus can be directed either to the negative aspects of the self (self-rumination), promoting anxiety, or to the positive ones (self-reflection), producing pleasure and well-being (Morin, 2002a). For some time now, researchers have attempted to establish a relationship between personality traits pertaining to self-conscious activities and various elements of mood, behavior and mental health (Trapnell & Campbell, 1999). Indeed, studies have shown that self-rumination is associated to psychopathologies, acting as a mediator in the occurrence of anxiety and depression. In a recent investigation, it was found that the participants of three Brazilian syncretic religions (namely, Santo Daime, União do Vegetal, and Sociedade Panteísta Ayahuasca) that make use of the psychedelic drink Ayahuasca, which is known to influence consciousness, presented low scores on measures of psychopathology (Escobar, 2013). In that study, religious ayahuasqueros (n=110) were submitted to several psychometric instruments, including Lipp's Inventory of Stress Symptoms, Beck's Anxiety and Hopelessness Indexes, CES-D Depression Scale, Goldberg's General Health Questionnaire, Manual Line Bisection Test, and Social Skills Inventory. The results obtained showed that, overall, the participants

as displayed a good level of mental health, though those belonging to the Santo Daime group showed statistically higher results when compared to the other groups (but still not in a level indicative of psychopathology). For the present study, it was hypothesized that personality traits may be involved in the results of the study from Escobar (2013), particularly relating to the operation of self-consciousness. Therefore, the Rumination-Reflection Questionnaire was applied to those same participants in order to explore the mediating role of self-rumination and self-reflection on the results obtained in the study by Escobar (2013). In order to investigate the relationships between the various empirical scales with the variable of interest, the Similarity Structure Analysis (SSA) was used on the resulting data, treating belonging to of the three ayahuasqueros groups with the “external variables as points” technique. The results yielded a scalogram that, interpreted by means of Facet Theory, showed a polar structure evidencing that all the religious groups had elevated values of self-reflection, but the Santo Daime group had the highest values for self-rumination. These findings support the hypothesis that the functioning of one’s self-consciousness is a personality trait that has a mediating role in the emergence of psychopathologies.

1. Introduction

Ayahuasca is an ancient psychedelic traditional native Amazonian drink with potent and mysterious effects on human consciousness and behavior. Its name means “liana of the soul”, in reference to the deep altered state of consciousness promoted by its oral consumption in shamanic rituals (Escobar & Roazzi, 2010; B. C. Labate & Araújo, 2002; Schultes, Hofmann, & Rätsch, 2001).

Currently, the ritual consumption of ayahuasca has expanded to urban environments with a variety of contexts within which it is offered to the users, following the different cosmogonies of the religious groups. Most of these abide to a thinking system based on complementary dualism, along with tenets from Christian values that receive the syncretic addition of beliefs in reincarnation, African religiosity, and indigenous motifs (B. C. Labate & Araújo, 2002; Beatriz Caiuby Labate, Rose, & Santos, 2008; MacRae, 2004). There are also some groups with shamanic-like functioning infused with New Age ideologies (B. C. Labate, 2004; Lira, 2009), as well as one with a unique

monistic-pantheist religiosity where ayahuasca is used to worship Creation and the Universe (Escobar, 2013).

The psychoactive effects of ayahuasca are due to the combined presence of the monoamine serotonin-like dimethyltryptamine (DMT) in the leaves of the *Psychotria viridis* and the β -carbolines in the stem of the *Banisteriopsis caapi*. The latter, commonly harmine, harmaline, and tetrahydroharmine, have the role of interacting with the gastrointestinal monoamine oxydase A (MAO-A), a monoamine degrading enzyme, so as to inhibit its action, allowing the DMT to be absorbed intact (Riba, 2003). DMT, which is analogous to LSD, psilocybin, and mescaline, acts as an agonist in the serotonin receptors present in certain brain areas involved in psychological processes such as arousal, cognition, volition, perception, emotion, etc. (Nichols, 2004; Ray, 2010).

The altered state of consciousness produced by ayahuasca can vary significantly, but common occurrences include dream-like visions, changes in the perception of light and color, accelerated thinking, enlightenment, and spiritual experiences, sometimes including depersonalization, derealization, or dread, all of which may or not be accompanied by vomit and diarrhea (Schultes, et al., 2001; Shanon, 2003).

The clinical safety of ayahuasca has been demonstrated in more than one study, with the most significant adverse effect being some elevation of the arterial blood pressure (Riba, 2003; Strassman & Qualls, 1994). There is no evidence for development of tolerance and dependence (Riba, 2003; Santos et al., 2012; Strassman, Qualls, & Berg, 1996) and the effects on autonomic, neuroendocrine and behavioral systems do not seem to be dangerous (Barbanoj, Riba, Clos, & Gimenez, 2008; Riba et al., 2003; Santos, et al., 2012; Santos et al., 2011).

Some researchers have proposed that the interaction between DMT and serotonergic mechanisms are involved in the occurrence of psychopathology. In fact, research had been conducted to establish the relation between schizophrenia and the use of psychedelics, obtaining results suggesting that the existence of phenomenological and neurochemical similarities between both those altered states of consciousness (Costa, Figueiredo, & Cazenave, 2005; Pomilio et al., 1999; Santos & Strassman, 2011).

Understanding ayahuasca's effect on serotonergic neurotransmission may be interesting for the development of the theory about psychopathology, given that a low flow of serotonin or high availability of MAO-A seems to be

related to occurrence of depression, anxiety, suicide, drugs abuse and other mental health problems (Markou, Kosten, & Koob, 1998; Nemeroff & Vale, 2005; Nestler et al., 2002; Quan-Bui et al., 1984; Sullivan et al., 2006). Indeed, ayahuasca consumption is capable of increasing the number of serotonin receptors and mimic the effects of antidepressants, with instances of this being used as adjuvant in psychotherapy and psychiatric treatment (Escobar & Roazzi, 2010; B. C. Labate, Santos, Anderson, Mercante, & Barbosa, 2010; Mabit, 2007; Mercante, 2009; Osório et al., 2012). Some other psychedelics have likewise been considered as potentially important therapeutic tools (Winkelman & Roberts, 2007).

The therapeutic properties of ayahuasca and of psychedelics in general can also be credited to the ritual involved in their use, that is to say, how the experience is conducted and the offering of social support (B. T. Anderson, 2012; B. C. Labate, et al., 2010; Sánchez & Yurrebaso, 2009; Sanchez & Nappo, 2008; Tuguimoto et al., 2011). It is also believed that the effects upon serotonergic neural substrates promote access to constitutive memories that would eventually be signified and reintegrated into the Self system with consequent changes in behavior (Winkelman, 1996, 2001, 2007). Some of the neural substrates involved in limbic and vision systems, as well as other mechanisms related to volition, are demonstrated in the effects of ayahuasca and other psychedelics, and seem to offer support to this hypothesis (Almeida Prado et al., 2009; de Araujo et al., 2012; Geyer, Nichols, & Vollenweider, 2009; Gouzoulis-Mayfrank et al., 1999; Nichols, 2004; Riba, 2003; Riba et al., 2006; Vollenweider & Geyer, 2001).

Some studies demonstrates that ayahuasca could be an important aid to treat addiction, and its use is related to abandoning the habit of alcohol and other drugs, though the mechanisms involved are not well known (Fábregas et al., 2010; Grob et al., 1996; Halpern, Sherwood, Passie, Blackwell, & Ruttenber, 2008; Labigalini, 1998; Santos, Moraes, & Holanda, 2006). The tea could be involved in acute schizophrenia or psychotic episodes (Santos & Strassman, 2011), but studies have failed to demonstrate any deleterious effects on ayahuasca users or any significant occurrence of psychopathological problems due to continuous use (Bouso et al., 2012; Doering-Silveira et al., 2005; Escobar, 2013; Grob, et al., 1996; Halpern, et al., 2008; Tófoli, 2010).

In truth, ayahuasca has been largely associated to good mental health, with improvements found on issues of drug abuse, stress, anxiety, and the

occurrence of minor disorders, as well as positive changes in personality, spirituality and worldview (P. C. Barbosa, Cazorla, Giglio, & Strassman, 2009; P. C. R. Barbosa, Giglio, & Dalgalarondo, 2005; Escobar, 2013; Kjellgren, Eriksson, & Norlander, 2009; Mabit, 2007; McKenna, 2004; Trichter, Klimo, & Krippner, 2009).

It is fairly certain that there are both biological and psychosocial mechanisms involved in mental health problems, these being related to thinking styles and different modes of functioning in the world (Fenigstein, Scheier, & Buss, 1975; A. Morin, 2002a; Takano & Tanno, 2009; Trapnell & Campbell, 1999; Yook, Kim, Suh, & Lee, 2010). Psychopathologies such as chronic stress, generalized anxiety, and depression had been related to deficits in serotonin neurotransmission as well as to the patient's low resilience and inefficient social support (Markou, et al., 1998; Nemeroff & Vale, 2005; Nestler, et al., 2002; Quan-Bui, et al., 1984; Sullivan, et al., 2006; Telles-Correia & Barbosa, 2009).

It is postulated here that consciousness is a human activity arising from natural selection, one that has a spectrum of *modi operandi* with different states of functioning (Dietrich, 2003; Escobar, 2013). It also involves different forms of interaction between the environment and intrinsic personal information, with different impacts on the functions of consciousness; the more conscious access to information there is, the higher the level of functioning (A. Morin, 2004, 2006).

The state of altered consciousness produced by ayahuasca has been called a “psychointegrator”, due to its properties of accessing intrinsic memories or silenced personal problems and trauma, that is to say, accessing unconscious information with the possibility of rearranging these contents so as to modify their integration to the Self system, with consequent changes in behavior (Winkelman, 1996, 2001, 2007). It seems that ayahuasca facilitates the resolution of psychological processes by assessing the unconscious symbolic systems that could be consciously modified during psychedelic experience. The ways or mechanisms by which consciousness does it successfully are still unknown, however, and significant research and theoretical efforts are still necessary.

It appears quite clear that the experience with ayahuasca and analogous psychedelics allows a special access to constitutive self-information, one which could contribute to the understanding and treatment of mental health in different ways. Accessing one's negative self-aspects would tend to produce

psychopathology, whereas accessing the positive ones would improve or promote mental health (Morin, 2002).

The access to this kind of self-information occurs in a high level of consciousness, where the Self focuses attention on itself, something which directs the individual reflection to shape personal traits such as values, behaviors, etc. (Duval & Wicklund, 1972; A. Morin, 2006). Self-consciousness can be of two kinds: public or private. Public self-consciousness refers to self-awareness activity with self-focus turned to the visible self attributes to other selves (i.e. behavior, physical appearance, opinion of others, etc.), while private self-consciousness is related to non-observable events (sensations, perceptions, values, own opinions, beliefs, memories, etc.), that is, to internal factors that relate to the self itself (Fenigstein, et al., 1975; A. Morin, 2006; Nascimento, 2008).

Private self-consciousness is a special mechanism of the mind designed to produce critical reflection upon constitutive contents, and it occurs by means of cognitive operations like thinking, imagination, self-talk, and so on, creating self-perception in the experience of awareness, making the subject him or herself as a reflexive observer processing self-information (A. Morin, 2004, 2006; Nascimento, 2008). Research on this level of conscious activity demonstrates need to isolate these properties and progress in the construction of adequate instruments (E. M. Anderson, Bohon, & Berrigan, 1996; Froming & Carver, 1981; Piliavin & Charng, 1988; Trapnell & Campbell, 1999).

A self-reflective factor found in the private self-consciousness scale (Fenigstein, et al., 1975) was investigated by Trapnell and Campbell (1999), who observed that the self-reflexive factor of private self-consciousness presents two components: one intellectual, related to positive affect, and another ruminative, related to negative affect. The isolation of these two aspects (self-reflection and self-rumination) have opened new perspectives for the understanding of the role of modes of thinking and self-awareness as personality traits in mental health (Trapnell & Campbell, 1999).

Some of the work done points to the existence of intrinsic relations between self-rumination as trait and the occurrence of anxiety, depression and other mental problems (Jones & Fernyhough, 2009; Luyckx et al., 2007; A. Morin, 2002a; Nascimento, 2008; Takano & Tanno, 2009; Trapnell & Campbell, 1999; Wupperman & Neumann, 2006; Yook, et al., 2010; Zanon, 2009; Zanon, Borsa, Bandeira, & Hutz, 2012; Zanon & Hutz, 2009).

In a nutshell, Ayahuasca is capable of promoting an altered state of consciousness due to the effects of a substance that improves serotonergic mechanisms in brain, increases access to self-information, and has a ritualistic use that allows for social support and reintegration (Escobar & Roazzi, 2010; Grob, et al., 1996; McKenna, 2004). It has the peculiar feature of activating certain brain areas related to self-consciousness and self-awareness (Almeida Prado, et al., 2009; de Araujo, et al., 2012; A. Morin, 2002b) and also acting as a psychointegrator substance (Winkelman, 2007). Thus, the goals of the present study were to explore the occurrence of signs of psychopathology in ayahuasca users of different religiosities and to study the relationships with self-rumination and self-reflexive activities.

2. Method

2.1. Participants

This was a cross-sectional study with a sample of convenience comprised of 110 individuals of three ayahuasca religiosities from the state of Pernambuco: Santo Daime (StD), União do Vegetal (UDV) and Sociedade Panteísta Ayahuasca (SPA). Most participants were from the UDV (n=68, 61.8%), followed by StD (n=23, 20.9%), and SPA (n=18, 16.4%), with one of the subjects not reporting his religious affiliation (0.9%). Overall, the sample consisted of 56 male subjects (51.9%) and 52 females (48.1%) with a mean age was 38.8 years (SD = 12.70), ranging individually from the ages of 20 to 68. Regarding education, most had a bachelor's degree or higher (63.3%), the remaining having a lesser level education (36.7%). The average length of use of ayahuasca among the participants was 94.2 months (SD = 88.36), ranging individually from 1 to 355 months.

2.2. Instruments

To investigate the mediation role of self-consciousness in psychopathology among ayahuasca users, various psychometric instruments and tasks were used, with their internal reliability accessed by the Kaiser-Meyer-Olkin index and Cronbach's Alpha.

Stress. Lipp's Inventory of Stress Symptoms (ISS) was used to measure pathological stress and its severity (Lipp, 2005).

Anxiety. Beck's Anxiety Index (BAI) was used to assess the occurrence and severity of anxiety (Cunha, 2001).

Hopelessness. Beck's Hopelessness Scale (BHS) was used to measure the occurrence and severity of feelings of hopelessness (Cunha, 2001).

Depression. The Depression Scale of the Center of Epidemiological Studies (CES-D) was used to measure depression (Silveira & Jorge, 1998). This test, however, did not show a good fit to the present sample, so a series of factor analyses were carried out until the two factors emerged (Depressive Affect, Negative Affect) with a Cronbach Alpha score higher than 0.70 (Escobar, 2013).

Minor Disorders. The Goldberg General Health Questionnaire (GHQ) was used to assess the occurrence of non-psychotic symptoms (psychic stress, death wish, distrust in one's own performance, sleep disturbances, psychosomatic disturbances) and their severity (Pasquali, Gouveia, Andriola, Miranda, & Ramos, 1996).

Social Abilities. The Inventory of Social Abilities (ISA) was used to evaluate the social strategies of the participants (Del Prette & Del Prette, 2005). In this questionnaire, only two factors out of the original six (Coping and self-assertion with risk, Coping and self-assertion in the expression of positive sentiment) showed an adequate level of reliability (Cronbach Alpha higher than 0.70) and, therefore, only those two factors were used (Escobar, 2013).

Visual Neglect. The Manual Line Bisection Test (MLBT) was used to measure the deterioration of visual mechanisms and attention (Cavezian et al., 2007; Halligan & Marshall, 1988).

Self-rumination and Self-reflection. The Rumination-Reflection Questionnaire (RRQ) was used to assess the two components of the Reflection factor of the Private Self-Consciousness Scale (Trapnell & Campbell, 1999; Zanon & Hutz, 2009).

2.3. Procedures

After an initial contact with those responsible for the religious movements in order to explain the research goals and to obtain their authorization for the investigation, the general members of such movements were invited to enroll in the study. All necessary ethical cautions were taken, following the criteria from Resolution 196/96 of the National Health Council in Brazil, as well as from the Ethics Committee on Human Research of the Center for Health Sciences, Federal University of Pernambuco (protocol no. 384/11).

The participants answered all questionnaires and scales in a single protocol, having been informed about the nature and goals of the investigation beforehand. There was no time limit for the responses; the spontaneous settling time ranged from 1:30 to 2:30 hours.

3. Results

3.1. Instruments Measures

Table 1 shows the statistics for all the instruments used, as well as the analytical procedures and significances values adopted, considering the specific religious group (StD, UDV, and SPA) as between-subject factors or grouping variable.

The members of the ayahuascan groups presented low psychopathology scores (ISS, BAI, BHS, CES-D, GHQ, and MLBT). None of these instruments produced means that exceeded their predicted cutoff values, indicating an absence of psychopathology in the sample studied. The statistical differences found regarding the BHS indicated that the UDV group was less hopeless than the other two. The mean results of the ISA indicated that ayahuasca users presented a good repertoire of social abilities. Self-consciousness activity was statistically elevated and predominantly self-reflective. Differences were found between both activities of the RRQ, with the SPA participants being more self-reflexive. On the other hand, self-rumination activity was higher in the StD participants. The ratio of these results in RRQ factors was 1.24 (3.92/3.16; range 1.11 to 1.34) and self-reflection was higher than self-rumination in all religious groups.

Table 1. Means and standard deviations of the participants for the scores on the instruments and statistical comparisons between religious groups.

Instruments	N	Religiosities	Statistical	P
ISS				
GLM Repeated Measures				
Phase Alertness	107	1.62 (1.64)	F(2, 206) = 0,928	0,449
Phase Resistance	107	1.43 (1.8)		
Phase Exhaustion	107	1.62 (2.01)		
BAI				
Kruskal-Wallis				
Total	99	3.47 (5.12)	$\chi^2 = 4.674$; df = 2	0.097
BHS †				
Kruskal-Wallis				
Total	107	2.40 (1.84)	$\chi^2 = 13.147$; df = 2	0.001
CES-D				
Kruskal-Wallis				
Depressive Affect	107	0.3 (0.5)	$\chi^2 = 5.290$; df = 2	0.71
Negative Affect	108	0.49 (0.62)	$\chi^2 = 2.272$; df = 2	0.321
GHQ				
Kruskal-Wallis				
Global Score	108	1.5 (0.27)	$\chi^2 = 3.052$; df = 2	0.217
Psychic Stress	108	1.48 (0.39)	$\chi^2 = 5.453$; df = 2	0.065
Death Wish	107	1.12 (0.27)	$\chi^2 = 4.076$; df = 2	0.130
Distrust in Own Performance	108	1.65 (0.35)	$\chi^2 = 1.130$; df = 2	0.514
Sleep Disturbances	108	1.36 (0.42)	$\chi^2 = 2.661$; df = 2	0.264
Psychosomatic Disturbances	108	1.46 (0.36)	$\chi^2 = 0.730$; df = 2	0.694
ISA				
Kruskal-Wallis				
Coping and self-assertion with risk	106	10.46 (3.16)	$\chi^2 = 3.563$; df = 2	0.168
Coping and self-assertion in the expression of positive sentiment	106	8.96 (1.9)	$\chi^2 = 0.047$; df = 2	0.977
MLBT				
GLM Repeated Measures				
Double Cue	99	-1.88 (4.11)	F(3, 288) = 2.017	0.063
No Cue	99	-2.06 (3.51)		
Right Cue	99	-0.81 (3.53)		
Left Cue	99	-3.24 (3.6)		
RRQ ††				
GLM Repeated Measures				
Self-Rumination	108	3.16 (0.79)	F(2, 104) = 3.568	0.032
Self-Reflection	108	3.92 (0.52)		

† Mann-Whitney U Post Hoc test showed differences between UDV < StD (p = 0.001) and UDV < SPA (p = 0.043).

†† LSD Post Hoc test showed differences in self-reflection to SPA > StD (p = 0.013) and SPA > UDV (p = 0.001), and in self-rumination to StD > UDV (p = 0.019).

3.2. SSA Analysis

A Structural Similarity Analysis (SSA) was used to identify the relationships between the various psychometric instruments themselves and with the three religious groups studied. This statistical technique belongs to the family of multidimensional scaling methods, which allow psychological associations to be expressed as geometrical distances (Guttman, 1968, 1991). The analysis was made possible by the method of external variables as points (Cohen & Amar, 1999; Roazzi & Dias, 2001) which allowed each *ayahuasquero* group to be positioned within in the relational structure found between the psychometric variables. Facet Theory was used as a meta-theoretical reference for the interpretation of the results (Roazzi & Dias, 2001), enabling an accurate description of the relationships between the factors of these various scales the different religious groups.

Figure 1 shows the scalogram found for the SSA, displaying a spatial distribution of variables indicating the relative proximity of the StD participants with the factors related to stress, anxiety, depression, and non-psychotic disorders, having the highest levels of self-rumination. The SPA, on the other hand, had the highest level of self-reflection. These two self-consciousness activities assumed opposite positions relative to the psychopathology indexes. The ISA factors presented similar behavior, with the repertoire of adequate social strategies being distant from the measures of psychopathology.

Generally speaking, the consumption of ayahuasca was not related to the occurrence of symptoms of stress, anxiety, depression, hopelessness, visual perception or attentional disturbances and minor disorders. It was found that these measures are related to self-rumination, a trait more powerfully observed in the StD sample, which was also found to be more vulnerable than the others to stress, anxiety, hopelessness, negative affect, sleep disturbances and other psychopathological indexes, though not at pathological levels.

4. Discussion

Since the altered states of consciousness induced by the use of ayahuasca and other psychedelics substances are similar to symptoms of schizophrenia, some investigators had suggested their relationship to psychoses (Costa, et al.,

2005; Pomilio, et al., 1999; Santos & Strassman, 2011; Vollenweider & Geyer, 2001). If that were the case, it would follow that one would tend to find mental health problems in the population studied, however, in the present study it was shown that the use of ayahuasca in different ritual contexts in Northeastern Brazil did not seem to promote signs of psychopathology or the deterioration of visual-attentional mechanisms.

There were varying durations of the use of ayahuasca in the present investigation, ranging from one month to almost 30 years, yet, the findings obtained are in line with the studies that failed to find an association between such a use and psychological and psychiatric problems (P. C. Barbosa, et al., 2009; P. C. R. Barbosa, et al., 2005; Bouso, et al., 2012; Doering-Silveira, et al., 2005; Fábregas, et al., 2010; Grob, et al., 1996; Halpern, et al., 2008). Not only does it appear that ayahuasca used in a ritualistic context does not promote psychopathologies, but it also seems that it might be protective or even therapeutic against problems such as alcohol and drug abuse, psychosis, violent trauma (i.e. panic syndrome and post-traumatic stress), and other mental health issues (Escobar & Roazzi, 2010; B. C. Labate, et al., 2010; Mercante, 2009).

The *União do Vegetal* showed less hopelessness than the *Santo Daime* and *Sociedade Panteísta Ayahuasca*, though the differences were not within the psychopathological range and the ritual use of ayahuasca investigated here does not seem to negatively interfere with mental health.

The participants also displayed a good level of social ability, with various strategies for dealing with people and society. This is in alignment with studies that identify groups based on religion and faith as social support mechanisms (Sanchez & Nappo, 2008; Tuguimoto, et al., 2011) and potential promoters of social cohesion and reintegration (Sánchez & Yurrebaso, 2009). From this perspective, it seems that the ritual use of ayahuasca aimed towards spiritual evolution provides an opportunity to exercise self-control, personal discipline, and living within a collective.

It is still unclear as to what are the factors contributing to the good levels of mental health observed among the religious users ayahuasca, but it is obviously necessary to consider the bio-psychosocial model. It is possible that serotonergic mechanisms are involved, predisposing people to the positive aspects of life (McKenna, 2004). At the same time, faith, social support, and noetic experiences could be contributing to provide the subjects with a balance between themselves and others.

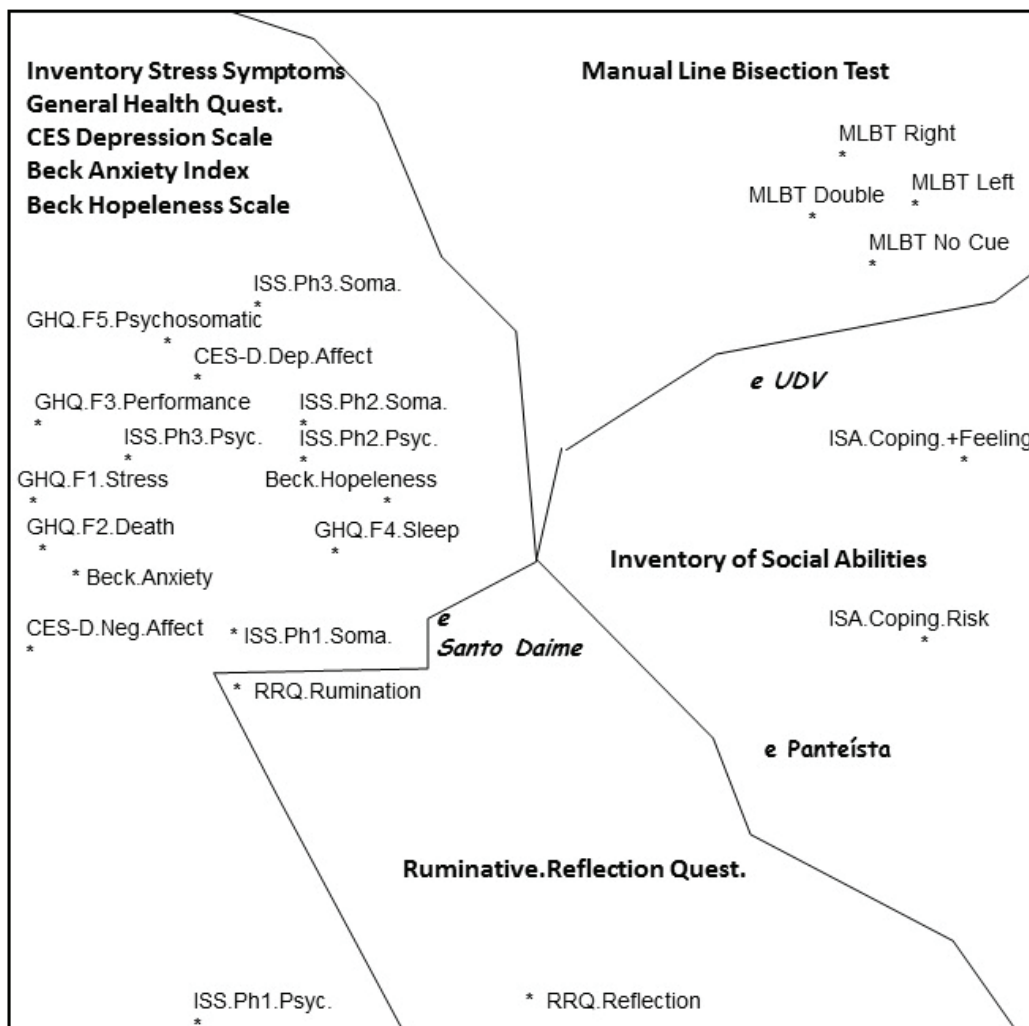


Fig. 1. SSA Projection in different scales measured in terms of ayahuasqueros groups (Santo Daime, Sociedade Panteísta Ayahuasca and União do Vegetal) as external variables (e) (3-D axis 1 vs. axis 2, coefficient of alienation = 0.10).

Legend: ISS = Lipp's Inventory of Stress Symptoms, Ph1. = phase alertness, Ph2. = phase resistance/near exhaustion, Ph3. = phase exhaustion, Psych. = psychosomatic, Soma. = somatic; GHQ = Goldberg's General Health Questionnaire, F1 = psychological stress, F2 = death wish, F3 = distrust in own performance, F4 = sleep disturbances, F5 = psychosomatic disturbances; Beck.Hopelessness = Beck Hopelessness Scale; Beck.Anxiety = Beck Anxiety Index; CES-D = Depression Scale of the Center for Epidemiologic Studies, Neg.Affect = negative affect, Dep.Affect = depressive affect; ISA = Inventory of Social Abilities, Coping.+Feeling = coping and self-assertion in the expression of positive sentiment, Coping.Risk = coping and self-assertion with risk; MLBT = Manual Line Bisection Test; RRQ = Rumination-Reflection Questionnaire, Reflection = self-reflection, Rumination = self-rumination.

The ayahuasca experience seems to be a profound and transforming one, with positive impacts in behavior and well-being (P. C. R. Barbosa, et al., 2005; Halpern, et al., 2008; Kjellgren, et al., 2009; Lira, 2009; Trichter, et al., 2009). Indeed, studies conducted with psilocybin, a substance analogous to the DMT present in ayahuasca, showed that it was capable of promoting positive changes in personality (Griffiths, Richards, Johnson, McCann, & Jesse, 2008; MacLean, Johnson, & Griffiths, 2011). The best explanation for this so far is that psychedelics act as psychointegrator substances, thereby facilitating the homeostasis of psychophysiological and psychocultural dynamic processes (Winkelman, 2007).

The SSA pattern and facets that were found pointed to the Santo Daime group as being, in relative terms, slightly more vulnerable to mental health than the other groups. The greater proximity of that group to self-rumination activity points to a role of that activity in mediating the emergence of psychopathology, while the fairly large distance between all of these things and self-reflection indicates that the latter activity has the opposite effect. This is consistent with Morin (2002), who pointed out that the prevalence of a high level of self-reflection is indicative that the person has an autofocus on epistemic self-interests. It is also in agreement with studies that propose that self-rumination could act as an activity capable of neutralizing the positive effects of self-reflection (Takano & Tanno, 2009).

Based on the clinical researches exploring the power of self-ruminative thinking in explaining depression and psychosis (Jones & Fernyhough, 2009; Joormann, Dkane, & Gotlib, 2006; Koster, Lissnyder, Derakshan, & Raedt, 2011; Yook, et al., 2010), the *Santo Daime* group probably does not present mental health problems due to the ratio between self-reflection and self-rumination, with self-reflection being the prominent activity. Indeed, Luyckx et al. (2007) has shown the importance of the self-reflection in the consolidation of identity and in well-being, a fact that seems to be important in understanding the present results.

The ritual use of ayahuasca is characterized by increases in content awareness and intrusive information, which can be especially important for the development of cognitive strategies to handle self-information. Processes such as self-talk and the effectiveness of the internal dialogue can be crucial for an individual to process self-information in successfully way (A. Morin, 1993, 1995; Alain Morin & Everett, 1990).

The finding that self-rumination apparently mediates the emergence of psychopathology is of extreme importance. Though this activity is frequently seen as simply a personality trait, in regards to the occurrence of psychopathology, it may be an important element to identify self-conscious activity and develop techniques aimed to establish an equilibrium between rumination and reflection.

In summary, the present study used SSA and facet Theory to demonstrate the role of self-rumination in the mediation of psychopathological processes, showing that religious ayahuasca users generally present a good level of mental health, most likely due to the self-conscious activities of rumination-reflection. Future research on the subject needs to develop a way to isolate the biological, psychological, and social mechanisms involved in order to produce a better understanding of the potential role of the use of ayahuasca in the improvement of mental health.

References

- Almeida Prado, D., Pinto, J., Crippa, J., Santos, A., Ribeiro, S., Araujo, D., et al. (2009). P.1.e.025 Effects of the Amazonian psychoactive plant beverage ayahuasca on prefrontal and limbic regions during a language task: a fMRI study. *European Neuropsychopharmacology*, 19, Supplement 3(0), S314-S315.
- Anderson, B. T. (2012). Ayahuasca as Antidepressant? Psychedelics and Styles of Reasoning in Psychiatry. *Anthropology of Consciousness*, 23(1), 44-59.
- Anderson, E. M., Bohon, L. M., & Berrigan, L. P. (1996). Factor structure of the Private Self-Consciousness Scale. *Journal of Personality Assessment*, 66, 144-152.
- Barbanoj, M. J., Riba, J., Clos, S., & Gimenez, S. (2008). Daytime ayahuasca administration modulates REM and slow-wave sleep in healthy volunteers. *Psychopharmacology*, 196, 315-326.
- Barbosa, P. C., Cazorla, I. M., Giglio, J. S., & Strassman, R. J. (2009). A six-month prospective evaluation of personality traits, psychiatric symptoms and quality of life in ayahuasca-naïve subjects. *Journal of Psychoactive Drugs*, 41(3), 205-212.
- Barbosa, P. C. R., Giglio, J. S., & Dalgalarrrondo, P. (2005). 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. *Journal of Psychoactive Drugs*, 37(2), 193-201.
- Bouso, J. C., González, D., Fondevila, S., Cutchet, M., Fernández, X., Ribeiro Barbosa, P. C., et al. (2012). Personality, Psychopathology, Life Attitudes and Neuropsychological Performance among Ritual Users of Ayahuasca: A Longitudinal Study. [Article]. *PLoS One*, 7(8), 1-13.
- Cavezian, C., Danckert, J., Lerond, J., Dalery, J., D'Amato, T., & Saoud, M. (2007). Visual-perceptual abilities in healthy controls, depressed patients, and schizophrenia patients. *Brain and Cognition*, 64(3), 257-264.
- Cohen, E. H., & Amar, R. (1999). External Variables as Points in SSA: a Comparison with the Unfolding Techniques. In M. Schweizer, D. Hänzli, B. Jann, E. Peier-Klantschi & H. J. Schweizer-Meyer (Eds.), *Facet Theory: Design and Analysis* (pp. 259-279). Bern: FTA - Facet Theory Association (c/o Institut für Soziologie, Universität Bern).
- Costa, M. C. M., Figueiredo, M. C., & Cazenave, S. d. O. S. (2005). Ayahuasca: uma abordagem toxicológica do uso ritualístico. *Revista de Psiquiatria Clínica*, 32, 310-318.
- Cunha, J. A. (2001). *Manual da versão em português das escalas Beck*. São Paulo: Casa do Psicólogo.
- de Araujo, D. B., Ribeiro, S., Cecchi, G. A., Carvalho, F. M., Sanchez, T. A., Pinto, J. P., et al. (2012). Seeing with the eyes shut: Neural basis of enhanced imagery following ayahuasca ingestion. *Human Brain Mapping*, 33(11), 2550-2560.
- Del Prette, Z. A. P., & Del Prette, A. (2005). *Inventário de Habilidades Sociais (IHS-Del Prette): manual de aplicação, apuração e interpretação* (3a ed.). São Paulo: Casa do Psicólogo.
- Dietrich, A. (2003). Functional neuroanatomy of altered states of consciousness: The transient hypofrontality hypothesis. *Consciousness and Cognition*, 12, 231-256.
- Doering-Silveira, E., Lopez, E., Grob, C. S., Dobkin-de-Rios, M., Alonso, L. K., Tacla, C., et al. (2005). Ayahuasca in Adolescence: A Neuropsychological Assessment. *Journal of Psychoactive Drugs*, 37(2), 123-128.
- Duval, S., & Wicklund, R. A. (1972). *A theory of objective awareness*. New York: Academic Press.
- Escobar, J. A. C. (2013). *Ayahuasca e Saúde: Efeitos de uma Beberagem Sacramental Psicoativa na Saúde Mental de Religiosos Ayahuasqueiros*. Unpublished Ph.D., Universidade Federal de Pernambuco, Recife.

- Escobar, J. A. C., & Roazzi, A. (2010). Panorama Contemporâneo do Uso Terapêutico de Substâncias Psicodélicas: Ayahuasca e Psilocibina. *Neurobiologia*, 73(3), 159-172.
- Fábregas, J. M., González, D., Fondevila, S., Cutchet, M., Fernández, X., Barbosa, P. C. R., et al. (2010). Assessment of addiction severity among ritual users of ayahuasca. *Drug and Alcohol Dependence*, *Accepted manuscript*.
- Fenigstein, A., Scheier, M. F., & Buss, A. H. (1975). Public and private self-consciousness: Assessment and theory. *Journal of Consulting and Clinical Psychology*, 43(4), 522-527.
- Froming, W. J., & Carver, C. S. (1981). Divergent influences of private and public self-consciousness in a compliance paradigm. *Journal of Research in Personality*, 15, 159-171.
- Geyer, M. A., Nichols, D. E., & Vollenweider, F. X. (2009). Serotonin-Related Psychedelic Drugs. *Encyclopedia of Neuroscience*, 731-738.
- Gouzoulis-Mayfrank, E., Schreckenberger, M., Sabri, O., Arning, C., Thelen, B., Spitzer, M., et al. (1999). Neurometabolic Effects of Psilocybin, 3,4-Methylenedioxyethylamphetamine (MDE) and d-Methamphetamine in Healthy Volunteers - A Double Blind, Placebo-controlled PET Study with [¹⁸F]FDG. *Neuropsychopharmacology*, 20, 565-581.
- Griffiths, R. R., Richards, W. A., Johnson, M. W., McCann, U. D., & Jesse, R. (2008). Mystical-type experiences occasioned by psilocybin mediate the attribution of personal meaning and spiritual significance 14 months later. *Journal of Psychopharmacology*, 22(6), 621-632.
- Grob, C. S., McKenna, D. J., Callaway, J. C., Brito, G. S., Neves, E. S., Oberlaender, G., et al. (1996). Human Psychopharmacology of Hoasca, A Plant Hallucinogen Used in Ritual Context in Brazil. *The Journal of Nervous and Mental Disease*, 184(2), 86-94.
- Guttman, L. (1968). A general nonmetric technique for finding the smallest coordinate space for a configuration of points. *Psychometrika*, 33, 469-504.
- Guttman, L. (1991). *Louis Guttman: In memoriam - Chapters from an unfinished textbook on facet theory*. Jerusalém: The Israel Academy of Sciences and Humanities.
- Halligan, P. W., & Marshall, J. C. (1988). How long is a piece of string? A study of line bisection in a case of visual neglect. *Cortex*, 24, 321-328.
- Halpern, J. H., Sherwood, A. R., Passie, T., Blackwell, K., & Ruttenber, A. J. (2008). Evidence of health and safety in American members of a religion who use a hallucinogenic sacrament. *Med Sci Monit* 14 (8), SR15-22.

- Jones, S. R., & Fernyhough, C. (2009). Rumination, reflection, intrusive thoughts, and hallucination-proneness: Towards a new model. *Behaviour Research and Therapy*, 47(1).
- Joormann, J., Dkane, M., & Gotlib, I. H. (2006). Adaptive and Maladaptive Components of Rumination? Diagnostic Specificity and Relation to Depressive Biases. *Behavior Therapy*, 37, 269-280.
- Kjellgren, A., Eriksson, A., & Norlander, T. (2009). Experiences of encounters with ayahuasca - "the vine of the soul". *Journal of Psychoactive Drugs*, 41(4), 309-315.
- Koster, E. H. W., Lissnyder, E. D., Derakshan, N., & Raedt, R. D. (2011). Understanding depressive rumination from a cognitive science perspective: The impaired disengagement hypothesis. *Clinical Psychology Review*, 31 138-145.
- Labate, B. C. (2004). *A reinvenção da ayahuasca nos centros urbanos*. Campinas, SP: Mercado de Letras, Fapesp.
- Labate, B. C., & Araújo, W. S. (Eds.). (2002). *O uso ritual da Ayahuasca*. São Paulo, SP: Mercado das Letras, Fapesp.
- Labate, B. C., Rose, I. S. d., & Santos, R. G. d. (2008). *Panorama da bibliografia sobre as religiões ayahuasqueiras*. Paper presented at the 26ª Reunião Brasileira de Antropologia Retrieved from http://www.abant.org.br/conteudo/ANAIS/CD_Virtual_26_RBA/grupos_de_trabalho/trabalhos/GT%2006/isabela%20santana.pdf
- Labate, B. C., Santos, R. G. d., Anderson, B., Mercante, M. S., & Barbosa, P. C. (2010). Considerações sobre o tratamento da dependência por meio da ayahuasca. from <http://www.neip.info/index.php/content/view/90.html#et>
- Labigalini, E. J. (1998). *O uso da ayahuasca em um contexto religioso por ex-dependentes de álcool – um estudo qualitativo*. Unpublished Master, Univesidade Federal de São Paulo, São Paulo.
- Lipp, M. N. E. (2005). *Inventário de Sintomas de Stress para Adultos* (3a ed.). São Paulo: Casa do Psicólogo.
- Lira, W. L. (2009). *Os trajetos do êxtase dissidente no fluxo cognitivo entre homens, folhas, encantos e cipós: uma etnografia ayahuasqueira nordestina.*, Universidade Federal de Pernambuco, Recife.
- Luyckx, K., Soenens, B., Berzonsky, M. D., Smits, I., Goossens, L., & Vansteenkiste, M. (2007). Information-oriented identity processing, identity consolidation, and well-being: The moderating role of autonomy,

- self-reflection, and self-rumination. *Personality and Individual Differences*, 43(5), 1099-1111.
- Mabit, J. (2007). Ayahuasca in the treatment of addictions. In M. J. Winkelman & T. B. Roberts (Eds.), *Psychedelic medicine: new evidence for hallucinogenic substances as treatments* (Vol. 2, pp. 87-105). Westport, Connecticut: Praeger.
- MacLean, K. A., Johnson, M. W., & Griffiths, R. R. (2011). Mystical experiences occasioned by the hallucinogen psilocybin lead to increases in the personality domain of openness. *Journal of Psychopharmacology*, 25(11), 1453-1461.
- MacRae, E. (2004). The ritual use of ayahuasca by three Brazilian religions. In R. Coomber & N. South (Eds.), *Drug Use and Cultural Contexts "Beyond the West"* (pp. 27-45). London: Free Association Books.
- Markou, A., Kosten, T. R., & Koob, G. F. (1998). Neurobiological similarities in depression and drug dependence: A self-medication hypothesis. *Neuropsychopharmacology*, 18(3), 135-174.
- McKenna, D. J. (2004). Clinical investigations of the therapeutic potential of ayahuasca: rationale and regulatory challenges. *Pharmacology e Therapeutics*, 102, 111-129.
- Mercante, M. S. (2009). Ayahuasca, dependência química e alcoolismo. *Ponto Urbe*, 5(Dezembro), 1-23. Retrieved from http://www.pontourbe.net/index.php?option=com_content&view=article&id=37:ayahuasca-dependencia-quimica-e-alcoolismo&catid=6:cat-artigos&Itemid=7
- Morin, A. (1993). Self-talk and self-awareness: on the nature of the relation. *The Journal of Mind and Behavior*, 14(3), 223-234.
- Morin, A. (1995). Characteristics of an effective internal dialogue in the acquisition of self-information. *Imagination, Cognition and Personality*, 15(1), 45-58.
- Morin, A. (2002a). Self-awareness review Part 1: Do you "self-reflect" or "self-ruminate"? *Science & Consciousness Review*, 1. Retrieved from <http://www2.mtroyal.ab.ca/~amorin/rumination.pdf>.
- Morin, A. (2002b). The Split-brain debate revisited: on the importance of language and self-recognition for right hemispheric consciousness. *Homo Oeconomicus*, 18(3-4), 523-534.
- Morin, A. (2004). A neurocognitive and socioecological model of self-awareness. *Genetic, Social, and General Psychology Monographs*, 130(3), 197-222.

- Morin, A. (2006). Levels of consciousness and self-awareness: A comparison and integration of various neurocognitive views. *Consciousness and cognition*, 15, 358-371.
- Morin, A., & Everett, J. (1990). Inner speech as a mediator of self-awareness, self-consciousness, and self-knowledge: An hypothesis. *New Ideas in Psychology*, 8(3), 337-356.
- Nascimento, A. M. (2008). *Autoconsciência situacional, imagens mentais, religiosidade e estados incomuns de consciência: um estudo sócio-cognitivo*. Unpublished Ph.D., Universidade Federal de Pernambuco, Recife.
- Nemeroff, C. B., & Vale, W. W. (2005). The neurobiology of depression: inroads to treatment and new drug discovery. *Journal of Clinical Psychiatry*, 66 (Suppl. 7), 5-13.
- Nestler, E. J., Gould, E., Manji, H., Bucan, M., Duman, R. S., Gershenfeld, H. K., et al. (2002). Preclinical Models: Status of Basic Research in Depression. *Biological Psychiatry*, 52, 503-528.
- Nichols, D. E. (2004). Hallucinogens. *Pharmacology & Therapeutics*, 101(2), 131-181.
- Osório, F. d. L., Macedo, L. R. H., Sousa, J. P. M. d., Pinto, J. P., Quevedo, J., Crippa, J. A. d. S., et al. (2012). The Therapeutic Potential of Harmine and Ayahuasca in Depression: Evidence from Exploratory Animal and Human Studies. In R. G. d. Santos (Ed.), *The Ethnopharmacology of Ayahuasca*. Kerala, India: Transworld Research Network.
- Pasquali, L., Gouveia, V. V., Andriola, W. B., Miranda, F. J., & Ramos, A. L. M. (1996). Questionário de Saúde Geral de Goldberg (QSG): adaptação brasileira. *Psicologia: Teoria e Pesquisa*, 10, 421-437.
- Piliavin, J., & Charng, H. (1988). What is the factorial structure of the Private and Public Self-Consciousness Scales? *Personality and Social Psychology Bulletin*, 14, 587-595.
- Pomilio, A. B., Vitale, A. A., Ciprian-Ollivier, J., Cetkovich-Bakmas, M., Gomez, R., & Vazquez, G. (1999). Ayahuasca: an experimental psychosis that mirrors the transmethylation hypothesis of schizophrenia. *Journal of Ethnopharmacology*, 65, 29-51.
- Quan-Bui, K. H. L., Plaisant, O., Leboyer, M., Gay, C., Kamal, L., Devynck, M.-A., et al. (1984). Reduced platelet serotonin in depression. *Psychiatry Research*, 13(2), 129-139.

- Ray, T. S. (2010). Psychedelics and the human receptorome. *PLoS One*, 5(2), e9019.
- Riba, J. (2003). *Human pharmacology of ayahuasca*. Unpublished Ph. D., Universitat Autònoma de Barcelona, Barcelona.
- Riba, J., Romero, S., Grasa, E., Mena, E., Carrió, I., & Barbanoj, M. (2006). Increased frontal and paralimbic activation following ayahuasca, the pan-amazonian inebriant. *Psychopharmacology*, 186(1), 93-98.
- Riba, J., Valle, M., Gloria, U., Yritia, M., Morte, A., & Barbanoj, M. J. (2003). Human pharmacology of ayahuasca: subjective and cardiovascular effects, monoamine metabolite excretion, and pharmacokinetics. *The Journal of Pharmacology and Experimental Therapeutics*, 306, 73-83.
- Roazzi, A., & Dias, M. G. B. B. (2001). Teoria das facetas e avaliação na pesquisa social transcultural: Explorações no estudo do juízo moral. In C. R. d. P. a. R. PB/RN (Ed.), *A diversidade da avaliação psicológica: Considerações teóricas e práticas* (pp. 157-190). João Pessoa, PB: Idéia.
- Sánchez, J. C., & Yurrebaso, A. (2009). Cohesion grupal: relaciones con la cultura de los equipos de trabajo. [Article]. *Psicothema*, 21(1), 97+.
- Sanchez, Z. v. d. M., & Nappo, S. A. (2008). Intervenção religiosa na recuperação de dependentes de drogas. *Revista de Saúde Pública*, 42(2), 265-272.
- Santos, R. G. d., Grasa, E., Valle, M., Ballester, M. R., Bouso, J. C., Nomdedéu, J. F., et al. (2012). Pharmacology of ayahuasca administered in two repeated doses. *Psychopharmacology* 219, 1039–1053.
- Santos, R. G. d., Moraes, C. C. d., & Holanda, A. (2006). Ayahuasca e redução do uso abusivo de psicoativos: eficácia terapêutica? *Psicologia: Teoria e Pesquisa*, 22, 363-370.
- Santos, R. G. d., & Strassman, R. J. (2011). Ayahuasca and Psychosis. In R. G. d. Santos (Ed.), *The Ethnopharmacology of Ayahuasca* (pp. 97-99). Kerala: Transworld Research Network.
- Santos, R. G. d., Valle, M., Bouso, J. C., Nomdedéu, J. F., Rodríguez-Espinosa, J., McIlhenny, E. H., et al. (2011). Autonomic, Neuroendocrine, and Immunological Effects of Ayahuasca: A Comparative Study With D-Amphetamine. *Journal of Clinical Psychopharmacology* 31(717-726).
- Schultes, R. E., Hofmann, A., & Rätsch, C. (2001). *Plants of the gods – their sacred, healing and hallucinogenic powers* (2° ed.). Rochester-Vermont: Healing Arts Press.

- Shanon, B. (2003). Os conteúdos das visões da ayahuasca. *Mana*, 9(2), 109-152.
- Silveira, D. X. d., & Jorge, M. R. (1998). Propriedades psicométricas da escala de rastreamento populacional para depressão CES-D em populações clínica e não-clínica de adolescentes e adultos jovens. *Psiqu Clin*, 25, 251-261.
- Strassman, R. J., & Qualls, C. R. (1994). Dose-response study of N,N-dimethyltryptamine in humans. I: Neuroendocrine, autonomic, and cardiovascular effects. *Archives of General Psychiatry* 51(2), 85-97.
- Strassman, R. J., Qualls, C. R., & Berg, L. M. (1996). Differential tolerance to biological and subjective effects of four closely spaced doses of N,N-dimethyltryptamine in humans. *Biological Psychiatry*, 39(9), 784-795.
- Sullivan, G. M., Mann, J. J., Oquendo, M. A., Lo, E. S., Cooper, T. B., & Gorman, J. M. (2006). Low Cerebrospinal Fluid Transthyretin Levels in Depression: Correlations with Suicidal Ideation and Low Serotonin Function. *Biological psychiatry*, 60(5), 500-506.
- Takano, K., & Tanno, Y. (2009). Self-rumination, self-reflection, and depression: Self-rumination counteracts the adaptive effect of self-reflection. *Behaviour Research and Therapy*, 47(3), 260-264.
- Telles-Correia, D., & Barbosa, A. (2009). Ansiedade e depressão em medicina: Modelos teóricos e avaliação. *Acta Med Port*, 22(1), 89-98.
- Tófoli, L. F. (2010). Mental Health Safety of Ayahuasca Religious Use: Results of an Epidemiological Surveillance System by the União do Vegetal in Brazil. *Psychedelic Science in the 21st Century Conference*. Retrieved from: <http://www.slideshare.net/tofoli/mental-health-safety-of-ayahuasca-religious-use-results-from-an-epidemiological-surveillance-system-by-the-uniao-do-vegetal-in-brazil-13086360#btnPrevious>
- Trapnell, P. D., & Campbell, J. D. (1999). Private Self-Consciousness and the Five-Factor Model of Personality: Distinguishing Rumination From Reflection. *Journal of Personality and Social Psychology*, 76(2), 284-304.
- Trichter, S., Klimo, J., & Krippner, S. (2009). Changes in Spirituality among ayahuasca ceremony novice participants. *Journal of Psychoactive Drugs*, 41(2), 121-134.
- Tuguimoto, J. K., Gonçalves, E., Jacob, M. N., Moraes, D. G., Saavedra, C., Dallarosa, A., et al. (2011). A contribuição da espiritualidade e da religiosidade na prevenção e no tratamento da dependência química. *Estudos Universitários, Revista de Cultura da UFPE*, 28(9), 33-52.

- Vollenweider, F. X., & Geyer, M. A. (2001). A systems model of altered consciousness: integrating natural and drug-induced psychoses. *Brain Research Bulletin*, 56, 495-507.
- Winkelman, M. J. (1996). Psychointegrator plants: their roles in human culture, consciousness and health. In M. J. Winkelman & W. Andritzky (Eds.), *Yearbook of cross-cultural medicine and psychotherapy. Sacred plants, consciousness, and healing. Cross-cultural and interdisciplinary perspectives* (pp. 9-54). Berlin: Verlag für Wissenschaft und Bildung.
- Winkelman, M. J. (2001). Psychointegrators: Multidisciplinary Perspectives on the Therapeutic Effects of Hallucinogens. *Complementary Health Practice Review*, 6(3), 219-237.
- Winkelman, M. J. (2007). Therapeutic Bases of Psychedelic Medicines: Psychointegrative Effects. In M. J. Winkelman & T. B. Roberts (Eds.), *Psychedelic Medicine: new evidence for hallucinogenic substances as treatments* (Vol. 1, pp. 1-19). Westport, Connecticut: Praeger.
- Winkelman, M. J., & Roberts, T. B. (Eds.). (2007). *Psychedelic Medicine: new evidence for hallucinogenic substances as treatments*. Westport, Connecticut: Praeger.
- Wupperman, P., & Neumann, C. S. (2006). Depressive symptoms as a function of sex-role, rumination, and neuroticism. *Personality and Individual Differences*, 40 189–201.
- Yook, K., Kim, K.-H., Suh, S. Y., & Lee, K. S. (2010). Intolerance of uncertainty, worry, and rumination in major depressive disorder and generalized anxiety disorder. *Journal of Anxiety Disorders*, 24(6), 623-628.
- Zanon, C. (2009). *Relações da ruminação e reflexão com o bem-estar subjetivo, facetas do neurocitismo e sexo*. Unpublished Master, Universidade Federal do Rio Grande do Sul.
- Zanon, C., Borsa, J. C., Bandeira, D. R., & Hutz, C. S. (2012). Relações entre pensamento ruminativo e facetas do neuroticismo. *Estudos de Psicologia* (Campinas), 29, 173-181.
- Zanon, C., & Hutz, C. S. (2009). Propriedades psicométricas da Escala Fatorial de Neuroticismo e do Questionário de Ruminação e Reflexão. *Avaliação Psicológica*, 8, 279-281.

Proceedings of the 14th Facet Theory Conference.

Searching for Structure in Complex Social,
Cultural & Psychological Phenomena

Edited by
Antonio Roazzi
Bruno Campello
Wolfgang Bilsky

Recife | 2013