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Trends

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Adaptation and latent structure of the Brazilian version of the Ego Dissolution Inventory (EDI-BR): An exploratory study

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Abstract

Introduction: Existing scales that seek to measure alterations in self-experience were based on studies conducted in developed countries. Therefore, the aim of this study was to evaluate the psychometric properties of the Ego-Dissolution Inventory (EDI), translate and adapt it to the Brazilian context.

Methods: Translation of the measure was made by two translators fluent in both English and Portuguese, with back-translation into English to ensure there was no loss of meaning. The scale was included in an online survey exploring substance use. A total of 528 participants answered the full scale. We calculated the Kaiser-Meyer-Olkin (KMO) measure to evaluate sampling adequacy, then ran Exploratory Analysis Factor (EFAs) to investigate the factor structure of the EDI.

Results: The scale showed acceptable psychometric properties, with excellent internal consistency and sampling adequacy for a factor analysis. Kaiser-Gutman's criteria and Hull's method pointed to a three-factor solution, while Parallel Analysis suggested a two-factor solution. All items showed salient loadings, with two items exhibiting cross-loading. Positive but weak correlations were found between EDI factors 1 and 2 and nature-relatedness.

Conclusions: The validated scale showed solid psychometric properties, with potential differences in factor structure in relation to the English version. Considering validation as ongoing process, it is recommended to conduct studies comparing the scores of ego dissolution across distinct substances and different regions of the country.

Keywords: Ego-dissolution, ego-death, psychedelics, hallucinogens, psychometrics.

Introduction

Psychedelics are a class of substance that produce transient but intense changes in perception, mood, and feelings.¹ These substances act mainly in serotonergic systems, through 5-HT_{2A} receptor affinity.² Several studies suggest the therapeutic potential of these substances, in cases such as supportive care for anxiety in terminal patients,³ treatment of refractory depression,⁴ and management of substance use disorders.⁵

Ego dissolution (also called “ego death”)⁶ is a central feature of the psychedelic experience and a promising topic in the study of consciousness. It is characterized as a sensation of blurred distinction between the subjective and objective perception of the

world,⁷ and feelings of connectedness with the world.⁸ Reported effects of drug-induced ego dissolution studies include feeling of numbness, feelings of “non-existence”, disembodiment, depersonalization and feelings of unity with the environment.⁹ This phenomenon can occur in some pathological states, such as in acute psychosis or in temporal lobe epilepsy auras,¹⁰ but also in states considered non-pathological, such as in mystical experiences or through altered states of consciousness induced by hallucinogenic substances.⁷

There are several materials that seek to measure alterations in self-experience. Dittrich's APZ (Abnormal Mental States) questionnaire,¹¹ as well as its revised versions 5D-ASC and OAV,¹² have been widely used to assess altered states of consciousness caused by psychedelic substances. However, the extensive number of items and the complex 11-factor structure is seen as a limitation by researchers.⁷ For this reason, Nour and colleagues sought to develop a measure with a simpler unidimensional structure: the Ego-Dissolution Inventory (EDI).⁷ These measures, however, originated from developed countries. To the best of our knowledge, there is no study from developing regions aiming to validate scales measuring ego dissolution. Considering the traditional use of psychedelics in these cultures (e.g. psilocybe mushrooms, ayahuasca, peyote), the absence of adequately validated measures for this population constitutes an important gap in psychedelic science.

Additionally, ego dissolution may have important clinical implications. For example, in a study by Uthaug et al.¹³ evaluating long-term effects from ayahuasca use, participants' ego dissolution during psychedelic experiences was strongly linked to decreases in depressive symptoms and increased life satisfaction. This suggests that ego dissolution is a relevant element involved in the therapeutic action of psychedelics. On the other hand, there is also evidence of negative outcomes – such as bad trips, anxiety, search for emergency medical care – in relation to the phenomenon of ego dissolution.¹⁴ Therefore, it is important that clinical studies with psychedelics seek to measure this construct for a greater understanding of its relationship with positive and negative outcomes. Accordingly, the aim of the current study was to translate and adapt the EDI to the Brazilian context, evaluating its psychometric properties.

Although the final version of the EDI is composed of 8 items referring to the phenomenon of ego dissolution, the original scale included 8 additional items, tapping into the, presumably opposite, phenomenon of ego inflation.⁷ Assuming that inflation and

dissolution are indeed contrary phenomena, but still in the spectrum of the same construct, we chose to use the original scale of 16 items and evaluate its psychometric structure in a sample from a developing country. It was expected that, as in the original study, the items would group into two different factors: ego dissolution and ego inflation.

Methods

Scale adaptation

Cultural adaptation was done following standard procedures in the field,¹⁵ with translation into Brazilian Portuguese by two translators fluent both in English and Portuguese. Back-translation into English was done by a third translator also fluent in both English and Portuguese, and then compared with the original scale to determine if there were any changes in meaning of items. The final scale items were also evaluated by a group of 3 experts and a pilot/pre-test study with 11 people was carried out before the official testing. There were no major changes in meaning of items. The scale was included in an online survey exploring substance use, implemented, and hosted by SurveyMonkey.¹⁶ The full survey took an average of 25 minutes to complete and was disseminated online, through social networks and mail lists.

Participants

The sample comprised 528 individuals. Respondents were preponderantly women (59.1%) with an average age of 29 years. The majority (80%) declared themselves as white, 44.2% had a bachelor's degree or higher and 30.9% had just frequented elementary or high school. Regarding the region of residence in Brazil, the vast majority (68.4%) were from Southeast, with most respondents being from the state of Rio de Janeiro (n = 178), followed by São Paulo (n = 159) and Minas Gerais (n = 21). Inclusion criteria for participants were: (1) being at least 18 years old; and (2) having had at least one experience with a classical psychedelic (LSD, psilocybin, DMT or ayahuasca), MDMA, cocaine, marijuana and/or alcohol. The complete sociodemographic information of the sample can be seen in Table 1.

Table 1 – Sociodemographic characteristics of sample

Variables	n	%
Sex		
Female	312	59.1
Male	210	39.8
Other	6	1.1
Sexual orientation		
Heterosexual	333	63.1
Bisexual	138	26.1
Gay/ Lesbian	45	8.5
Other	12	2.3
Ethnicity/ race (mv = 9)		
White/Caucasian	422	80.0
Afro-descendant	90	17.0
Other	16	3.0
Region		
South	46	8.7
Southeast	361	68.4
Midwest	12	2.3
Northeast	26	5.0
North	0	0.0
Educational level (mv = 116)		
Elementary school /High School	163	30.9
University education	167	31.7
Graduate education	66	12.5
Other	16	3.0
Marital status		
Single	367	69.5
Married/ Civil union	128	24.2
Divorced/ Widower/ Other	33	6.2
Substance used		
Psilocybin mushroom	145	27.6
LSD	162	30.7
DMT	47	8.9
MDMA	53	10.0
Cocaine	16	3.0
Cannabis	43	8.1
Alcohol	62	11.7
Age*	29.0	9.7

* Mean and standard deviation; mv – missing values.

Instruments

Sociodemographic: Sociodemographic data relevant to the research, such as gender, age, education, course, income, marital status, among others, were collected from the participants.

Substance use questionnaire: This questionnaire was designed with the aim of mapping substance use among participants, contexts in which use occurs, ways of obtaining it, as well as exploring possible problems and negative outcomes associated with substance use as part of a major study.

In order to explore convergent validity, in addition to the EDI the following instruments were also used:

*NR6 – Brief measure of Nature Relatedness Scale*¹⁷ (Brazilian version by Longo et al.¹⁸): This instrument is designed to assess relationship with nature, a construct that has become increasingly useful in the study of environmental behavior, as well as health and psychological well-being.¹⁷ Recent research indicates that nature relatedness increases after psychedelic use¹⁹⁻²², which may be mediated by ego loss phenomenon and the sensation of connectedness with the whole.²⁰ This is a one-dimensional Likert-type six points scale, with higher scores corresponding to higher levels of nature relatedness. The original NR6 version has a Cronbach's alpha (α) mean = .84, with the Brazilian version showing similar internal consistency (α = .86) and factor structure.¹⁸

*SWLS – Satisfaction with Life*²³ (Brazilian version by Gouveia et al.²⁴): This is a one-dimensional Likert-type scale, with higher scores corresponding to higher levels of satisfaction with life. There is evidence that use of psychedelics increases levels of life satisfaction,²⁵ and it appears that ego dissolution is significantly related to this specific improvement.^{7, 13, 26} The scale has solid psychometric properties (α = .87 for the original scale²³, α = .81 for Brazilian version²⁴).

Statistics

The Kaiser-Meyer-Olkin (KMO) measure was calculated to evaluate sampling adequacy in order to carry out a factor analysis. It has been suggested that KMO values should be equal to or above 0.60 in order to perform and interpret satisfactorily a factor analysis solution.²⁷ Exploratory Analysis Factor (EFAs) were calculated to investigate the factor

structure of the EDI-BR. Principal Axis Factoring was used as the extraction method, with Promax for factor rotation,²⁸ an oblique method suited for data in which the factors are potentially correlated.²⁹ Kaiser-Guttman's criteria (*eigenvalue* > 1), Parallel Analysis³⁰ and Hull's method³¹ were used as factor retention methods in three different analyses. Cronbach's alpha was calculated for the full scale, as well as for individual factors. Correlational analyses were calculated between all scale factors and scores in the SWLS and NR6 scales. The analyses were carried out with Factor 10.10.01³² and IBM SPSS Statistics v.23.³³

Ethical Issues

This study was approved by a local research ethics committee (CAAE: 95292418.5.0000.8144). All participants provided informed consent before completing the questionnaires.

Results

The KMO index (KMO = .905; Bartlett's test $p < .001$) indicated very good sampling adequacy and that the correlation matrix was suitable for factor analysis. Cronbach's alpha was .95 for the full scale.

Exploratory factor analysis

Both Kaiser-Gutman's criteria and Hull's method pointed to a three-factor solution, while Parallel Analysis suggested a two-factor solution. Table 2 shows results for the three-factor solution using Kaiser-Gutman's criteria, while Table 3 displays results for the 2-factor solution.

Table 2 – Factor loadings of the EDI scale items obtained with principal axis factoring analysis and promax rotation

Item #	Item	EDI Factors		
		I	II	III
14	I felt particularly self-confident	.91	-.16	.09
16	I felt particularly safe	.84	-.05	-.08
8	I felt particularly sure-of-myself	.81	-.04	.03
5	I felt a sense of union with others	.66	.23	-.12
2	I felt particularly assertive	.61	.15	.07
11	I felt far less absorbed by my own issues and concerns	.51	.10	.03
10	I felt especially motivated and competitive	.47	-.11	.31
9	I experienced a disintegration of my "self" or ego	-.04	.90	.05
15	All notion of self and identity dissolved	-.12	.83	.08
13	I lost all sense of ego	.02	.79	-.02
1	I experienced a dissolution of my "self" or ego	.11	.78	-.01
7	I experienced a decrease in my sense of self-importance	-.08	.58	.07
3	I felt at one with the universe	.40	.52	-.13
12	I felt as if my viewpoint was worth more than other peoples'	-.10	.09	.79
4	I felt more important or special than others	.02	.11	.70
6	My ego felt inflated	.17	-.08	.65
Eigenvalue		5.67	2.59	1.42
Variance (%)		35.46	16.16	8.89
Cronbach's Alpha		.81	.90	.71
Root Mean Square Error of Approximation (RMSEA)				.084
Comparative Fit Index (CFI)				.955
Schwarz's Bayesian Information Criterion (BIC)				757.679

* Factor loadings greater than 0.4 are represented in bold

Table 3 – Factor loadings of the EDI scale items obtained with parallel analysis and promax rotation

Item #	Item	EDI Factors	
		I	II
1	I experienced a dissolution of my "self" or ego	.86	.01
3	I felt at one with the universe	.68	.18
5	I felt a sense of union with others	.45	.40
7	I experienced a decrease in my sense of self-importance	.63	-.10
9	I experienced a disintegration of my "self" or ego	.94	-.12
13	I lost all sense of ego	.90	-.14
15	All notion of self and identity dissolved	.87	-.12
2	I felt particularly assertive	.32	.55
4	I felt more important or special than others	-.11	.67
6	My ego felt inflated	-.24	.73
8	I felt particularly sure-of-myself	.16	.70
10	I felt especially motivated and competitive	-.11	.68
11	I felt far less absorbed by my own issues and concerns	.21	.43
12	I felt as if my viewpoint was worth more than other peoples'	-.17	.65
14	I felt particularly self-confident	.01	.83
16	I felt particularly safe	.14	.65
Eigenvalue		6.22	1.77
Variance (%)		45.32	15.14
Cronbach's Alpha		.89	.81
Root Mean Square Error of Approximation (RMSEA)			.119
Comparative Fit Index (CFI)			.934
Schwarz's Bayesian Information Criterion (BIC)			1048.584

Factor loadings greater than 0.4 are represented in bold

Correlations between EDI factors, NR6 and SWLS

Results can be seen in Table 4. All EDI factors correlated positively. Ego-dissolution did not correlate with SWLS scores. EDI factors 1 and 2 correlated weakly with NR6 scores.

Table 4 – Correlations between the EDI, NR6 and SWLS

		Factor I	Factor II	Factor III
Spearman's rho	Factor I		.58**	.47**
	Factor II			.35**
	NR6	.22**	.30**	.01
	SWLS	.05	.01	-.07

** $p < .01$

Ego dissolution and substance use

One-way ANOVAs were also used to compare EDI scores for each factor of the 3-factor solution between users of different substances. There were significant differences for all EDI factors [factor 1: $F(6, 521) = 12.30$; $p < .001$; $\eta^2 = .12$ / factor 2: $F(6, 521) = 25.72$; $p < .001$; $\eta^2 = .23$ / factor 3: $F(6, 520) = 6.52$; $p < .001$; $\eta^2 = .07$].

Full results with all pairwise comparisons for each factor can be seen in the supplementary material (S1, S2 and S3). Post-hoc Bonferroni corrected t-tests showed that mushroom, DMT, LSD and MDMA users had higher scores than cannabis and alcohol users in factor 1 ('self-confidence and assertiveness'). LSD users also scored significantly higher on this factor than MDMA users, with cocaine users also scoring higher than cannabis users. For factor 2 ('ego dissolution'), both mushroom and DMT users scored significantly higher than users of all other substances. DMT users also scored significantly higher than mushroom users, and LSD users score higher than cannabis and alcohol users. For factor 3 ('ego inflation'), MDMA and cocaine users scored significantly higher than magic mushroom, DMT and cannabis users. Cocaine users also scored higher than LSD and alcohol users.

Discussion

The validated version of the scale showed acceptable psychometric properties, with excellent internal consistency for the full scale (and excellent to satisfactory consistency for individual factors) and salient loadings for all items. Factor analyses of the EDI-BR indicated different solutions. Analyses based on the Kaiser-Gutman criteria and Hull method pointed to a greater adequacy of the data to a three-factor solution, while parallel analysis suggested a bifactorial solution. All EDI factors correlated positively, and there were weak positive correlations between ego dissolution and nature-relatedness.

In the original validation article,⁷ the authors included eight items related to ego dissolution and eight items related to ego inflation. The structure was corroborated by the exploratory factor analysis performed, with retention of factors through parallel analysis. In the present study, although the parallel analysis also pointed to a two-factor solution, items did not behave in the same way. Items specifically referred to the feeling of ego disintegration (e.g., items 1, 3, 5, 7, 9, 13 and 15) gathered in one factor while other items gathered in a second factor.

However, in this bifactorial model, item 5 (“I felt union with others”) showed cross-loadings (factor 1: .45; factor 2: .40). A possible explanation is that the item has a generic formulation in relation to who these “others” may be. Alternatively, this may reflect cultural issues (e.g. phenomenon of ego dissolution in Brazil involves a feeling of union with the universe and nature, but not with other people). Another item that deserves attention is #11 (“I felt far less absorbed with my own issues and concerns”), since it surprisingly loaded in the ego-inflation factor. This item also has a formulation that can be problematic as it involves the adverbial intensifier “far less”, which can force more conservative responses. Furthermore, “issues and concerns” are very diverse mental events, which makes the understanding of the item very open to interpretation.

As an alternative to the bifactorial model, a three-factor structure was proposed by the Hull Method and the Kaiser-Gutmann criterion. In this model, items coalesce in aspects related to self-confidence and assertiveness (items 2, 3, 5, 8, 10, 11, 14 and 16), ego dissolution (items 1, 3, 7, 9, 13 and 15) and ego inflation (items 4, 6 and 12). Comparisons between different substances showed that users of classical psychedelics scored higher in factor 1 than users of cannabis and alcohol but scored low compared to cocaine and MDMA users in factor 3. In ego-dissolution factor (factor 2), users of classic psychedelics

scored higher than other users, except for LSD in relation to MDMA and cocaine, that there were no statistically significant differences. This suggests that may there be cognitive empowerment during the psychedelic experience that does not necessary implies in an increased egocentrism or ego-inflation. These results indicate a split within ego-inflation items, with some ego-dissolution items also loading on other factors. This means that there may be different possible arrangements between these three domains of the self, in addition to the simple dissolution vs inflation dichotomy. This is represented, for instance, by item 3 ("I felt at one with the universe"), which loaded both in the self-confidence/assertiveness and ego dissolution factors. Perhaps this shows that 'feeling one with the universe' can represent not only ego loss feeling, but also a sense of cognitive empowerment due to meaning attribution to the feeling of unity. Further qualitative research may shed light on the specific meaning that users of psychedelics attribute to these concepts. In addition, semantic adaptation studies may also be recommended for items 3, 5, 11 and 13.

A three-factor model was also found in the study by Dworatzky, Jansen & Schmidt³⁴ that sought to validate the EDI in a German sample. Similarly, the authors found a factorial structure in which the more specific items about ego dissolution also loaded in a factor of their own (except for #6 "I felt one with the universe" that also carried this factor in our study, but not in the study by Dworatzky).³⁴ In addition, the authors found a second factor with six items referring to aspects of ego inflation and a third factor with the items "I felt at one with the universe", "I felt a sense of union with others", "I felt far less absorbed by my own issues and concerns" and "I felt particularly sure-of-myself". The latter two had cross-loadings also with the ego-inflation factor.³⁴

In our analyses, factors 1 and 2 of the 3-factor solution were positively correlated with nature-relatedness, even though the correlations were weak. Recent data from an online survey show that there is a positive association between classic psychedelics and nature-relatedness in Brazil,²² but the role of ego dissolution phenomenon in this remains unclear. Other studies exploring this topic found that nature relatedness in psychedelic experience correlates with the extent of ego-dissolution but depends on the perceived influence of natural surroundings during the acute psychedelic state.²⁰ Our findings may suggest that nature-relatedness has a weaker association in Brazil in relation to other world regions. Conversely, sampling for the current study focused primarily on an urban setting, and this may have impacted results. Future studies expanding recruitment to non-

urban settings (e.g., the Amazon region) may be important to better clarify this topic. Nevertheless, given that the current study is observational, direction of causality cannot be ascertained, so it is possible that participants with higher nature-relatedness present more intense ego dissolution for other reasons.

Also, no factor on the scale showed a statistically significant correlation with the life-satisfaction scale. Given that other studies have demonstrated positive associations between ego dissolution and life satisfaction,^{7, 25} including a study that used the same measurement scales (EDI and SWLS),²⁶ it is possible that this reflects cultural issues or sampling biases. Life satisfaction is a construct that greatly varies and is influenced by different factors across cultures.^{35, 36} To the best of our knowledge, there is no other data on life satisfaction and psychedelic use in Brazil, so future studies should explore this issue further.

Regarding limitations, some cultural difficulties of translating the term 'ego', as well as the semantic formulation of some items, may have generated conflict in the answers. Additionally, the current study sample was predominantly recruited from college students, which biased its composition towards white ethnicity and higher educational achievement. It is possible, however, that this group is more represented among users of psychedelics. In any case, it is important to conduct new studies with a more diverse samples, perhaps also avoiding biases linked to online data collection.

Conclusion

This is the first study to adapt and validate the Ego-Dissolution Inventory in a developing country. Due to the recent explosion of studies with psychedelics, the existence of an instrument duly validated and adapted to evaluate such a central aspect of the psychedelic experience is very relevant. The EDI-BR showed acceptable psychometric properties and further validation, including establishing the instrument predictive validity, should be pursued. Considering internal consistency and fit indexes of the two factorial solutions, as well as the initial discriminant validity evidence provided by comparing scores between users of different substances, we recommend using in Brazil the scale with 16 dissolution/inflation items and the three-factor solution model for calculating the scores, until further studies on the validity of the EDI-BR are available.

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Supplementary material

S1. Comparisons between substances in EDI's factor 1

Substance	Mean (<i>SD</i>)	ΔM [95% <i>IC</i>]	Sig
Magic mushrooms	294.03 (191.29)		
DMT	337.11 (200.43)	-43.07 [-134.88 – 48.73]	1.00
Magic mushrooms	294.03 (191.29)		
LSD	255.43 (169.46)	38.60 [-23.93 – 101.13]	1.00
Magic mushrooms	294.03 (191.29)		
MDMA	360.40 (189.51)	-66.36 [-154.15 – 21.43]	.45
Magic mushrooms	294.03 (191.29)		
Cocaine	294.69 (199.53)	-.65 [-144.74 – 143.43]	1.00
Magic mushrooms	294.03 (191.29)		
Cannabis	130.58 (164.63)	163.45 [68.48 – 258.43]	< .001*
Magic mushrooms	294.03 (191.29)		
Alcohol	157.56 (150.28)	136.47 [53.47 – 219.46]	< .001*
DMT	337.11 (200.43)		
LSD	255.43 (169.46)	81.67 [-8.94 – 172.29]	.13
DMT	337.11 (200.43)		
MDMA	360.40 (189.51)	-23.29 [-132.88 – 86.30]	1.00
DMT	337.11 (200.43)		
Cocaine	294.69 (199.53)	42.42 [-115.89 – 200.73]	1.00
DMT	337.11 (200.43)		
Cannabis	130.58 (164.63)	206.52 [91.10 – 321.95]	< .001*
DMT	337.11 (200.43)		
Alcohol	157.56 (150.28)	179.54 [73.76 – 285.32]	< .001*
LSD	255.43 (169.46)		
MDMA	360.40 (189.51)	-104.96 [-191.51 – -18.41]	.005*
LSD	255.43 (169.46)		
Cocaine	294.69 (199.53)	-39.25 [-182.59 – 104.07]	1.00
LSD	255.43 (169.46)		
Cannabis	130.58 (164.63)	124.85 [31.02 – 218.68]	.001*
LSD	255.43 (169.46)		
Alcohol	157.56 (150.28)	97.87 [16.19 – 179.55]	.006*
MDMA	360.40 (189.51)		
Cocaine	294.69 (199.53)	65.71 [-90.31 – 221.73]	1.00
MDMA	360.40 (189.51)		
Cannabis	130.58 (164.63)	229.81 [117.56 – 342.07]	< .001*
MDMA	360.40 (189.51)		
Alcohol	157.56 (150.28)	202.83 [100.51 – 305.15]	< .001*
Cocaine	294.69 (199.53)		
Cannabis	130.58 (164.63)	164.11 [3.94 – 324.27]	.04*

Cocaine	294.69 (199.53)	137.12 [-16.25 – 290.49]	.14
Alcohol	157.56 (150.28)		
Cannabis	130.58 (164.63)	-26.98 [-81.56 – 135.53]	1.00
Alcohol	157.56 (150.28)		

S2. Comparisons between substances in EDI's factor 2

Substance	Mean (<i>SD</i>)	ΔM [95% <i>IC</i>]	Sig
Magic mushrooms	241.66 (166.72)		
DMT	329.74 (158.87)	-88.08 [-162.13 – -14.04]	.006*
Magic mushrooms	241.66 (166.72)		
LSD	179.08 (147.17)	62.58 [12.15 – 113.01]	.004*
Magic mushrooms	241.66 (166.72)		
MDMA	123.17 (133.72)	118.49 [47.68 – 189.30]	< .001*
Magic mushrooms	241.66 (166.72)		
Cocaine	99.50 (122.31)	142.16 [25.95 – 258.37]	.004*
Magic mushrooms	241.66 (166.72)		
Cannabis	88.70 (118.14)	152.96 [76.36 – 229.56]	< .001*
Magic mushrooms	241.66 (166.72)		
Alcohol	54.10 (89.22)	187.56 [120.63 – 254.50]	< .001*
DMT	329.74 (158.87)		
LSD	179.08 (147.17)	150.66 [77.58 – 223.75]	< .001*
DMT	329.74 (158.87)		
MDMA	123.17 (133.72)	206.57 [118.19 – 294.96]	< .001*
DMT	329.74 (158.87)		
Cocaine	99.50 (122.31)	230.24 [102.56 – 357.93]	< .001*
DMT	329.74 (158.87)		
Cannabis	88.70 (118.14)	241.05 [147.96 – 334.14]	< .001*
DMT	329.74 (158.87)		
Alcohol	54.10 (89.22)	275.65 [190.33 – 360.96]	< .001*
LSD	179.08 (147.17)		
MDMA	123.17 (133.72)	55.91 [-13.89 – 125.72]	.311
LSD	179.08 (147.17)		
Cocaine	99.50 (122.31)	79.58 [-36.02 – 195.18]	.757
LSD	179.08 (147.17)		
Cannabis	88.70 (118.14)	90.38 [14.71 – 166.06]	.006*
LSD	179.08 (147.17)		
Alcohol	54.10 (89.22)	124.98 [59.11 – 190.86]	< .001*
MDMA	123.17 (133.72)		
Cocaine	99.50 (122.31)	23.67 [-102.16 – 149.50]	> .999

MDMA	123.17 (133.72)	34.47 [-56.07 – 125.01]	> .999
Cannabis	88.70 (118.14)		
MDMA	123.17 (133.72)	69.07 [-13.45 – 151.60]	.229
Alcohol	54.10 (89.22)		
Cocaine	99.50 (122.31)	10.80 [-118.38 – 139.98]	> .999
Cannabis	88.70 (118.14)		
Cocaine	99.50 (122.31)	45.40 [-78.29 – 169.10]	> .999
Alcohol	54.10 (89.22)		
Cannabis	88.70 (118.14)	34.60 [-52.94 – 122.15]	> .999
Alcohol	54.10 (89.22)		

S3. Comparisons between substances in EDI's factor 3

Substance	Mean (<i>SD</i>)	ΔM [95% <i>IC</i>]	Sig
Magic mushrooms	38.41 (53.55)		
DMT	31.06 (48.00)	7.34 [-23.14 – 37.84]	> .999
Magic mushrooms	38.41 (53.55)		
LSD	55.09 (61.37)	-16.67 [-37.47 – 4.13]	.309
Magic mushrooms	38.41 (53.55)		
MDMA	70.77 (79.74)	-32.36 [-61.52 – -3.20]	.016*
Magic mushrooms	38.41 (53.55)		
Cocaine	102.69 (83.54)	-64.27 [-112.13 – -16.41]	.001*
Magic mushrooms	38.41 (53.55)		
Cannabis	24.58 (46.30)	13.83 [-17.72 – 45.38]	> .999
Magic mushrooms	38.41 (53.55)		
Alcohol	38.81 (56.45)	-.39 [-27.96 – 27.18]	> .999
DMT	31.06 (48.00)		
LSD	55.09 (61.37)	-24.02 [-54.14 – 6.10]	.320
DMT	31.06 (48.00)		
MDMA	70.77 (79.74)	-39.71 [-76.11 – -3.31]	.019*
DMT	31.06 (48.00)		
Cocaine	102.69 (83.54)	-71.62 [-124.21 – -19.04]	< .001*
DMT	31.06 (48.00)		
Cannabis	24.58 (46.30)	6.48 [-31.86 – 44.82]	> .999
DMT	31.06 (48.00)		
Alcohol	38.81 (56.45)	-7.74 [-42.88 – 27.40]	> .999
LSD	55.09 (61.37)		
MDMA	70.77 (79.74)	-15.69 [-44.46 – 13.08]	> .999
LSD	55.09 (61.37)		
Cocaine	102.69 (83.54)	-47.60 [-95.22 – .02]	.050*
LSD	55.09 (61.37)		
		30.50 [-.68 – 61.69]	.062

Cannabis	24.58 (46.30)		
LSD	55.09 (61.37)	16.28 [-10.87 – 43.44]	> .999
Alcohol	38.81 (56.45)		
MDMA	70.77 (79.74)	-31.91 [-83.74 – 19.91]	> .999
Cocaine	102.69 (83.54)		
MDMA	70.77 (79.74)	46.19 [8.90 – 83.48]	.004*
Cannabis	24.58 (46.30)		
MDMA	70.77 (79.74)	31.97 [-2.02 – 65.95]	.089
Alcohol	38.81 (56.45)		
Cocaine	102.69 (83.54)	78.11 [24.90 – 131.31]	< .001*
Cannabis	24.58 (46.30)		
Cocaine	102.69 (83.54)	63.88 [12.94 – 114.83]	.003*
Alcohol	38.81 (56.45)		
Cannabis	24.58 (46.30)	-14.22 [-50.28 – 21.83]	> .999
Alcohol	38.81 (56.45)		

S4. Brazilian version of EDI with instructions

INVENTÁRIO DE DISSOLUÇÃO DO EGO**Instruções:**

Por favor, pense em uma experiência marcante que você teve com a substância e avalie a intensidade em que cada afirmação se aplica para a experiência em questão.

Abaixo de cada afirmação tem uma linha com as extremidades "**Não** mais que usualmente" e "**Sim**, experienciei isso completamente/inteiramente". A linha é utilizada para marcar as alterações em relação ao seu estado normal. Seu estado normal corresponde à marca na extremidade esquerda da escala, isto é "Não mais que usualmente".

Apenas marque no extremo da escala se isso **verdadeiramente** for o caso.

Itens

1. Experienciei uma dissolução do meu "Eu" ou ego.
2. Eu me senti particularmente assertivo.
3. Eu me senti um com o universo.
4. Eu me senti mais importante ou especial do que os outros.
5. Eu senti união com os outros.
6. Eu senti meu "eu" inflado.
7. Eu experienciei uma diminuição no meu sentido de auto importância.
8. Eu me senti particularmente certo de mim mesmo.
9. Eu experienciei uma desintegração do meu "Eu" ou ego.
10. Eu me senti especialmente motivado e competitivo.
11. Eu me senti muito menos absorvido com minhas próprias questões e preocupações.
12. Eu senti como se o meu ponto de vista valesse mais do que o de outras pessoas.
13. Perdi toda a sensação de ego.
14. Eu me senti particularmente autoconfiante.
15. Toda noção de eu e identidade se dissolveu.
16. Eu me senti particularmente seguro.