

# PSYCHOMETRIC PROPERTIES OF SPANISH VERSION OF MYSTICAL EXPERIENCE QUESTIONNAIRE AND WELLBEING MEASURES

## PROPIEDADES PSICOMÉTRICAS DE LA VERSIÓN EN ESPAÑOL DEL CUESTIONARIO DE EXPERIENCIAS MÍSTICAS Y MEDIDAS DE BIENESTAR

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### ABSTRACT

Recent research into psychedelics has found them to be an effective treatment for disorders related to depression, anxiety, and post-traumatic stress disorder. Mystical experiences have proven to mediate the therapeutic effects for outcomes; however, Spanish measures have not been studied thoroughly. In this study we explored the psychometric properties of the Mystical Experience Questionnaire (MEQ), Acceptance and Action Questionnaire-II (AAQ-II), and VanderWeele's Flourishing Measure in a Spanish-speaking sample in Puerto Rico. The MEQ is a 30-item questionnaire that measures the degree of a mystical experience. A total of 235 participants took part in a survey where they answered the MEQ and other well-being questionnaires concerning past or future psychedelic use. For psychometric analysis, 207 participant answers were used for Exploratory Factor Analysis (EFA) and internal consistency. EFA revealed a three-factor structure explaining 65.46% of the variance and displayed high internal consistency for each scale (whole scale McDonald's  $\omega_i = .98$ ) of the MEQ. Furthermore, other well-being scales also displayed high internal consistency. The Spanish translation of the MEQ and other well-being scales demonstrated to be appropriate measures for the assessment of mystical experiences, psychological flexibility, and flourishing in a Spanish-speaking sample with and without the use of psychedelics.

**KEYWORDS:** Psychedelics, mystical experience, psychometry, well-being.

### RESUMEN

Investigaciones recientes con psicodélicos han demostrado que son tratamientos efectivos para trastornos como la depresión, la ansiedad y el trastorno de estrés post-traumático. Las experiencias místicas median los efectos terapéuticos para los resultados en tratamiento; sin embargo, los instrumentos traducidos al español no han sido estudiados a fondo. En este estudio exploramos las propiedades psicométricas del Cuestionario de Experiencia Mística (MEQ), el Cuestionario de Aceptación y Acción-II (AAQ-II) y la Medida de Florecimiento de VanderWeele en una muestra de habla hispana en Puerto Rico. El MEQ se compone por 30 ítems que miden el grado de una experiencia mística. Un total de 235 personas participaron en una encuesta donde respondieron el MEQ y otros cuestionarios de bienestar y hábitos relacionados con el uso de psicodélico (pasado o futuro). Para el análisis psicométrico, utilizamos 207 respuestas. El análisis factorial exploratorio reveló una estructura de tres factores que explicaron el 65.46% de la varianza y mostró una alta consistencia interna para cada una de las escalas ( $\omega_i$  de McDonald de escala completa = .98). La traducción al español del MEQ y las otras escalas de bienestar demostraron ser medidas apropiadas para la evaluación de experiencias místicas, flexibilidad psicológica y florecimiento.

**PALABRAS CLAVE:** Psicodélicos, experiencias místicas, psicometría, bienestar.

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Psychedelics have been used for thousands of years by humans across the globe, but the earliest scientific work on psychedelics is attributed to Dr. Arthur Heffter in 1898. He isolated the major alkaloids from the peyote cactus and independently administered them until he identified mescaline as the psychoactive component. In 1943, LSD's psychoactive properties were accidentally discovered by Dr. Albert Hofmann, while working on developing ergot derivatives that might have therapeutic utility. He is also attributed to the identification of psilocybin during other scientific studies of South American intoxicating plants (Nichols & Nichols, 2021). During the 1950s and 1960s, physicians, psychiatrists, and psychologists were very actively involved in the study of psychoactive molecules like LSD, psilocybin, and 3,4-methylenedioxymethamphetamine (MDMA, a party drug, also known as ecstasy) because of their ability to intensify and restructure inner experience (Passie, 2021).

Clinical research with psychedelics began in the mid-20<sup>th</sup> century. The initial focus on research with these substances was based on a psychotomimetic model that posed that these psychedelics could aid in inducing psychotic-like states. Following this, the mysticomimetic model proposed that these drugs could generate experiences of the transcendent or mystical type. Later on, clinical studies focused on disorders related to depression, anxiety, neuroticism, and obsessive compulsion (Bossis, 2021).

A recent publication by Carhart-Harris and colleagues (2021) showed that in their phase 2 double-blind and randomized controlled trial comparing the established treatment for depression and psilocybin-assisted psychotherapy, there were no significant differences in antidepressant effects between psilocybin and escitalopram. Nonetheless, secondary outcomes generally favored psilocybin over escitalopram. In an attempt to study the acute and persisting effects of psilocybin, Griffiths and colleagues (2006; 2008) designed a double-blind study comparing psilocybin (30mg/ 70kg) and methylphenidate hydrochloride

(40mg/70kg). Psilocybin produced a range of acute perceptual changes, subjective experiences, and labile moods, including anxiety, but showed an increased measure of mystical experience. At the two-month follow-up, the participants rated the psilocybin experience as having an important personal meaning and spiritual significance and attributed sustained positive changes in attitudes and behavior to the experience. At 14 months of follow-up, most participants considered this experience as one of the most personally meaningful and spiritually significant of their lives. Moreover, 64% of participants reported that this experience moderately or very much increased their sense of well-being or life satisfaction, while no participant described the contrary. These findings were again replicated in another study by Griffiths and colleagues (2011). More recently, in a study using a single dose of psilocybin to treat cancer-related anxiety and depression in cancer patients, Ross and colleagues (2016) found that in conjunction with psychotherapy, a single moderate dose (0.3 mg/kg) of psilocybin produced rapid, robust, and enduring anxiolytic and antidepressant effects. At the 6.5-month follow-up, approximately a third of the participants continued with clinically significant reductions in depression or anxiety, sustained benefits in existential distress and quality of life, as well as improved attitudes towards death. They reported that the mystical experience produced by psilocybin mediated the therapeutic effect of the psychedelic on anxiety and depression.

#### Mystical Experiences

Mystical experiences have been shared between religious traditions across humanity's history. Descriptions of these experiences from multiple sources share common themes, suggesting a core experience that underlies different religions and cultures. In his work, Stace (1960) used nine characteristics for these experiences; internal unity (i.e., unitary consciousness), external unity (i.e., a sense of unity with all the surrounding environment), nontemporal and nonspatial quality (i.e., the

feeling of infinite time and space, not bound by a usual perception of time and space), inner subjectivity (i.e., sensing of life or a living presence within all), objectivity and reality (i.e., noetic quality, a feeling that the experience was a source of objective truth), sacredness (i.e., experimenting the divine or holy), deeply felt peace and joy, paradoxicality (i.e., the need to use illogical or contradictory statements to describe the experience), and ineffability (i.e., being unable to describe the experience through the use of ordinary language).

The Mystical Experience Questionnaire (MEQ) is a self-report measure for the evaluation of single mystical experiences occasioned by psychedelics. The MEQ is based on Stace's conceptual framework and covers most of the dimensions of classic mystical experience: unity, transcendence of time and space, noetic quality, sacredness, positive mood, and ineffability (MacLean et al., 2012). Its scores have proven, at the time of a psilocybin session, to predict ratings of personal meaning, spiritual significance, personal well-being, life satisfaction, and positive behavior change in the short term (Griffiths et al., 2011) and long-term (Griffiths et al., 2008).

MacLean and colleagues (2012) performed a two-part study to assess the factor structure of the MEQ and its psychometric properties. Through a web-based survey, they first conducted an exploratory factor analysis (EFA) of the 43 items. In the second part, they conducted a confirmatory factor analysis (CFA) to verify the structure found in the first sample. Through a promax rotated factor loading calculation, they found a four-factor structure with 30 items, deleting 13 items due to low primary factor loading, poor discrimination, and high unique variance. This four-factor model explained 57% of the variance in each item. Factors included dimensions of internal unity, external unity, noetic quality, and sacredness. Cronbach's alpha reliability indicated excellent internal consistency for the new 30-item MEQ,  $\alpha=.933$ , and good internal consistency for the four provisional subscales (Factor 1=.926; Factor 2=.831, Factor 3=.810, Factor 4=.800).

In the second part of the study, the 4-factor model showed a better fit than the other models proposed. This model explained 64% of the variance and alpha reliability demonstrated excellent internal consistency ( $\alpha=.957$ ), as well as good internal consistency for all four subscales (Factor 1= .946, Factor 2= .831, Factor 3=.887, Factor 4= .864). Items corresponding to each factor are as follows, Factor 1: 35, 41, 54, 77, 83, 12, 14, 47, 74, 9, 22, 69, 36, 55, 73; Factor 2: 5, 18, 30, 43, 80, 87; Factor 3: 2, 15, 29, 34, 48, 65; Factor 4: 6, 23, 86. Item order corresponds to the item number within the complete 100-item questionnaire.

Barrett and colleagues (2015) replicated the reliability of the factor structure of the MEQ30 that MacLean and colleagues (2012) had found, using pooled validated data ( $n=184$ ) from five experimental psilocybin studies using CFA and external validity using structural equation modeling. Findings indicated that the previous four-factor MEQ30 model found by MacLean et al. (2012) demonstrated acceptable model fit ( $CFI>0.90$ ,  $SRMR<0.09$ ), while others did not (Hood and Stace, three-factor models). Reliability for the MEQ30 model showed excellent reliability, as calculated using Cronbach's alpha ( $\alpha_{\text{mystical}}=.97$ ,  $\alpha_{\text{positive mood}}=.92$ ,  $\alpha_{\text{trans.time/space}}=.86$ ,  $\alpha_{\text{ineffability}}=.90$ ). In 2016, Bouso et al. (2016) explored the psychometric properties of MEQ, with ayahuasca practitioners in various parts of Spain ( $n=158$ ). In their study, they translated the MEQ into Spanish using the principles of back translation and focusing on conceptual rather than linguistic equivalence. Their results obtained suggested that MacLean and colleagues (2011) tetrafactorial model could not be identified within the sample. After performing an EFA, a two-factor model emerged. Factor analysis for the bifactorial model showed that it explained 59.11% of the variance and estimated reliability of  $\alpha=.94$  for the complete scale. The researchers explained that differences in factor structure could have been because of the difference in sample size, differences in the conditions in which the questionnaire was answered (anonymous retrospective via internet vs. clinical setting vs. natural condition after experience), inherent

subjective differences of the experiences between psilocybin and ayahuasca, and the cultural differences between the samples.

More recently, Davis and colleagues (2023) translated into Spanish and tested the psychometric properties of some of the most used measures that assessed acute psychedelic effects. These measures were the Psychological Insight Questionnaire (PIQ), the Challenging Experiences Questionnaire (CEQ), and the MEQ. They performed a web-based survey that was answered by 442 people (Latin-American=62%; Hispanic= 91.4%) and assessed the acute and enduring effects of a previous experience with LSD (58.4%) or Psilocybin (41.6%). Confirmatory factor analysis revealed a good fit for the measures and four factors for the MEQ. It demonstrated that the Spanish versions of the measures could be reliably used in studies of psychedelic use within a Spanish-speaking population.

For this study, we seek to analyze the psychometric properties, including the factor structure of the MEQ and other measures of well-being in Puerto Rico. To our knowledge, this will be the third time this questionnaire's

psychometry is calculated in the Spanish language and the first time to be done so with a Latin-American sample in the Caribbean.

## METHOD

### Study Design

This study follows a cross-sectional descriptive design with quantitative techniques of psychometric character. The study design is aimed to collect data at one point in time from a sample in a predetermined population and provide basic information about prevalence and distribution (Franckel & Wallen, 2009). Data collection is aimed at analyzing the psychometric properties of the Spanish-version MEQ30.

### Participants

A total of 235 participants answered the study thoroughly (49.06 % completion rate). 60% of participants answered were female, 75% had an education past a high school diploma, and 74% had previously taken psychedelics before answering the study. More detailed demographic information is presented in Table 1.

TABLE 1.  
Demographics.

Variable	<i>n</i>
Participants that completed study	235
Age	
21 – 83	Mean=32.96, SD=9.94
Gender	
Female	182
Male	99
Non-binary	14
Other	2
Do not wish to respond	4
Education	
High School diploma	37
Associate Degree	30
Bachelors	121
Masters	68
Doctorate	22
Other	14
Do not wish to respond	9
Previous psychedelic use	
Yes	205
No	71
Do not wish to respond	2
Planned psychedelic use next 6 monts	
Yes	40
No	28
Do not wish to respond	3

## Measures

**Sociodemographic Questionnaire.** In the first section of the survey, participants were asked to answer basic demographic information: age, gender, education, and nationality, among others. In addition, fifteen (15) personality items were taken from the International Personality Item Pool.

**Psychedelic Practice Questions.** The second section of the survey probed and divided participants between those who had used psychedelics in the past and those who intended to use psychedelics in the next six months. Participants who had used psychedelics in the past had five additional questions concerning age of first use, approximate number of experiences, frequency, status of use, and motivation for continued use. Both groups were asked what psychedelics they had or planned to use, who, and where they had the experience and motivation. A secondary segment inquired about preparation, intention setting, integration and whether they thought psychedelics had helped them.

**Choosing an Experience for the MEQ.** Participants were instructed to think of their most significant experience with psychedelics and to select them from a list provided. Those who had responded that they had not used psychedelics in the past were instructed to think of a single most important experience in their lives and answer accordingly.

**MEQ30.** The revised 30-item MEQ is a self-report measure used to assess the acute mystical-type experience via a 6-point Likert scale and grouped into four subscales: Mystical Positive Mood, Transcendence of Time and Space, and Ineffability. These have displayed excellent reliability ( $\alpha = .97$ ,  $\alpha = .92$ ,  $\alpha = .86$ ,  $\alpha = .90$ , respectively) in recent studies within controlled psilocybin studies (Barrett et al., 2015). The translation into Spanish by Bouso et al. (2016a) was used in this study. This version produced a two-factor solution with a reliability of 0.95 and 0.92, respectively. The first factor corresponded to the subscales of Mystical, and Positive Mood, excepting items 14, and items 5 and 80 of MacLean and

colleagues (2012), and the second corresponded to transcendence of time and space, and Ineffability, plus the aforementioned items. No validation study in Puerto Rico for this measure was found at the time of this study.

**VanderWeele's Flourishing Measure.** The Flourishing Measure is a 10 item self-report measure comprised of five central domains: Happiness and Life Satisfaction, Mental and Physical Health, Meaning and Purpose, Character and Virtue, and Close Social Relationships. The Secure Flourish measure also includes two additional items on financial and material stability. Both have obtained good reliability,  $\alpha = .82$  and  $\alpha = .76$ , respectively, with a Spanish-speaking sample ( $n = 2500$ ) from Mexico (Węziak-Białowska et al., 2019). At the time of this study, the authors did not find any existing validation study for this instrument in Puerto Rico, nor did the author of this questionnaire report any.

**AAQ-II.** The Spanish version of the Acceptance and Action Questionnaire-II is a 7-item measure used to assess avoidance and psychological acceptance on a 7-point Likert scale. Reliability ( $\alpha = .91$ ) for the Spanish version has proven to be as good as the original English version. At the time of this study, the authors found no existing validation study for this instrument in Puerto Rico.

## Procedures

Participants of the study were recruited primarily through social media. A link and QR code to the survey was posted on specialized Facebook groups and Instagram stories and accounts that attract individuals interested in psychedelics. Information regarding the study was also shared by word of mouth and online networking. The participants' anonymity in the study was clearly stated in all of the posts. Participants were required to confirm that (a) they lived in Puerto Rico; (b) were 21 or older; (c) had taken any psychedelic in the past or intended to take some psychedelic in the next 6 months. During recruitment (June 2022 – August 2022), 236 people answered the study and 192 (81%) had completed the study. On

July 2022, inclusion criteria of psychedelic use were waived to add variability to the sample. Participants who answered “no” or “do not wish to respond” to probing questions (c) were led directly to answer the study questionnaires. This procedure was approved by the Institutional Review Board of Albizu University.

#### Statistical Analysis

All the statistical analyses were carried out using IBM SPSS Version 25. Factor structure for measures was calculated using an exploratory factor analysis (EFA). Unweighted least square method with factor extraction and oblique (direct oblimin) method for rotation of the component matrix, retaining factor loads greater than 0.40 in the rotated matrix. Internal consistency was calculated using McDonald's Omega, considering values of 0.70 and greater as acceptable. Convergent validity was analyzed based on Pearson's correlation between MEQ scores and scores on scales corresponding to different well-established measures related to wellbeing.

## RESULTS

### MEQ

An unweighted least square extraction was conducted on the 30 items with oblique rotation (direct oblimin), resulting in a three-factor extraction. Kaiser-Meyer-Olkin (KMO) verified the sampling adequacy for the analysis,  $KMO=.96$  (“marvelous” according to Kaiser & Rice, 1974), and all KMO values for individual items were greater than .92, which is well above the acceptable limit of .5 (Kaiser & Rice, 1974). A parallel analysis was performed to assess the number of factors to retain; 95<sup>th</sup> percentile scores became higher than observed values in the sample after the third eigenvalue, supporting the three-factor structure obtained by the extraction. The cumulative variance explained after extraction by the three factors was 65.46%. Table 2 shows the factor loadings after rotation. The items that cluster on the same factor suggest that factor 1 represents Mystical, factor 2 Ineffability, and factor 3 Positive Mood. Whole

scale reliability analysis demonstrated excellent reliability,  $\omega_t=.98$ . A second analysis forcing a four-factor structure was performed based on previous observed factor loading in the English version. Item 1 loaded on more than one factor and item clusters were not as congruent as the previous solution.

### AAQ-II

Unweighted least square extraction was conducted on the 7 items with oblique rotation (direct oblimin); this produced a one-factor structure. KMO verified the sampling adequacy for the analysis,  $KMO=.90$ , and all KMO values for individual items were greater than 0.85. The parallel analysis supported a single-factor structure, as values observed were smaller than 95<sup>th</sup> percentile after the first eigenvalue. Cumulative variance explained after extraction by the single factor was 64.2%. Whole scale reliability analysis demonstrated excellent reliability,  $\omega_t=.93$ .

### Flourishing and secure flourishing index

Unweighted least square extraction was conducted on the 10-items corresponding to the flourishing measure with oblique rotation (direct oblimin), this analysis produced a three-factor solution. Kaiser-Meyer-Olkin verified the sampling adequacy for the analysis,  $KMO=0.85$  (“meritorious” according to Kaiser & Rice, 1974), and all KMO values for individual items were greater than 0.75. Cumulative variance explained after extraction by three factors was 62%. Items one to six were loaded onto the first factor, item 7 loaded onto factor two, and items 9 and 10 were loaded onto the third factor. Item 8 did not reach the retention value. Parallel analysis suggested a four-factor structure. A second extraction analysis was conducted, forcing a four-factor structure for the 10 items. The cumulative variance increased to 68%. Items one, two, and four loaded onto the first factor, items five and six loaded onto the fourth factor, item 7 loaded to factor two, and items 9 and 10 loaded onto the third factor. Items three and 8 did not reach retention value. Whole scale reliability analysis demonstrated excellent reliability,  $\omega_t=.87$ .

TABLE 2.  
Factor Loading for Exploratory Analysis of the Final Version of the Mystical Experience Questionnaire using Oblimin Rotation (n=207).

Item #	3 Factor			4 Factor			
	Mystical	Ineffability	Positive Mood	Mystical	2	3	4
4	<b>0.55</b>	0.20	0.10	<b>0.53</b>	.0002	.04	-0.29
5	<b>0.58</b>	0.31	-.09	<b>0.50</b>	0.37	0.03	-0.03
6	<b>0.61</b>	0.19	0.08	<b>0.52</b>	0.22	0.18	-0.04
9	<b>0.69</b>	0.09	0.02	<b>0.67</b>	-0.04	-0.05	-0.23
13	<b>0.55</b>	0.39	-0.22	<b>0.50</b>	0.42	-0.12	-0.08
14	<b>0.86</b>	-0.03	0.11	<b>0.76</b>	0.04	0.18	0.002
15	<b>0.87</b>	-0.04	0.06	<b>0.78</b>	-0.004	0.10	-0.04
16	<b>1.03</b>	-0.12	-0.05	<b>0.96</b>	-0.04	-0.01	-0.004
18	<b>0.71</b>	0.07	0.20	<b>0.61</b>	0.07	0.27	-0.06
19	<b>0.60</b>	0.25	-0.01	<b>0.51</b>	0.33	0.13	-0.007
20	<b>0.71</b>	0.04	0.19	<b>0.64</b>	-0.03	0.20	-0.14
21	<b>0.65</b>	0.05	0.14	<b>0.56</b>	0.08	0.21	-0.02
22	<b>0.59</b>	0.30	0.04	<b>0.48</b>	0.37	0.19	-0.01
23	<b>0.77</b>	-0.002	-0.06	<b>0.77</b>	-0.09	-0.13	-0.17
24	<b>0.89</b>	-0.11	0.08	<b>0.80</b>	-0.03	0.13	0.02
25	<b>0.70</b>	0.04	0.21	<b>0.62</b>	-0.03	0.22	-0.13
26	<b>0.91</b>	-0.07	0.07	<b>0.81</b>	0.04	0.12	0.04
27	<b>0.48</b>	0.17	-0.20	<b>0.45</b>	0.27	-0.12	0.03
28	<b>0.92</b>	-0.06	-0.07	<b>0.84</b>	0.01	0.01	-0.004
1	-0.02	<b>0.90</b>	-0.07	0	<b>0.58</b>	-0.06	<b>-0.45</b>
2	-0.014	<b>0.67</b>	0.22	-0.04	-0.007	<b>0.86</b>	-0.12
3	0.04	<b>0.61</b>	0.30	-0.002	0.194	0.10	<b>-0.60</b>
7	0.21	<b>0.70</b>	-0.13	0.32	0.04	0.02	<b>-0.50</b>
10	0.19	<b>0.58</b>	0.21	0.02	-0.003	0.10	<b>-0.81</b>
11	0.02	<b>0.76</b>	-0.09	-0.07	<b>0.75</b>	0.08	<b>-0.15</b>
29	0.32	<b>0.41</b>	0.15	0.19	0.09	0.05	<b>-0.66</b>
8	0.36	0.07	<b>0.47</b>	0.13	<b>0.72</b>	0.05	-0.11
12	0.30	-0.04	<b>0.60</b>	0.27	-0.05	<b>0.49</b>	-0.13
17	0.27	0.29	<b>0.43</b>	0.14	-0.04	<b>0.72</b>	0.02
30	0.12	0.14	<b>0.76</b>	0.13	0.25	<b>0.58</b>	-0.07

TABLE 3.  
Trifactorial Solution Obtained.

Item #	Mystical	Ineffability	Positive Mood	Theoretical factor (MacLean et al., 2012)	Theoretical factor (Bouso et al., 2016)
4	<b>0.55</b>	0.20	0.10	1	2
5	<b>0.58</b>	0.31	-.09	1	1
6	<b>0.61</b>	0.19	0.08	1	2
9	<b>0.69</b>	0.09	0.02	1	1
13	<b>0.55</b>	0.39	-0.22	3	2
14	<b>0.86</b>	-0.03	0.11	1	1
15	<b>0.87</b>	-0.04	0.06	1	1
16	<b>1.03</b>	-0.12	-0.05	1	1
18	<b>0.71</b>	0.07	0.20	1	1
19	<b>0.60</b>	0.25	-0.01	3	2
20	<b>0.71</b>	0.04	0.19	1	1
21	<b>0.65</b>	0.05	0.14	1	1
22	<b>0.59</b>	0.30	0.04	3	2
23	<b>0.77</b>	-0.002	-0.06	1	1
24	<b>0.89</b>	-0.11	0.08	1	1
25	<b>0.70</b>	0.04	0.21	1	1
26	<b>0.91</b>	-0.07	0.07	1	1
27	<b>0.48</b>	0.17	-0.20	2	2
28	<b>0.92</b>	-0.06	-0.07	1	1
1	-0.02	<b>0.90</b>	-0.07	3	2
2	-0.014	<b>0.67</b>	0.22	2	2
3	0.04	<b>0.61</b>	0.30	4	2
7	0.21	<b>0.70</b>	-0.13	3	2
10	0.19	<b>0.58</b>	0.21	4	2

Item #	Mystical	Ineffability	Positive Mood	Theoretical factor (MacLean et al., 2012)	Theoretical factor (Bouso et al., 2016)
11	0.02	<b>0.76</b>	-0.09	3	2
29	0.32	<b>0.41</b>	0.15	4	2
8	0.36	0.07	<b>0.47</b>	2	1
12	0.30	-0.04	<b>0.60</b>	2	1
17	0.27	0.29	<b>0.43</b>	2	1
30	0.12	0.14	<b>0.76</b>	2	1

TABLE 4.  
Bivariate Correlation Between MEQ and its Subscales with AAQ and FI.

Scale/Subscale	1	2	3	4	5	6
1. Mystical	1					
2. Ineffability	.789**	1				
3. Positive mood	.731**	.566**	1			
4. MEQ	.985**	.865**	.781**	1		
5. AAQ	-.159*	-.024	-.079	-.128	1	
6. Flourishing	.318**	.161*	.200**	.288**	-.631**	1

Note. MEQ (n=212); AAQ (n=205); Flourishing (n=210); \*\* p<.01; \*p=.05

Convergent and divergent validity. Bivariate correlation analysis using Pearson’s coefficient was performed between the MEQ and its subscales, the AAQ, and the Flourishing Index for convergent and divergent validity. Table 4 shows a high correlation between subscales and the MEQ, supporting construct validity. A significant positive correlation between MEQ and the

Flourishing Index supports convergent validity. A significant, albeit weak, negative correlation was found between the Mystical subscale and AAQ, while a correlation with MEQ was found not to be significant. There was a significant high negative correlation found between the Flourishing Index and AAQ scale, indicating a high divergence between these two scales.

TABLE 5.  
Reliability, Standard Error, and Descriptive Statistics of the Final Version of the Mystical Experience Questionnaire and its Sub-scales.

Scale/Subscale	Items	Omega	SE	M	SD	CI 95%
MEQ	30	.98	2.67	90.83	38.86	[85.79, 95.91]
Mystical	19	.97	1.87	55.43	27.16	[51.75, 59.19]
Ineffability	7	.91	0.63	21.55	9.18	[20.35, 22.77]
Positive Mood	4	.87	0.36	13.85	5.30	[13.12, 14.51]

Note. n=212; SE= Standard Error, M= Mean; SD= Standard Deviation; CI= Confidence Intervals

DISCUSSION

In this current investigation, we assessed the psychometric properties of the Spanish version of the Mystical Experience Questionnaire (MEQ) and other wellbeing scales in a Latin-American sample living in Puerto Rico. Overall, the present measures demonstrated appropriate psychometric properties for use in research that includes a Spanish-speaking population.

Initial analysis produced a three-factor structure for the MEQ rather than the expected four factor structure the English

version has consistently produced (Barrett et al., 2015; Davis et al., 2023; MacLean et al., 2012). When evaluating the obtained variable loading, all loaded parsimoniously with a single factor. Upon review, the ineffability and transcendence of time and space factors seemed to converge into a single factor. A possible way to understand this is that the transcendence of time and space often leads to ineffability because the profound, boundary-defying nature of these experiences challenges conventional linguistic expression. This convergence of factors could also be attributed to variations in the processing and perception of experiences stemming from



differences in language, culture, and contextual influences in Puerto Rico. This grouping was also observed by Bouso and colleagues (2016) in their two-factor solution with a Spanish-speaking population in Spain. Nonetheless, items 13, 19, and 22 differed in their loading from Barrett and colleagues (2015) solution, all originally from the transcendence of time and space to the mystical factor.

For the Flourishing measure, factor loading seemed surprising considering studies like Węziak-Białowska and colleagues (2019) observed loading according to theoretical understanding. When evaluating whether to eliminate item 8, McDonald's Omega would only slightly increase .004 to .881. Theoretical value was prioritized over statistical significance, and this item referenced the ability to postpone happiness for the future. VanderWeele (2017) proposes this item as part of the dimension of Character and Virtue. The authors believe this item could also represent psychological flexibility, as both items in this domain could be interpreted as referring to how the person faces difficult or everyday circumstances requiring this flexibility. This could be supported, although not entirely, by the negative association between the Flourishing Index and the AAQ.

#### Strengths, Limitations, and Future Recommendations

This study stands as a pioneering effort, marking the first exploration of psychedelic users in Puerto Rico through the examination of the psychometric properties of the Mystical Experience questionnaire. By focusing on a population primarily underrepresented in existing research, the study contributes to visualizing different healing modalities within the Puerto Rican community on the island. The exploration of the MEQ's psychometric properties, in parallel with Davis and colleagues (2023) study, further enhances this investigation's credibility and sets a precedent for future researchers on the island.

When interpreting the present results, one should be conscious of the study's retrospect-

tive nature and that answers rely on the participant's ability to remember a particular experience accurately. Other factors to consider include the sample size and the nature of the variability of the participants. Thus, findings reflect the answers of the sample and are not generalizable to the population.

To build on these findings, future studies may look to further assess the relationship between the variables of mystical experiences, life satisfaction, relationship satisfaction, and psychological flexibility. Building a model to examine the role and level of influence that psychedelic use, psychological flexibility, and mystical experiences may have on flourishing. Furthermore, it is crucial for the future the detailed analysis of this sample's descriptives, providing visibility into the unique characteristics and nuances of the Puerto Rican population under study. This approach may facilitate a more accurate and informed understanding of people who use psychedelics, steering away from speculative assumptions. Supporting professionals in feeling prepared when engaging with individuals who may have had challenging experiences or are seeking to integrate their psychedelic experience.

#### Conclusion

The findings of the present study bear significant implications within the context of contemporary psychedelic research and the broader landscape of a positive psychology approach, such as flourishing. As the resurgence of interest in psychedelic assisted therapy continues, along with the expansion in the range of treatment options involving these substances, it is crucial that appropriate and reliable psychological measures are made available for all different kinds of populations. In particular, the inclusion of the Latin-American population, with a specific focus on Puerto Ricans from Puerto Rico, contributes to the broader dialogue on mental health and well-being within this community. This study not only contributes to the generalizability of psychedelic research outcomes but also underscores the importance of cultural sensitivity and inclusivity in mental health

research. By acknowledging and incorporating the unique perspectives and experiences of the Latin-American population, specifically those from Puerto Rico, the study paves the way for a more comprehensive understanding of the potential impacts of psychedelic experiences on mental health and well-being in diverse cultural contexts. This inclusive approach aligns with the evolving paradigm of mental health research, emphasizing the need for culturally informed and equitable research in the context of the resurgence of psychedelic assisted therapy.

The present study looked to analyze the psychometric properties of one of the most used scales in assessing the subjective effects of psychedelics and other measures of well-being. The MEQ 30 has shown to have appropriate psychometric properties for measuring mystical experiences in the Spanish-speaking population in Puerto Rico, and so did the AAQ and Flourishing index scales.

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**Approval from the Institutional Review Board for Human Research:** The study protocol was approved by the Institutional Review Board for Human Subject Protection of Albizu University the 16th of June, 2022 with the protocol number SP22-47.

**Informed Consent/Assent:** The authors confirm that each participant gave their consent by selecting 'continue' on the informed consent page at the beginning of the study.

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