

ORIGINAL ARTICLE

The mind possessed: well-being, personality, and cognitive characteristics of individuals regularly experiencing religious possession

Roma Delmonte,¹ Miguel Farias,¹  Marco Aurélio V. Bastos Júnior,²  Leandro Madeira,¹ Beatriz Sonogo¹

¹Brain, Belief and Behaviour Lab, Centre for Trust, Peace and Social Relations, Coventry University, Coventry, England. ²Faculdade de Medicina, Universidade Federal de Mato Grosso do Sul, Campo Grande, MS, Brazil.

Objective: To further our understanding of religious possession experiences by focusing on personality, cognitive, and quality of life outcomes.

Methods: Data collection was undertaken at Umbanda sessions in Brazilian cities. Participants were mediums who regularly experienced possession (n=334) or those who attended the same rituals but had never been possessed (n=54).

Results: We found that mediums were not significantly different across variables from the control group, except for anxiety, which was lower among mediums. Correlational and regression analysis showed that the level of meaningfulness attributed to possession and fusion with the spiritual entity were strongly positively correlated with most quality-of-life dimensions, and negatively with anxiety; in addition, level of meaningfulness predicted lower anxiety, and psychological quality of life was predicted by level of fusion and meaningfulness. Contrary to expectations, there were no detrimental effects of a lower level of bodily control over the possession experience.

Conclusion: Together, these results suggest that individuals regularly experiencing possession within a religious context are psychologically similar to those who attend the same rituals without experiencing possession, and that the way they appraise their experiences as meaningful, as well as the level of spiritual fusion, are predictors of well-being.

Keywords: Quality of life; anxiety; dissociative identity disorder

Introduction

Possession is often perceived in a negative light. To be possessed means to be out of control or, within some religions, to have an entity of a malignant nature taking control of one's body and actions. For the modern mind, possession is frightening because it is associated with a discontinuity in identity/personality, and alterations in consciousness and behavior.¹ Nevertheless, possession experiences are widely reported across cultures,² and those possessed are often regarded as a positive channel for various spiritual agents, such as deceased humans (in Spiritism and Spiritualism), nature deities or godlike beings (in Afro-American religions), or the Holy Spirit (in Evangelical Pentecostal churches and the Charismatic renewal movement of Roman Catholicism).

Brazilian religious rituals where possession occurs are usually traced back to enslaved African populations brought from Nigeria, Guinea, and other countries. Current estimates based on the 2010 census and other

studies, including the 2014 World Values Survey, indicate that between 2.3% and 4.2% of the Brazilian population is affiliated with a religion which involves possession,³ though the number of people attending them is potentially much larger. Within Candomblé, one can indeed trace the names of the spiritual entities (*orixás*) to Nigeria.⁴ But there are other, more obscure references, particularly in relation to Brazilian indigenous influences, which cannot be ascertained, though there is no doubt that trance states stimulated via music and dance are present in these cultures.

The type of possession beliefs one finds in Umbanda, which originated in Brazil in the early 20th century, probably owes less to indigenous Brazilian culture than to African and European religions, particularly Roman Catholicism and French Spiritism.⁵ The types of spiritual entities found in Umbanda include the Nigerian *orixás*, but also a wide variety of "archetypal" figures such as gypsies, cow herders, sailors, and *caboclos* (indigenous Brazilians).

Correspondence: Miguel Farias, Brain, Belief and Behaviour Lab, Centre for Trust, Peace and Social Relations, Coventry University, Cheetah Rd, Coventry CV1 2TL, United Kingdom.
E-mail: miguel.farias@coventry.ac.uk
Submitted Dec 14 2021, accepted Mar 09 2022, Epub Jul 15 2022.

How to cite this article: Delmonte R, Farias M, Bastos Jr MAV, Madeira L, Sonogo B. The mind possessed: well-being, personality, and cognitive characteristics of individuals regularly experiencing religious possession. *Braz J Psychiatry*. 2022;44:486-494. <http://doi.org/10.47626/1516-4446-2021-2414>

Clinical studies of possession

Psychological and clinical studies of possession have helped to stigmatize rather than understand this phenomenon. In Brazil, for example, for the greater part of the 20th century, possession was classified either as pathology or as a religious phenomenon of the lower classes.⁶ In Europe, Oesterreich's⁷ book on possession equally highlighted this as a phenomenon of the "lower races" or of the "lower strata" of modern civilizations, which to him was explained by a primitive unstable personality particularly prone to autosuggestion.

The scholarly understanding of possession started changing largely due to anthropological and sociological work that pointed out the near universality of possession experiences and their social functions, such as resolving power imbalances for women and marginalized individuals.⁸ Winkelman's⁹ large-scale analysis of possession and societal complexity undermined the idea that possession was more salient in very simple, "primitive" societies by showing that the cultural incidence of possession is positively associated with complex social-political organization and higher population density.

On par with these changes, the recent clinical literature has moderated its earlier pathologizing of possession in various ways. Studies of Spiritist mediums showed that, despite a high prevalence of dissociative and psychotic-like experiences, these were along the healthy continuum of unusual experiences and not indicative of mental disorders.^{10,11} Another study, which compared Brazilian Spiritist mediums versus Canadian and U.S. patients with dissociative identity disorder, found that the mediums had better social adjustment and a lower prevalence of mental disorders than the clinical sample.¹²

Recent literature from other countries, such as Turkey and the Dominican Republic, show a more nuanced set of results, suggesting that individuals who experience possession are more likely to have a range of dissociative symptoms.^{13,14}

Other interesting evidence that is now emerging suggests that the quality of the possession experience develops over time, often moving from an involuntary and uncontrollable state to a voluntary one in which the possessed individual willingly loses self-awareness.^{15,16} Although this remains controversial, some researchers have claimed that religious training on how to manage possession states is associated with better control and integration of these experiences in one's life,¹¹ and that individuals experiencing unusual or anomalous states of mind may be drawn to possession religions as a way of coping with and cognitively framing these life experiences.¹⁷

Possession is currently included under the category of dissociative identity disorder.¹⁸ For possession to be diagnosed as pathological, it must not be a normal or broadly accepted cultural or religious practice (criterion D) and must cause significant distress (criterion C). This seems to imply that possession experiences happening within a religious context would be generally healthy, and those happening outside of a religious context would be unhealthy. However, reality is far more nuanced. We have recently criticized these criteria based on the case study

of a religious leader from an Afro-Brazilian religion (Umbanda), who began having possession experiences early in life, but these were not accepted by her Catholic family and caused her considerable distress.¹⁹ Although she reports – at the individual level – a positive affect associated with these early experiences, family disapproval was stigmatizing and led her to actively repress all phenomena associated with possession until early adulthood.

Although the literature exploring religious possession is varied and growing fast, there are various gaps. For example, there has been scarce examination of the non-clinical cognitive dimensions of possession experiences, such as the perceptual overlap between the spiritual agent and the individual self, the level of meaningfulness of these experiences, or their underlying mechanisms. On the methodological level, we find that studies of possession in Afro-American religions, with one exception,¹⁴ either lack a control group or use control groups taken from a general or a clinical population. Our study sought to advance the current literature by assessing cognitive features of the possession experience and including a control group of participants who partake in the same ritual as the mediums.

Aims of the present study

In order to advance this literature, this study addresses two related questions: 1) Are the psychological characteristics and well-being of individuals experiencing religious possession significantly different from those attending the same religious rituals, but not experiencing possession? 2) Are there particular characteristics of the possession experience (frequency, time length, self-control, fusion with spiritual entity, meaningfulness) which allow to differentiate between positive and negative mental health outcomes?

The first question aims to understand how different (or similar) individuals experiencing possession are from those participating in the same religious rituals. Clinical studies usually employ a control group, which is as similar as possible to the experimental one, based on random allocation to either the experimental or control conditions. Given the specific characteristics of our target group – the ability to experience possession states – the ideal control group should share the same religious context and be as similar as possible regarding demographic background but lack the possession experience.

The second question addresses key variables which potentially shape the positive/negative outcomes of possession experiences. Frequency and length are potentially associated with positive outcomes, as longer and more regular practice suggests that it becomes assimilated into everyday life. Likewise, we would expect a sense of meaning associated with the possession experience to be associated with more positive outcomes overall. On the other hand, lack of personal control over the possession experience is potentially a source of distress and has been found to correlate with poor mental health.^{10,11} Finally, concerning the level of fusion with the spiritual entity – from perceiving the self and the spiritual

entity as separate to completely fused – we have no particular hypothesis, as this has not been tested before.

Methods

Procedure

Data were collected between January and March 2019 via printed questionnaires in Portuguese at 11 religious sessions in the urban regions of two large cities in Brazil (Porto Alegre and São Paulo). All participants were of Brazilian nationality and signed a consent form agreeing to take part in the current study.

Religious sessions typically lasted between 2 and 3 hours. Possessed individuals were usually addressed as mediums, and they were the first to arrive so they could dress appropriately – usually in white, but there was some variation according to the religious calendar and the temple. All sessions were accompanied by live singing, percussion, and dancing (except one where the space was particularly narrow, the mediums were seated throughout, and the music being played was recorded). All sessions started with a short prayer, often the Christian Lord's Prayer. None of the sessions included the use of psychoactive substances, though occasionally the mediums, while possessed, would smoke or drink an alcoholic beverage (this was interpreted as the spirit's behavior, not the medium's). Some time after the percussion and singing started, the mediums showed a pattern of behaviors signaling that they had been possessed. These usually involved jerking movements of the head and upper body, yelling, as well as specific gestures mimicking actions associated with certain spiritual entities, such as bending a bow and firing arrows. Following this, there was a brief interaction between the mediums and the other individuals conducting the ritual; this usually entailed a blessing from the mediums or a reverent action such as kneeling or prostrating at the feet of the medium. Then, participants from the audience were asked to approach the mediums and were led, one at a time, to talk to or receive a blessing from the possessed medium.

Data analysis

Data were analyzed using SPSS version 27. Statistical significance was set at $p < 0.05$. To address our first research question, we used a multivariate analysis of variance with a between-subjects design to contrast mediums with participants of the same religious sessions who never experienced possession and were there for devotional purposes and/or to seek a blessing or healing from the spiritual entities. To address our second research question, where we sought to understand the characteristics of the possession experience and their relationship with positive/negative outcomes, we ran bivariate correlations and hierarchical regression analyses.

Participants

The sample consisted of 420 participants. Of these, 32 filled in less than 25% of the survey and were excluded,

which left a total of 388 participants (mean age = 39.08 years, standard deviation = 17.9 years, range 18-74 years, 69% women). There were 334 mediums (mean age = 38.54 years, SD = 12.6 years, 70% women) and 54 control participants (mean age = 42.56 years, SD = 14.3 years, 59% women). The group of mediums was slightly younger than the control group ($F[1, 385] = 4.38, p = 0.011$). There was no significant difference in the distribution of gender between groups (chi-square = 2.9, degrees of freedom [df] = 1, $p = 0.089$).

Power calculation

We ran a power analysis based on a previous study²⁰ that compared personality traits between patients with schizophrenia spectrum disorder and nonpsychotic individuals. This study was chosen because individuals experiencing possession have been described as having psychotic-like characteristics and, in addition, we were not able to find any controlled study assessing personality traits of individuals experiencing possession. This study's between-group differences in seven personality scales (Swedish Universities Scales of Personality [SSP]) had a mean effect size of $F = 29.2$, which converts to a d of 1.1. Using G*Power, set for the t test family, two-tailed, assuming an alpha of 0.05, 1-Beta = 0.95, an effect size of $d = 1.1$ and an allocation rate of 1:1, the minimum sample size needed to detect a difference was calculated as 23 participants in each group. To compensate for possible dropouts or very incomplete surveys, we adopted a target sample size of 50 participants per group. Moreover, as the present report concerns part of a comprehensive research project on individuals experiencing possession, more individuals were recruited for the "possession group," for a final allocation rate of circa 6:1 ($n=334$ and $n=54$). Using G*Power, in the t test family, two-tailed, assuming an alpha of 0.05, 1-Beta = 0.95, an effect size of $d = 1.1$ and an allocation rate of 6:1, the minimum total sample size needed to detect a difference was calculated to be 81 participants in the possession group and 13 participants in the control group, indicating that our study is adequately powered.

Measures

Questionnaire materials included various standardized personality and well-being measures, one cognitive task, and items designed to collect demographic data. In addition, the group of mediums was asked about frequency, length, and characteristics of their possession experiences. Below we describe the measures, giving examples of scale items as well as internal reliability values (Cronbach's α) for the current sample.

Personality

Schizotypy is a particularly relevant personality trait in relation to possession, as it differentiates between so called "happy schizotypes," who are mentally healthy despite scoring high on the dimension of unusual experiences,²¹ and those individuals scoring higher on

dimensions related to cognitive disorganization, impulsive nonconformity, or social anhedonia, who are more prone to developing psychosis. To measure this trait, we included a Portuguese version of the O-LIFE-R, which consists of 40 items,²² and has been previously used with Brazilian religious samples.²³

Examples of items include: unusual experiences ($\alpha = 0.72$) – When in the dark do you often see shapes and forms even though there is nothing there?; impulsive nonconformity ($\alpha = 0.66$) – Do you ever have the urge to break or smash things?; introvertive anhedonia ($\alpha = 0.52$) – Are there very few things that you have ever enjoyed doing?; and cognitive disorganization ($\alpha = 0.77$) – Do you often have difficulties in controlling your thoughts?

We were also interested in assessing predisposition towards hallucinatory experiences, as possession experience often features auditory phenomena (hearing voices) that may be understood as hallucinations. We used the revised version of the Launay-Slade Hallucination Scale (LSHS)²⁴ with 12 items ($\alpha = 0.81$). Example of items are: I often hear a voice speaking my thoughts aloud; On occasions, I have seen a person's face in front of me when no-one was in fact there.

For both personality scales, participants were asked to say whether they had experienced any of the phenomena described in the items (yes or no rating).

Well-being

We assessed well-being in two ways. First, we used the World Health Organization Quality of Life instrument-Abbreviated version (WHOQOL-Bref), which assesses physical, psychological, social, and environmental dimensions.²⁵ The scale consists of 26 items rated on a five-point scale. Examples of items are: How satisfied are you with your sleep? (physical health, $\alpha = 0.76$); How satisfied are you with yourself? (psychological, $\alpha = 0.78$); How satisfied are with the support you get from your friends? (social relationships, $\alpha = 0.75$); How satisfied are you with the condition of your living place? (environment, $\alpha = 0.71$).

Second, we measured trait anxiety²⁶ in order to assess the underlying levels of anxiety in this population. The scale consists of 20 items assessed on a four-point rating scale ($\alpha = 0.86$). Items include: I am tense; I feel strained; I feel frightened.

Cognition

A potential process involved in possession experiences is that of “cognitive looseness”. This is characterized by a propensity to tap more easily than usual into unconscious processes. A consequence of this, which some cognitive tasks assess, is the ability to make close associations between random events,²⁷ or seeing patterns and meaning in random noise – there is evidence that individuals more prone to spiritual experiences and beliefs have such cognitive propensity, while this is not found in traditionally religious individuals.²¹

We chose 12 items from the Snowy Pictures stimuli, a cognitive task that can be used outside of the lab to assess the propensity to perceive patterns in visual noise, thus testing “cognitive looseness” propensity.^{28,29} The 12 pictures consisted of seven images embedded in visual noise (e.g., boat, horse, tent) and four pictures which only contained visual noise. A wrong response, or a “false positive,” occurred when a participant indicated that there was an embedded object when there was none (scored as 0 – none – or 1 – false positive).

Demographic data

We assessed age and gender.

Characteristics of possession experiences

For the mediums group only, we asked about frequency and length of possession experiences. We measured frequency by asking how often they were possessed by a spiritual agent, assessed on a seven-point rating scale (every day, more than once per week, once per week, once per month, a few times per year, once per year, rarely); for length, we calculated how long they had had this experience in years (current age minus age of first experience). In addition, we asked how much control they had over their bodies during the possession experience (rated as no control at all, a little control, partial control, total control); how personally meaningful they felt the possession experience to be, rated from “not at all” (0) to “extremely” (10); and the level of fusion with the spiritual entity, rated on a seven diagram scale with two circles representing the self or the spirit and showing increasing levels of overlap.³⁰

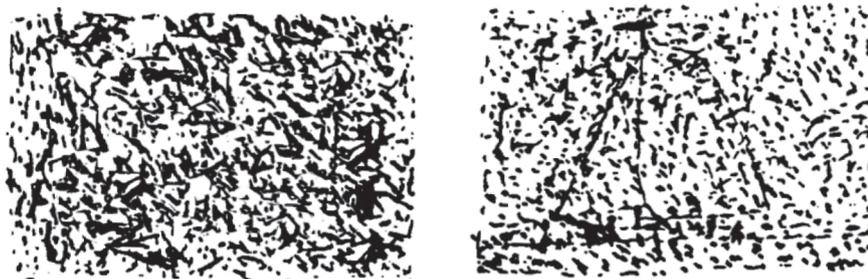


Figure 1 Two images from the Snowy Pictures cognitive task. The left one has only noise; the right one includes an embedded boat.

Ethics statement

This study received ethics approval by the Coventry University ethics committee (Project ID P45635). Permission was granted from the religious leaders to visit their temples. Participants were told in advance that researchers would be visiting them on a certain date. All interested in taking part were asked to be at the religious temple 45 minutes in advance to fill in a questionnaire.

Results

We started by looking at the results contrasting both groups. Table 1 shows the means and SD for all variables.

Group comparisons

To assess how different or similar the mediums were from non-mediums taking part in the same rituals, we compared the results for both groups across all variables. Age was included as a covariate in all group comparison analyses due to the significant age difference between groups. We carried out two between-subjects (with mediums vs. non-mediums as the independent variable) multivariate analyses of variance for the subscales of schizotypy and of quality of life (QoL). For the subscales of schizotypy, there was no significant difference between groups (Pillai's trace = 0.29, $F[4, 316] = 2.31$, $p = 0.06$, $\eta_p^2 = 0.03$). For the subscales of QoL we equally found no difference between groups (Pillai's trace = 0.01, $F[4, 349] = 1.15$, $p = 0.33$, $\eta_p^2 = 0.13$).

We then proceeded to carry out three separate between-subjects analyses of variance (with mediums vs. non-mediums as the independent variable) for the individual scales of hallucinatory experiences, anxiety, and the Snowy Pictures task. For hallucinatory experiences we found no differences between groups ($F[1, 354] = 0.70$, $p = 0.40$, $\eta_p^2 = 0.002$). For anxiety, we found that the non-mediums group had a significantly higher score than the mediums ($F[1, 320] = 9.88$, $p = 0.02$, $\eta_p^2 = 0.03$), though the effect size was small. Finally, we found no significant differences between groups on the cognitive task ($F[1, 383] = 0.31$, $p = 0.57$, $\eta_p^2 = 0.001$).

Overall, we found no differences between groups, except for anxiety, where the non-mediums showed higher scores.

Analysis for the mediums group

Our second question addresses variables which potentially shape the positive/negative outcomes of possession experiences, such as frequency and length of possession, meaningfulness of the experience, lack of control over the experience, and the level of perceived fusion with the spiritual entity. Bivariate correlations were computed for these variables and all the other variables assessed, including age and gender.

We found that the more frequently mediums experience possession, the higher the level of meaningfulness and of spiritual fusion reported; possession frequency was also correlated with physical and social QoL, and negatively associated with introvertive anhedonia. Given the social context of the possession rituals, mediums frequently engage with others, which helps explain the positive association with social QoL and the negative one with anhedonia.

Possession length of experience was measured in years, and ranged from 0 to 67. We only found that it was positively correlated with age, and negatively associated with cognitive disorganization and impulsive nonconformity. Concerning the bodily control one has while being possessed, we found this to be negatively associated with level of meaningfulness and fusion with the spirit, i.e., the more control one has over one's body while experiencing possession, the lower the level of meaningfulness and spiritual fusion. We also found bodily control to be negatively associated with unusual experiences and hallucinatory experiences, suggesting that the more in control one is, the less one experiences non-ordinary perceptions.

The last two variables assessing the characteristics of mediums were meaningfulness of the possession experience and fusion with the spiritual agent; these variables were correlated at a moderately strong degree ($r = 0.37$). We found that level of meaningfulness was positively associated with all dimensions of QoL, except environmental QoL, and negatively associated with anxiety, cognitive disorganization, and introvertive anhedonia. Finally, we found that fusion was positively associated

Table 1 Means and standard deviations (in parentheses) on all variables for mediums (n=334) and participants in the same religious session who were not mediums (n=54)

Variables	Mediums	Non-mediums
Unusual experiences	5.70 (2.82)	5.40 (2.80)
Cognitive disorganization	4.05 (2.92)	4.73 (3.09)
Introvertive anhedonia	2.00 (1.62)	2.28 (1.87)
Impulsive nonconformity	2.73 (2.12)	2.65 (2.11)
Hallucinatory experiences	5.79 (3.36)	5.21 (3.27)
QoL physical	27.66 (4.10)	26.46 (4.67)
QoL psychological	23.37 (3.67)	22.71 (3.75)
QoL social relations	11.47 (2.47)	10.94 (2.52)
QoL environmental	28.22 (5.30)	28.09 (5.01)
Anxiety	31.43 (7.76)	34.92 (10.31)
Snowy Pictures	1.10 (1.47)	1.27 (2.07)

QoL = quality of life.

with all dimensions of QoL, as well as with unusual experiences and hallucinatory experiences; and was negatively associated with cognitive disorganization, introvertive anhedonia, and age.

Table 2 also shows the construct validity of our outcome measures. All dimensions of QoL were moderately to strongly negatively correlated with anxiety and all schizotypy subscales (though the correlation was weaker with the unusual experiences subscale). The cognitive task was positively correlated with unusual experiences and hallucinatory experiences, suggesting that it did measure a propensity to perceiving meaningful patterns in visual noise, despite failing to correlate significantly with any of the variables assessing the characteristics of possession experience. Likewise, anxiety was moderately to strongly negatively correlated with all dimensions of QoL. Overall, these results show that the measures are adequately assessing the constructs.

Hierarchical regression analysis for the mediums

We further tried to tease apart the potentially positive and negative mental health outcomes associated with characteristics of mediums by conducting three hierarchical regression analyses. First, we focused on the only hypothesized negative predictor: lack of control over the possession experience. We reverse-scored this variable to use it as a dependent variable. Age was entered in the first step to control for this variable; for the second step, we entered the schizotypy subscales; for the third step, we entered the hallucination experiences and the cognitive task; we entered anxiety in the fourth step; and, finally, we entered the QoL dimensions. We found no significant models that predicted lack of control.

We then sought to analyze the contribution of medium characteristics to positive mental health outcomes. We started by entering anxiety as the dependent variable. We then entered age in the first step as a control variable; both frequency and length of possession experience in the second step; meaningfulness in the third step; and spiritual fusion in the fourth step (Table 3). Age was a negative predictor of anxiety at all steps (the older one is, the less anxious), possession frequency and experience did not add significantly to the model at any step; fusion negatively predicted anxiety on step 3 (the more spiritually fused, the lower the anxiety), but in the fourth and final step of the model, only age and meaningfulness remained significant negative predictors of anxiety (the more meaningful the possession experience, the lower the anxiety) (R^2 adjusted = 0.10, $F[1, 246] = 6.78$, $p < 0.001$).

We ran another multiple regression model with psychological QoL as the dependent variable, using the same four steps and variables in the same order (Table 4). As with the previous model, we found that age was a positive significant predictor of psychological QoL at all steps. In step 3, fusion with the spirit was equally a significant predictor, and remained, with age, the strongest predictor of psychological QoL. In addition, in step 4 we also found that meaningfulness was a positive predictor and length of possession experience a negative predictor of psychological QoL (R^2 adjusted = 0.16, $F[1, 276] = 11.38$,

Table 2 Pearson correlation coefficients between possession characteristics, scales, age, and gender within the mediums group (n=334)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Possession frequency	-																
2. Possession length	0.01	-															
3. Bodily control	-0.08	0.04	-														
4. Meaningfulness	0.35**	0.05	-0.12*	-													
5. Fusion	0.31**	-0.00	-0.22**	0.37**	-												
6. Unusual experiences	-0.01	0.02	-0.13*	0.05	0.17**	-											
7. Cognitive disorganization	-0.01	-0.17**	-0.14*	-0.13*	-0.13*	0.51**	-										
8. Introvertive anhedonia	-0.24**	0.01	-0.00	-0.23**	-0.21**	0.07	0.32**	-									
9. Impulsive nonconformity	0.09	-0.21**	-0.09	-0.06	0.001	0.42**	0.59**	0.31**	-								
10. Hallucinatory experiences	0.09	-0.00	-0.17**	0.10	0.13*	0.72**	0.45**	0.07	0.37**	-							
11. QoL physical	0.11*	-0.03	0.06	0.17**	0.17*	-0.15**	-0.41*	-0.30**	-0.34**	-0.16**	-						
12. QoL psychological	0.10	0.11	-0.07	0.26**	0.28**	-0.19**	-0.51**	-0.38**	-0.35**	-0.12*	0.61**	-					
13. QoL social relations	0.16**	-0.03	0.02	0.21**	0.25*	-0.21**	-0.35**	-0.35**	-0.25**	-0.11*	0.48**	0.63**	-				
14. QoL environmental	0.08	0.04	0.02	0.10	0.12*	-0.19**	-0.33**	-0.31**	-0.31**	-0.15**	0.51**	0.50**	0.48**	-			
15. Anxiety	-0.08	-0.10	-0.00	-0.32**	-0.14*	0.18**	0.35**	0.19**	0.24**	0.15**	-0.34**	-0.42**	-0.28**	-0.27**	-		
16. Snowy Pictures	-0.03	0.11	0.05	0.05	0.09	0.14*	-0.02	-0.08	0.04	0.15**	0.05	0.07	-0.05	0.05	-0.03	-	
17. Age	-0.08	0.69**	0.09	-0.06	-0.16**	-0.17*	-0.28**	-0.03	-0.35**	-0.10	0.03	0.21**	0.00	0.16**	-0.16**	0.08	-
18. Gender	-0.00	0.07	-0.04	-0.05	0.02	0.00	0.15**	-0.00	0.10	0.11*	-0.18**	-0.20**	-0.07	-0.09	0.09	-0.09	-0.04

QoL = quality of life.
* $p < 0.05$, ** $p < 0.001$.

Table 3 A hierarchical regression model predicting anxiety within the mediums group (n=247)

	Step 1		Step 2		Step 3		Step 4	
F(1, 246)	6.75*		2.54		3.34*		6.78**	
R ² adjusted	0.02		0.02		0.04		0.10	
	β	t	β	t	β	t	β	t
Predictor variable								
Age	-0.16	-2.60*	-0.18	-2.07*	-0.21	-2.47*	-0.21	2.58*
Possession frequency			-0.06	-0.94	-0.02	-0.24	0.02	0.31
Possession length			0.00	0.18	0.02	0.55	0.03	0.68
Fusion					-0.16	-2.36*	-0.05	-0.80
Meaningfulness							-.29	-4.42**

* p < 0.05, ** p < 0.001.

Table 4 A hierarchical regression model predicting psychological QoL within the mediums group (n=276)

	Step 1		Step 2		Step 3		Step 4	
F(1, 275)	14.53**		6.38*		11.83**		11.38**	
R ² adjusted	0.05		0.05		0.13		0.16	
	B	t	β	t	β	T	β	t
Predictor variable								
Age	0.22	3.81**	0.29	3.67**	3.54	4.67**	0.36	4.84*
Possession frequency			0.11	1.81	0.02	0.40	-0.02	0.40
Possession length			-0.09	-1.21	-0.14	-1.81	-0.14	-1.95*
Fusion					0.30	5.14**	0.25	4.17**
Meaningfulness							0.17	2.89*

QoL = quality of life.

* p < 0.05, ** p < 0.001.

p < 0.001). Given the very high correlation between age and length of possession experience ($r = 0.69$), we checked for collinearity: the variance inflation factor (VIF) statistics for age (1.86) and length of possession experience (1.83) suggest a high collinearity and, thus, the result in step 4 for length of possession experience is deemed unreliable.

Discussion

Using a range of measures, we tried to address two interrelated questions: first, the extent to which mediums who regularly experience possession differ from a control group of non-mediums who partake in the same ritual. We found that the medium group was no different from the control group across all measures, except for anxiety, where they scored lower than the control group. These are somewhat surprising results. We would at least have expected the medium group to score higher on a propensity to unusual experiences and hallucinations, as well as score higher in the cognitive task. If this had happened, we could have included this group of Umbanda mediums within the growing literature on spirituality and benevolent schizotypy.^{21,23,31} One potential reason for this lack of differences is that the control group, despite not experiencing possession, shares many of the psychological and cognitive features of mediums, as well as an interest in these rituals. Even so, we would expect the regular experience of being possessed to be

associated with significantly different mental health, personality and cognitive outcomes from those who have never had that experience.

Our second question focused on the specific characteristics of the medium group and whether we could use these to differentiate positive from negative mental health outcomes. We asked mediums about their level of bodily control during possession states and hypothesized that the less control they had, the worse their psychological outcomes. But we did not find that; instead, a greater sense of control was only associated with a lower propensity to experience unusual and hallucinatory states, and a lower level of meaningfulness and spiritual fusion. The regression analysis did not provide any further significant results. Tentatively, we may suggest that letting go of bodily control during possession states is a marker of greater trust in, and dedication, to the religious experience one is having (including the benevolence of the spirit and trust in the religious leader). In other words, the ability to let go of control – at least within a ritual Umbanda context – is likely to signal belief in the goodness of the possession experience and allows the medium to move deeper into it. This somehow contrasts with previous work that highlights the importance of learning to control one's experience of possession.¹¹

Concerning the other medium-related characteristics which we expected to lead to positive outcomes, this hypothesis was mostly confirmed. Meaningfulness and fusion with the spirit were consistently associated with all

quality-of-life dimensions (except environmental QoL for meaningfulness) and correlated negatively with anxiety. Of all the medium characteristics, only fusion was positively associated with the schizotypy dimension of unusual experiences and with hallucinatory predisposition. Although we did not find differences between groups for these variables, this result suggests that at least one part of the core experience of possession is shaped, to some degree, by these personality traits. In addition, the multiple regression analyses confirmed the important role of these two variables: when controlling for age, they predicted a lower level of anxiety (though in the final model only meaningfulness was a significant predictor), and both variables were positive predictors of psychological quality of life.

The results for frequency and length of possession experience were less consistent. Frequency was positively associated with physical and social quality of life, and negatively with introverted anhedonia, while length of experience was only associated (negatively) with the schizotypy dimensions of cognitive disorganization and impulsive non-conformity, but not with any dimensions of quality of life, nor anxiety. The regression analyses were not able to shed further light on the psychological role of these variables, but the negative correlations with those two schizotypy dimensions suggest that those who have experienced possession for longer have personality characteristics which are protective of mental health.

One of the limitations of this study was the lack of inclusion of other relevant mental health measures. We had originally planned to include depression and childhood trauma, as well as additional sociodemographic measures, but, after consultations with the Umbanda religious leaders who found many of the items of these scales too sensitive or personal, we decided to take them out. This was a carefully weighed decision: we wanted to obtain a moderately large sample of mediums, and if we had included those measures, we expected to have a much lower recruitment rate.

In conclusion, the results of this study suggest that individuals regularly experiencing possession within a religious context are psychologically very similar to others who never experienced the same phenomenon, and that the way they appraise their experiences as meaningful, as well as the level of spiritual fusion, are predictors of well-being. Contrary to expectations, lack of bodily control over the possession experience was not associated with negative outcomes.

These results must be framed within the Brazilian cultural context in which they occurred. Specifically, one must note that the religious beliefs of Umbanda and other Brazilian religions, such as Candomblé, understand that the spirits that “come down” to possess the mediums are benevolent and seek to heal and help the living. This cannot be generalized to other cultures where religious possession may be regarded as mischievous (*jinn* in Islamic cultures) or malignant (demons in Christian cultures). Sensitivity to the cultural context is key to moving away definitely from the dated psychiatric approach which merged together possession experiences with faith healing, mysticism, or charismatic leaders’

ability to hypnotize crowds³²; the ways in which we experience the “mind possessed,” as well as other forms of non-ordinary states of consciousness, deserves to be examined with multidimensional lenses that acknowledge the delicate interplay of physiological, psychological, and cultural factors.

Acknowledgements

We are grateful to participants from the following religious temples based in Porto Alegre and São Paulo, Brazil: Olhar Divino, Instituto Cultural Sete Ondas, Baba Meje e ABha Akin, Casa Igbo Majé, Casa Yalorixá Mãe Marlene de Oxum, Casa Pai Michael, Casa de Umbanda Zé Pelintra, Casa do Pai Rafael, Centro Pai Ogum da Lua, Centro Caboclo Pena Verde, and Centro Pai Dani de Xangô. We would like to thank Carlos de Almeida for assistance with data collection. This study was made possible through a grant from the BIAL Foundation (346/16). RD was supported by a doctoral scholarship from Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES).

Disclosure

The authors report no conflicts of interest.

References

- 1 Cohen E. The mind possessed: the cognition of spirit possession in an Afro-Brazilian religious tradition. New York, NY: Oxford University Press; 2007.
- 2 Bourguignon E. Religion, altered states of consciousness and social change. Columbus: Ohio State University Press; 1973.
- 3 Peres MF, de Oliveira AB, Leão FC, Vallada H, Moreira-Almeida A, Lucchetti G. Religious landscape in Brazil: comparing different representative nationwide approaches to obtain sensitive information in healthcare research. *SSM Popul Health*. 2018;6:85-90.
- 4 Souza AR. Encantaria Brasileira: o livro dos mestres, caboclos e encantados. Rio de Janeiro: Pallas; 2004.
- 5 Harding RE. Afro-Brazilian religions. In: Jones L, editor. *Encyclopedia of religion*. Vol. 1. 2nd ed. Farmington Hills, MI: Thomson Gale; 2005. p. 119-25.
- 6 Almeida AA, Oda AM, Dalgalarondo P. Brazilian psychiatrists' approaches on trance and possession phenomena. *Rev Psiquiatr Clin*. 2007;34:34-41.
- 7 Oesterreich TK. Possession, demoniacal and other, among primitive races, in antiquity, the middle ages, and modern times. New York: R.R Smith; 1930.
- 8 Lewis IM. Ecstatic religion: a study of shamanism and spirit possession. London: Routledge; 2005.
- 9 Winkelmann M. Trance states: a theoretical model and cross-cultural analysis. *Ethos*. 1986;14:174-203.
- 10 Moreira-Almeida A, Lotufo Neto F, Greyson B. Dissociative and psychotic experiences in Brazilian spiritist mediums. *Psychother Psychosom*. 2007;76:57-8.
- 11 Negro PJ Jr, Palladino-Negro P, Louzã MR. Do religious mediumship dissociative experiences conform to the sociocognitive theory of dissociation? *J Trauma Dissociation*. 2002;3:51-73.
- 12 Moreira-Almeida A, Lotufo Neto F, Cardeña E. Comparison of Brazilian spiritist mediumship and dissociative identity disorder. *J Nerv Ment Dis*. 2008;196:420-4.
- 13 Sar V, Alioğlu F, Akyüz G. Experiences of possession and paranormal phenomena among women in the general population: are they related to traumatic stress and dissociation? *J Trauma Dissociation*. 2014;15:303-18.
- 14 Schaffler Y, Cardeña E, Reijman S, Haluza D. Traumatic experience and somatoform dissociation among spirit possession practitioners in the Dominican Republic. *Cult Med Psychiatry*. 2016;40:74-99.

- 15 Mota CS, Trad LA. A gente vive pra cuidar da população: estratégias de cuidado e sentidos para a saúde, doença e cura em terreiros de candomblé. *Saude Soc.* 2011;20:325-37.
- 16 Zangari W. Uma leitura psicossocial do fenômeno de incorporação na Umbanda dissertation. São Paulo: USP; 2003.
- 17 Menezes A Jr, Alminhana L, Moreira-Almeida A. Sociodemographic and anomalous experiences profile in subjects with psychotic and dissociative experiences in religious groups. *Rev Psiq Clin.* 2012;39:203-7.
- 18 American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)*. Arlington: American Psychiatric Publishing; 2013.
- 19 Delmonte R, Lucchetti G, Moreira-Almeida A, Farias M. Can DSM 5 differentiate between non-pathological possession and dissociative identity disorder? A case study from an Afro-Brazilian religion. *J Trauma Dissociation.* 2016;17:322-37.
- 20 Fagerberg T, Söderman E, Gustavsson JP, Agartz I, Jönsson EG. Stability of personality traits over a five-year period in Swedish patients with schizophrenia spectrum disorder and non-psychotic individuals: a study using the Swedish universities scales of personality. *BMC Psychiatry.* 2018;18:54.
- 21 Farias M, Claridge G, Lalljee M. Personality and cognitive predictors of New Age practices and beliefs. *J Individ Differ.* 2005;39:979-89.
- 22 Mason O, Claridge G. The Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE): further description and extended norms. *Schizophr Res.* 2006;82:203-11.
- 23 Alminhana LO, Farias M, Claridge G, Cloninger CR, Moreira-Almeida A. Self-directedness predicts quality of life in individuals with psychotic experiences: a one-year follow up study. *Psychopathology.* 2017;50:239-45.
- 24 Morrison AP, Wells A, Nothard S. Cognitive factors in predisposition to auditory and visual hallucinations. *Br J Clin Psychol.* 2000;39:67-78.
- 25 Fleck MP, Louzada S, Xavier M, Chachamovich E, Vieira G, Santos L, et al. [Application of the Portuguese version of the abbreviated instrument of quality life WHOQOL-bref]. *Rev Saude Publica.* 2000;34:178-83.
- 26 Spielberger CD, Gorsuch RL, Lushene R, Vagg PR, Jacobs GA. *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press; 1983.
- 27 Brugger P, Regard M, Landis T, Cook N, Krebs D, Niederberger J. 'Meaningful' patterns in visual noise: effects of lateral stimulation and the observer's belief in ESP. *Psychopathology.* 1993;26:261-5.
- 28 Ekstrom RB, French JW, Harman HH, Dermen D. *Manual for kit of factor referenced cognitive tests*. Educational Testing Service: Princeton, NJ, 1976.
- 29 Whitson JA, Galinsky AD. Lacking control increases illusory pattern perception. *Science.* 2008;322:115-7.
- 31 Farias M, Underwood R, Claridge G. Unusual but sound minds: mental health indicators in modern spiritual individuals. *Br J Psychol.* 2012;104:364-81.
- 32 Sargant W. *The mind possessed: a physiology of possession, mysticism and faith healing*. London: Heinemann; 1973.