Ayahuasca in Adolescence: A Preliminary Psychiatric Assessment†

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Abstract—Ayahuasca is believed to be harmless for those (including adolescents) drinking it within a religious setting. Nevertheless controlled studies on the mental/ psychiatric status of ritual hallucinogenic ayahuasca concoction consumers are still lacking. In this study, 40 adolescents from a Brazilian ayahuasca sect were compared with 40 controls matched on sex, age, and educational background for psychiatric symptomatology. Screening scales for depression, anxiety, alcohol consumption patterns (abuse), attentional problems, and body dysmorphic disorders were used. It was found that, compared to controls, considerable lower frequencies of positive scoring for anxiety, body dismorphism, and attentional problems were detected among ayahuasca-using adolescents despite overall similar psychopathological profiles displayed by both study groups. Low frequencies of psychiatric symptoms detected among adolescents consuming ayahuasca within a religious context may reflect a protective effect due to their religious affiliation. However further studies on the possible interference of other variables in the outcome are necessary.

Keywords—adolescence, ayahuasca, hallucinogen, psychopathology, religion, scales

Ayahuasca is a hallucinogenic concoction of plants used as a psychoactive ritual sacrament in ceremonies of the syncretic churches União do Vegetal (UDV) and Santo Daime. In Brazil, law has sanctioned the use of ayahuasca within the context of religious practice since 1987. Ayahuasca is consumed only during religious ceremonies, which last approximately four hours, being regularly scheduled twice monthly and often attended by multigenerational families. Within the UDV, adolescents are offered the opportunity to voluntarily join their parents and participate in ritual ceremonies where ayahuasca is consumed, and it is a common belief among members of the UDV that ayahuasca presents no risk for adolescents as long as they take it within a religious context. Nevertheless, to date there have been no controlled studies on the effects of periodic ritual ayahuasca use on adolescents.

In 1993, a comprehensive research investigation of ayahuasca use in long-term adult members of the UDV called the Hoasca Project was conducted in the Brazilian Amazon city of Manaus (Callaway et al. 1999, 1996 1994;

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TABLE 1
Demographic Characteristics of Adolescent Study (N = 80)

	Ayahuasca Group (N = 40)	Comparison Group (N = 40)
Age	16.52 years (SD = 1.34)	16.62 years (SD = 1.0)
Sex: Male	N = 22 (55.0 %)	N = 22 (55.0 %)
Female	N = 18 (45.0 %)	N = 18 (45.0 %)
Civil status: Single	N = 38 (95.0 %)	N = 37 (92.5 %)
Residence:		
Living with Parents	N = 37 (92.5 %)	N = 39 (97.5 %)
Ethnic group: White	N = 30 (75.0 %)	N = 33 (82.5 %)

McKenna et al. 1998; Grob et al. 1996). Phase I evaluations of pharmacokinetics, neuroendocrine assays, serotonin function, and psychiatric and medical health were then conducted. Contrasting the findings on 15 subjects from the UDV for at least 10 years with matched controls who had never consumed ayahuasca, this pilot investigation concluded that there was no evidence of injurious effect induced by ritual use of ayahuasca. Indeed, UDV subjects appeared to have experienced a remission of severe psychiatric disorders, including drug and alcohol abuse, following their entry into this religion.

Currently, the membership of the UDV in Brazil is estimated at close to 9,000, including approximately 1,200 adolescents. Considering the proportion of this age group within the population that uses these psychoactive substances on a regular basis, it is advisable to investigate the adolescents' psychiatric status and behavioral functioning.

The main objective of this study is to evaluate the mental condition of these adolescents through screening instruments for psychiatric disorders.

METHOD

Sample and Procedure

The study involved 40 adolescents, from both sexes, ages ranging from 15 to 19 years of age, who had drunk ayahuasca in a ritual context for at least 24 times in the last two years prior to the assessment. They were compared to a comparison group of 40 adolescents who had never drunk ayahuasca matched by sex, age, and educational level. Both groups live in the same communities and share the same environmental influences.

Ayahuasca-consuming adolescents were randomly selected among participants of three distinct UDV churches whereas the comparison group included randomly selected adolescents according to paring criteria. After a twenty-day washout period, ayahuasca adolescents were interviewed together with comparison group and asked to complete a series of scales aiming to screen for psychiatric conditions. Interviews were conducted by a trained psychiatrist in 2001 in two different Brazilian cities. Both adolescents and their parents were asked to sign an informed consent before enrollment in the study.

Instruments

Measurement of psychiatric morbidity in the community and clinical settings in the last decades has been achieved basically by the use of standardized methods of measurement (Cooper 1987; Eastwood 1971). Many tests used in case identification are usually referred to as "screening tests" (Goldberg 1989) and have been developed to be used in a first stage assessment in populational studies to identify probable cases that will later have their "caseness" status confirmed or not in a second stage. Such a test is devised to be easy and quick to administer, usually does not involve rich diagnostic detail, but enables proper measurement of the condition. Tests used here are acceptable scientific tools both in the sense they proved they consistently measure a given phenomenon (reliability) and in the sense that they are actually measuring what they are designed to measure (validity; see Bartko & Carpenter 1976).

Subjects were assessed in terms of mental status by means of the following psychiatric screening instruments: SRQ (Self Report Questionnaire) to assess overall psychic condition(Iacoponi & Mari 1988; Mari & Williams 1986); CES-D (Center for Epidemiological Studies Depression Scale) for depression (Da Silveira & Joge 2002).; Beck Anxiety Inventory and STAI (State-Trait Anxiety Inventory) as a screening for anxiety disorders (Gorenstein & Andrade 1996); DUSI (Drug Use Screening Inventory) to identify drug misuse (De Micheli & Formigoni 2002; Tarter et al. 1996, 1992); Conners' Adolescent Self-Rating subscale to detect Attention Deficit Disorder(Doering-Silveira & Da Silveira In press); and BSQ (Body Shape Questionnaire) to investigate self image related disorders.(Di Pietro & Da Silveira In press).

Data Analysis

Descriptive statistics were followed by comparisons between ayahuasca and control groups. Strength of associations was tested with chi-square for categorical variables, whereas t-test was used for comparing continuous variables.

TABLE 2
Number and Percentages of Subjects Scoring Positively for Psychiatric Diagnoses in Ayahuasca and Comparison Adolescent Groups (N = 80)

Scales	Cut-offs	Ayahuasca (N = 40)		Comparison Group (N = 40)		Statistical Significance P
		n	%	n	%	
Self-Report Questionnaire	7/8	3	7.5	4	10.0	n.s.
CAGE (SRQ subscale)	1/2	1	2.5	0	0	n.s.
DUSI	2/3	1	2.5	0	0	n.s.
Beck Anxiety	15/16	3	7.5	1	2.5	n.s.
STAI-state	21/22	2	5.0	7	17.5	n.s.
STAI-trait	21/22	24	60.0	32	80.0	0.087
CES-D	15/16	12	30.0	11	27.5	n.s.
Body shape questionnaire	110/111	4	10.0	11	27.5	0.083
ADD	2/3	1	2.5	7	17.5	0.057

RESULTS

Demographic Data

In the ayahuasca group, 22 adolescents (55%) were male and 18 (45%) were female. Their mean age was 16.52 ± 1.34 years. Education level ranged from the first year in high school to first year in college. Ethnic breakdown showed 30 (75% of the sample) were White and 10 (25%) classified themselves as of mixed ethnic origin. Ninety-five percent of the subjects were single and most of them (92.5%) lived with their parents.

In the comparison group, 22 adolescents (55%) were male and 18 (45%) were female. Their mean age was 16.62 ± 1.0 years. They were mostly White (82.5%) and their educational level ranged from first year in high school to third year in high school (first year in high school = 7; second year = 15; third year = 18). Thirty-seven adolescents (92.5%) were single and most of them (97.5%) lived with their parents (see Table 1).

Pattern of Ayahuasca Consumption

Twenty-five adolescents (63%) started drinking ayahuasca systematically during childhood (before the age of 13) while 15 of them (37%) began to drink when adolescents (after they were 13 years old). The time span of systematic (at least once a month) ayahuasca use was 4.05 ± 2.28 years. At the time of assessment, the adolescents abstained from drinking ayahuasca for at least 20 days, with a mean abstinence period of 41.16 ± 15.55 days. Only one adolescent (2.5 %) reported having drunk ayahuasca outside of a religious context and 39 (97.5%) reported that the experience had a profoundly positive influence on their lives.

Psychiatric Assessment

In the ayahuasca group three adolescents (7.5%) had high scores on psychiatric symptoms. In terms of substance use disorders, one adolescent (2.5%) scored positively for problem drinking and another one (2.5%) for substance misuse. Concerning anxiety symptoms, 24 (60.0%) were anxious at the time of assessment but only three adolescents (7.5%) presented high scores on Beck Anxiety Scale and two adolescents (5.0%) on STAI-State scale. Twelve teenagers (30%) presented with depressive symptoms. In the assessment for other psychiatric disorders, four adolescents (10.0%) screened positively for body dysmorphic disorder and one (2.5%) fulfilled DSM IV criteria (three or more items) for attention deficit disorder-inattentive type. Except for the high proportion of depressive subjects in this sample, overall percentages are comparable with general population rates.

In the comparison group, four adolescents (10.0%) presented high scores on psychiatric symptoms. None of the adolescents scored positively either for alcohol related problems or for substance abuse or dependence [see above comment]. Although 32 (80.0%) adolescents reported anxiety symptoms at the time of assessment, only one (2.5%) presented high scores on the Beck Anxiety Scale, but seven adolescents (17.5%) scored high on STAI-State scale. Eleven of them (27.5%) were probably depressive. In the assessment for other psychiatric disorders, 11 adolescents (27.5%) screened positively for body dysmorphic disorder and seven (17.5%) fulfilled DSM IV criteria for Attention Deficit Disorder-Inattentive type.

Comparing both groups (see Table 2), adolescents of the comparison group demonstrated a trend to have more problems than adolescents from the ayahuasca group with anxiety symptoms ($p = 0.087$), self image ($p = 0.083$), and inattentiveness ($p = 0.057$).

After stratification by gender (see Table 3), differences among the ayahuasca and the comparison group were more expressive among women; the exception was for attention problems, where six boys from the control group and only one from ayahuasca group fulfilled diagnostic criteria for ADD. Eleven girls from the ayahuasca group presented high scores for anxiety (STAI-Trait) whereas 17 girls from the

TABLE 3
Number and Percentages of Subjects Scoring Positively for Psychiatric Diagnoses in Ayahuasca and Comparison Adolescent Groups, Stratified by Sex (N = 80)

	Ayahuasca Group (N = 40)		Comparison Group (N = 40)	
Scales	**N**	**%**	**N**	**%**
Men (N = 22)				
STAI-Trait	13	59.1	15	**68.2**
Body shape questionnaire	1	4.1	1	4.5
DSM IV ADD	1	4.1	6	27.3
Women (N = 18)				
STAI-Trait	11	61.1	17	94.4
Body shape questionnaire	3	16.7	10	55.6
DSM IV ADD	0	0	1	5.6

comparison group scored high for the condition. Concerning the body shape questionnaire, only one male adolescent from each group scored high on the instrument, whereas 13 female adolescents presented high scores, with three of them being from the ayahuasca group and 10 from the comparison group.

DISCUSSION

In the preliminary pilot investigation of adult long-term ayahuasca users held in Brazil named the Hoasca Project (Grob et al. 1996), diagnostic interviews identified considerable past psychiatric histories preceding their entry into the ayahuasca church. Interestingly, psychopathology remitted following their regular attendance at ayahuasca ceremonies. It is still unclear if the reported changes can be attributed to the effect of the substance itself or to the religious affiliating process. Besides ayahuasca ingestion, set and setting may have also played a considerable role in this favorable outcome. Members of the syncretic church stressed, as do many other religious groups, the importance of a protective and supportive community (Grob 1999).

In the present study adolescents drinking ayahuasca within a religious context were overall comparable to controls in terms of psychopathological profile. Nevertheless slight differences could be observed in favor of the ayahuasca group in terms of less anxiety symptoms, less body image dysmorphia, and fewer attention deficit disorders. Only trends could be observed between groups, but the small sample size may be responsible for differences not reaching statistical significance.

Church members often report that the more they engage in ayahuasca rituals, the more they "learn" how to focus their attention. This may be reflected in the lower frequency of probable attention deficit cases among them. It is not possible yet to determine if this is the due to a direct effect of ayahuasca in the brain or to the possibility of better training of attentional skills in this particular environment.

The Hoasca project also identified significant personality differences between ayahuasca using and nonusing groups (Grob et al. 1996). Ayahuasca using subjects were considered to be more confident, optimistic, outgoing, energetic, persistent, reflective, and scored higher than controls in measures of social desirability and emotional maturity (Grob 1999). This phenomenon, probably reflecting the strong sense of belonging to a well-structured religious community, can also eventually explain the smaller proportion of ayahuasca using adolescents reporting anxiety symptoms and concerns over body image.

This cross-sectional study made it possible to establish the lower frequencies of psychiatric symptoms in the ayahuasca-consuming adolescents in comparison with nonusing ones. However, it is not possible to know if psychopathologically less affected adolescents are more prone to adhere to the religious group or if the affiliation to such a community exerts a "protective" effect on these adolescents, whatever mechanisms involved may be.

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