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Spiritual and Religious Interpretations of Psychotic-Like Experiences Are Associated with More Positive Perceived Life Impact

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Abstract

Experiences that resemble symptoms of psychosis or dissociation in clinical research do not necessarily impair daily functioning and may instead be interpreted within religious or spiritual frameworks. However, the extent to which such interpretations influence perceived life impact remains unclear. Distinguishing phenomenological experiences from their spiritual or religious interpretations, we examined 12 psychotic- and dissociative-like nonordinary experiences (N = 7368). Interpreting experiences as religious or spiritual was consistently associated with more positive perceived life impact. This association remained after controlling for experience frequency and religious affiliation. Individuals who were uncertain whether an experience was religious or spiritual did not differ from those who rejected such interpretations. Although effect sizes varied across experience types, associations were positive throughout. These findings suggest that religious and spiritual interpretations are associated with more positive appraisals of phenomenologically similar experiences and may help explain why comparable experiences are linked to markedly different perceived life consequences.

Introduction

Hallucinations, ego distortions, and delusions of control are often discussed as clinical syndromes within psychiatry research [1,2]. However, these phenomena are not exclusive to psychiatric disorders [3,4]. When focusing on their phenomenological characteristics, defined here as the raw subjective features of an experience (e.g., sensing a presence, hearing a voice) independent of explanatory frameworks, similar experiences have been documented across cultures and throughout history in religious, spiritual, and other non-clinical contexts [2,5–7]. This suggests that such states cannot be understood solely as expressions of psychopathology. Indeed, studies examining these subjective experiences across various conceptual frameworks consistently demonstrate that experiences with these phenomenological qualities of changed perceptions of the self, internal or external environment are relatively common within the general population [3,8–11]. Crucially, their experience does not inherently evoke distress or a clinical need for care [4,12].

When these phenomena are conceptualized within a continuum model of psychosis, similar experiences occurring in individuals without a psychotic disorder are often referred to as subclinical psychotic experiences or psychotic-like experiences (PLEs) [13]. Although the term itself encompasses a range of definitions and operationalizations, PLEs are experiences resembling symptoms or indicators of psychosis or schizotypal traits that nevertheless occur in otherwise healthy individuals [14]. An alternative approach to these experiences, proposed within the framework of nonordinary experiences (NOEs), shifts the focus from diagnostic categories to phenomenology, by examining unusual subjective experiences independently of the explanatory frameworks through which they are interpreted [15,16]. This distinction makes it possible to separate the characteristics of an experience from the meanings subsequently attributed to it and its consequences.

When examining the raw experiential features of these NOEs, their psychological consequences are remarkably heterogeneous: a recent systematic review found evidence linking these experiences not only to distress, impairment, and psychopathology, but also to heightened well-being, a deeper sense of meaning in life, personal growth, and positive psychological functioning [17]. This diversity of outcomes raises the central question of why do experiences sharing similar phenomenological features become sources of suffering for some individuals while being experienced as meaningful or transformative by others? From a phenomenological perspective, these divergent outcomes may reflect not only the experiences themselves but also the interpretive frameworks through which they are understood and integrated into people's lives [4,17–19].

Among these interpretive frameworks, religion and spirituality are particularly relevant because many NOEs occur within religious traditions and can be understood through culturally shared spiritual narratives [6,18,19]. Rather than viewing such experiences primarily as indicators of psychopathology, these frameworks may shape how experiences are noticed, described, communicated, evaluated, and ultimately incorporated into personal life narratives. Recent evidence also suggests that spirituality and religiosity can be closely intertwined with the course and recovery of psychosis, although most research has focused on individuals with clinical psychosis and on symptoms with explicitly religious content, with relatively little attention given to how spiritual interpretations of psychotic-like experiences in the general population relate to their perceived impact [20]. As Jarvis [21] argues, the expression of psychotic symptoms is not simply a fixed biological reality but emerges through a "negotiated space" between individual distress and the values, norms, and explanatory models of the surrounding culture. Consequently, experiences sharing phenomenological features with psychotic symptoms may be lived in fundamentally different ways depending on the cultural and religious context in which they occur [22].

Brazil provides a particularly informative context in which to examine these processes because of its exceptional religious diversity and the widespread coexistence of Christian traditions with mediumistic European, Afro-Brazilian and Indigenous religions [23–25]. Although most Brazilians identify with Christian denominations, religious practice is characterized by considerable pluralism, mobility, and syncretism, with beliefs and practices frequently crossing institutional boundaries [26,27]. Traditions such as Kardecist Spiritism, Umbanda, and Candomblé explicitly incorporate communication with spirits, mediumship, spirit possession, and related phenomena into their religious worldviews [28]. Moreover, beliefs in spirit communication and reincarnation extend well beyond formal adherents of these traditions, making spiritual explanations for unusual experiences widely available throughout Brazilian society [25,29]. This cultural context provides a unique opportunity to examine whether interpreting non ordinary psychotic-like experiences through a spiritual or religious framework is associated with their perceived life impact.

Building on these divergent paradigms, a critical empirical question emerges: does a spiritual framework serve as a protective buffer against the distressing outcomes that can be associated with psychotic-like experiences? This study directly addresses this question by adopting a bottom-up, phenomenological assessment of NOEs. To avoid the measurement conflations that have hindered prior research, we

separates the raw phenomenon from its subsequent cognitive appraisal through a two-stage evaluation [30,31]. Participants first reported the lifetime occurrence of specific NOEs using neutral descriptions, isolated from both psychopathological and spiritual terminology. Only afterward were they asked to evaluate whether they considered each experience to be spiritual or religious, along with its specific psychological and functional impact. Specifically, we investigate four primary research questions:

1. Do individuals who interpret non-ordinary experiences through a spiritual or religious lens report a significantly different life impact compared to those who do not?
2. Does this observed association between interpretation and life impact persist after controlling for the raw frequency of the experiences?
3. Does the protective or destabilizing effect of the interpretation remain robust when accounting for specific religious affiliations?
4. Does the relationship between spiritual interpretation and perceived life impact vary systematically across different types of NOEs (e.g., auditory anomalies versus ego distortions)?

Methods

Participants

Data were drawn from a Brazilian survey investigating nonordinary experiences (NOEs), religious affiliation, life impact and spiritual and religious interpretations of unusual experiences. Participants (N = 1506) were recruited from an online panel sample designed to approximate the general population according to the last census (www.netquest.com). Sample sociodemographic characteristics were summarized in Table 1. Participants completed self-report measures assessing the frequency of a wide range of NOEs, their perceived long-term impact, and whether they considered each experience spiritual or religious. The present analysis focused on a subset of the experiences, the ones with substantial phenomenological overlap with psychotic-like experiences. Participants were eligible if they were at least 18 years old, provided electronic informed consent, successfully passed all embedded attention checks, and completed the survey. Participants who did not provide informed consent or failed one or more attention checks were excluded from the analyses. The study protocol was reviewed and approved by the Ethics Research Committee of the D'Or Institute for Research and Education (CAAE: 79141724.9.0000.5249). All procedures were conducted in accordance with the ethical standards of the institutional research committee and with the 1964 Declaration of Helsinki. Written informed consent was obtained from all participants involved in the study.

Measures

Participants reported the frequency of 37 nonordinary experiences using the Inventory of Nonordinary Experiences (INOE) [30,32]. The present study focused on 12 experiences selected a priori because they closely resemble experiences commonly examined as psychotic-like experiences in the psychosis continuum literature while remaining sufficiently neutral to be described without invoking

psychopathological or spiritual interpretations. Experiences and their relevance can be seen in Table 2. Supplementary information on other experiences that are not the focus on the current paper is reported in the supplementary information.

Each participant was presented with a list of experiences and had to indicate whether they have had the experience or not. Experiences were reported via a frequency scale assessed on an ordinal scale ranging from (1) never to (6) more than ten times. For each experience endorsed, participants indicated whether they considered the experience spiritual or religious. Responses were coded as “Yes”, “No”, or “Don't know”. Participants evaluated the overall impact of each experience on their lives using a five-point scale ranging from (1) very negative to (5) very positive. Higher scores reflected more positive perceived impact.

These appraisal items were derived from the Inventory of Nonordinary Experiences (INOE) valided in the US and India as well as a Brazilian extension and validation [31]. Crucially, this inventory distinguishes phenomenological features of experiences from their interpretations. The inventory was validated via Response Process Evaluation (RPE), an iterative cognitive interviewing method designed to ensure that participants understood the intended meaning of each item before administration in large population samples [33]. In addition, separate data shows that the aggregated participants' life-impact ratings across all nonordinary experiences consistently correlated with measures of life satisfaction, loneliness, anxiety, and depression in the expected direction (Table S1).

Religious affiliation was assessed by asking participants, "What is your current religious affiliation?" Response options included Catholic, Evangelical, Jewish, Buddhist, Kardecist Spiritist, Umbanda, Candomblé, "I do not practice any religion, but I believe in a higher power" (spiritual but not religious), "I do not practice any religion and do not believe in a higher power" (neither religious nor spiritual), "I don't know", and "Other" (with an open-text option if not listed). For analysis, affiliations were recoded into seven categories: Catholic, Evangelical, Kardecist Spiritist, Afro-Brazilian religions (Umbanda and Candomblé), spiritual but not religious, neither religious nor spiritual, and Other. Jewish, Buddhist, "I don't know," and "Other" responses were combined into the Other category because of their low frequencies.

Data analysis

All analyses were conducted in R. The dataset was structured at the participant–experience level, such that each observation represents one participant's report of one of the 12 selected nonordinary experiences (N = 7368 experiences). Analyses include observations with available data on experience frequency, perceived life impact, and spiritual or religious interpretation.

A series of linear mixed-effects models were estimated using the lme4 package in R [34]. Models were estimated using restricted maximum likelihood. Spiritual or religious interpretation was treated as a three-level categorical predictor (no, don't know, and yes), with "no" as the reference category. Experience

frequency was treated as an ordinal numeric predictor. Religious affiliation had seven categories, and participants identifying as neither religious nor spiritual were treated as the reference group.

Four models were estimated sequentially. Models 1–3 included crossed random intercepts for participants and experience types to account for the non-independence of repeated experience reports within individuals and for differences across experience types. Model 1 examined whether perceived life impact differed according to spiritual or religious interpretation. Model 2 additionally included experience frequency to evaluate whether the association between interpretation and perceived life impact remained after accounting for how frequently the experience occurred. Model 3 adjusted for religious affiliation to examine whether the association between the interpretation of a specific experience and perceived life impact was independent of participants' broader religious or spiritual affiliation. Model 4 additionally included random slopes for spiritual or religious interpretation across experience types, allowing the association between interpretation and perceived life impact to vary across the 12 experiences. To describe variation in the association across specific experiences, we additionally estimated separate linear regression models within each experience type.

Results

For each experience type, we report the number of participant–experience observations, the mean and standard deviation of experience frequency and perceived life impact, and the proportion of experiences interpreted as spiritual or religious in Table S2. The full distributions of experience frequency, perceived life impact, and spiritual or religious interpretation across experience types are presented in Figures S1–S3, respectively.

Spiritual and Religious Interpretations and Life Impact

Across all psychotic-like experiences, participants who interpreted experiences as spiritual or religious reported substantially more positive life impacts than participants who did not. Endorsing a spiritual or religious interpretation was associated with a 0.65-point increase in perceived positive life impact ($b = 0.67$, $SE = 0.03$, $t = 20.13$, $p < .001$). Participants who were uncertain whether an experience was spiritual or religious did not differ from those who rejected a spiritual interpretation ($b = 0.01$, $SE = 0.03$, $t = 0.424$, $p = .671$). The fixed effects explained 7% of the variance in perceived life impact (marginal $R^2 = .070$; Table 3). See Fig. 1.

Note

Total observations were 3,198 for "Yes", 1,792 for "Don't know", and 2,378 for "No". Sample sizes refer to participant–experience observations rather than unique participants.

Does Experience Frequency Explain the Association?

More frequent experiences were associated with more positive perceived life impact ($b = 0.08$, $SE = 0.01$, $t = 8.51$, $p < .001$). However, the association between spiritual/religious interpretation and life impact

remained largely unchanged after accounting for experience frequency (b = 0.65, SE = 0.03, t = 19.63, p < .001), indicating that the relationship was not explained by how often experiences occurred. Including experience frequency increased the variance explained by the fixed effects only modestly (marginal R^2 = .079 vs. .070) relative to Model 1 (Table 3).

Does Religious Affiliation Explain the Association?

The association between spiritual/religious interpretation and life impact also remained after adjusting for religious affiliation (b = 0.65, SE = 0.03, t = 19.11, p < .001). Relative to participants who identified as neither religious nor spiritual, individuals affiliated with Afro-Brazilian religions (b = 0.22, SE = 0.13, t = 1.61, p = .106) and Kardecist Spiritism (b = 0.25, SE = 0.08, t = 2.97, p = .170) reported somewhat more positive life impacts, although effects were not statistically reliable. Adding religious affiliation increased the variance explained by the fixed effects only marginally (marginal R^2 = .087), even though the individual effects of religious affiliation did not individually produce statistically reliable effects (Table 3).

Variation Across Experience Types

Allowing the association between spiritual or religious interpretation and perceived life impact to vary across experience types, the average association remained positive (b = 0.60, SE = 0.09, t = 6.45, p < .001). The estimated standard deviation of the experience-specific random slopes was 0.30, indicating variation in the magnitude of this association across experience types. All model results are available in Table 3.

To characterize this variation across specific experiences, we conducted follow-up analyses using separate linear regression models for each experience type, adjusting for experience frequency. The adjusted contrast between experiences interpreted as spiritual or religious (“yes”) and those not interpreted as spiritual or religious (“no”) was extracted from each model. Because these 12 analyses constituted a family of experience-specific tests, p values were adjusted using the Holm procedure to control the family-wise error rate. Results can be seen in Fig. 2. Experience-specific estimates, standard errors, 95% confidence intervals, t statistics, exact p values, and Holm-adjusted p values are reported in Table S3.

Experience-specific estimates were positive across all 12 experiences, although their magnitude varied. The strongest associations were observed for experiences involving an altered sense of self, such as diminished sense of self and experiences of another self in the body. The weakest associations were observed for auditory experiences, unusual smells, visions, and tactile experiences. All experience-specific point estimates were positive, although their magnitude varied across experiences, and 11 remained statistically significant after Holm adjustment for multiple comparisons. To contextualize these findings, the same analyses were conducted for all other experiences included in the survey, which replicated the importance of spiritual or religious interpretation for positive life effects (Figure S4).

Note

Points represent unstandardized regression coefficients for the contrast between experiences interpreted as spiritual or religious (“Yes”) and those not interpreted as spiritual or religious (“No”), estimated separately for each experience type while adjusting for experience frequency. Error bars represent 95% confidence intervals.

Discussion

Among individuals reporting psychotic-like nonordinary experiences, those who interpreted their experiences as spiritual or religious reported substantially more perceived positive life impact than those who did not. This association remained robust after accounting for both experience frequency and religious affiliation and was considerably stronger than the association between experience frequency and life impact. Although the magnitude of the effect varied across experiences, the overall pattern was consistently positive. Religious affiliation significantly improved overall model fit, but the increase in explained variance was modest, suggesting that the meaning attributed to a specific experience is more informative than religious affiliation alone.

Notably, the association between spiritual interpretation and perceived life impact remained substantial and statistically reliable after accounting for religious affiliation. Affiliation effects were generally modest, and although including religious affiliation improved the explained variance parameters, the individual parameters of belonging to a specific religious denomination did not reliably increase the prediction of perceived life impact. These findings suggest that how individuals interpret a specific experience may be more informative than broader religious or spiritual identities in shaping its perceived consequences. In other words, belonging to a religious group appears less informative than how individuals understand and contextualize the particular experiences. Notably, participants affiliated with Kardecist Spiritism and Afro-Brazilian religions that actively cultivate and incorporate mediumship, spirit communication, possession, and other anomalous experiences into religious practice reported somewhat more positive life impacts than the reference group. These observations are in line with previous ethnographic and medical work [22,28,35], but overall the findings suggest that the person-specific subjective interpretations of these experiences as spiritual or religious are more salient for perceived life impact on health than official association with a religious tradition. Therefore, practitioners may want to explore the personal belief-systems instead of relying on religious affiliation per se, which is a salient identity marker in contemporary society, but might be misleading.

At the same time, our findings should not be interpreted as supporting a simple causal sequence in which unusual experiences occur first and are subsequently interpreted as spiritual or pathological. Rather, phenomenology and interpretation are likely to develop together. Cultural and religious frameworks shape expectations, language, available explanations, and social responses, influencing not only how experiences are understood but also how they are noticed, described, communicated, and incorporated into everyday life. For example, an individual raised in a Kardecist Spiritist context may experience a sensed presence very differently from someone raised in a strongly secular environment, not simply because they later assign different meanings to the event, but because these cultural

frameworks influence the experience from its earliest stages. Although phenomenology and interpretation are therefore deeply intertwined in lived experience, they need not be inseparable in empirical measurement. Analytically distinguishing the experience from its interpretation provides a valuable strategy for understanding why experiences sharing similar phenomenological features may nevertheless be associated with markedly different outcomes.

Why might spiritual interpretations be associated with more positive outcomes? Non-mutually exclusive mechanisms may account for the present findings. First, spiritual interpretations may increase perceived agency and predictability. Rather than representing an incomprehensible or threatening event, unusual experiences may become embedded within culturally shared explanatory systems that provide meaning, language, and expectations for how they should be understood and managed [4,21]. Consistent with this interpretation, previous work indicated that individuals who frame anomalous experiences spiritually report greater perceived control over those experiences, which in turn is associated with lower distress [18].

Second, these explanatory frameworks are often embedded within social and religious communities that provide resources for integrating unusual experiences into everyday life. Rather than merely changing beliefs about an experience, such communities offer opportunities to discuss experiences with others, receive validation, observe similar experiences in peers, and learn culturally accepted ways of responding to them [5,19,36]. Consistent with this interpretation, religious affiliations that showed a statistical trend with more positive perceived life impact in the present study were Kardecist Spiritism and Afro-Brazilian religions, traditions in which mediumship, spirit communication, and related experiences are explicitly incorporated into religious teachings and practices.

Finally, these mechanisms are likely to be shaped by broader cultural context. In pluralistic religious settings such as Brazil, where spiritual explanations for nonordinary or psychotic-like experiences are widespread and culturally legitimate, experiences sharing phenomenological features with psychotic symptoms may be interpreted as communication with spirits, mediumship, or other sacred processes rather than signs of illness. Likewise, greater participation in organizational religious activities has been associated with a higher frequency of perceptual abnormalities without necessarily indicating greater psychopathology [37], while distress associated with psychotic-like experiences appears to be greater in highly secularized contexts where alternative, non-pathological explanatory models are less available [12]. Together, these findings suggest that cultural frameworks may influence not only how unusual experiences are interpreted, but also how successfully they are integrated into people's lives.

One notable finding was that perceptual abnormalities showed weaker associations between spiritual interpretation and perceived life impact compared to changes in the perceptions of self-related processes. Among perceptual experiences, auditory experiences were not significant after controlling for multiple statistical tests. Interestingly, a recent review suggested that perceptual abnormalities generally show weaker associations with distress than alterations in thought processes and beliefs [38]. Although speculative, auditory experiences may nevertheless occupy a unique position within this group. Hearing

voices is widely regarded as one of the hallmark features of psychotic disorders in both psychiatric classification and public conceptions of psychosis [2], potentially making these experiences more likely to be interpreted within a pathological rather than a spiritual framework. Consistent with this possibility, auditory experiences showed the lowest average positive life impact and the smallest proportion of spiritual interpretations in the present study (Table S2). Future research should examine whether the comparatively weaker association observed for auditory experiences reflects differences in cultural expectations, perceived stigma, or other aspects of their interpretation.

The findings also have potential clinical implications. Research on psychotic-like experiences has traditionally focused on psychopathology and distress, whereas research on spirituality has often examined experiences already defined as spiritual or mystical. By separating the phenomenology of the experience from its interpretation, the present study suggests that understanding how individuals make sense of unusual experiences may be as important as documenting the experiences themselves. When individuals report psychotic-like experiences, clinicians may benefit from exploring the meanings attached to those experiences by the participant rather than focusing exclusively on their phenomenological characteristics. More broadly, our findings complement recent evidence that religiosity and spirituality play important, albeit complex, roles for clinically relevant symptoms. A recent systematic review concluded that religious and spiritual factors can either facilitate or hinder recovery depending on the forms of religious coping and explanatory models involved [20]. Although our study examined non-clinical psychotic-like experiences rather than clinically defined psychosis, our findings similarly suggest that how individuals interpret unusual experiences is closely related to their perceived consequences. Together, these findings support the inclusion of spiritual and religious meaning-making as part of the assessment and formulation of psychotic-like experiences.

Several limitations should be acknowledged. First, the study employed a cross-sectional design and the reported associations should not be interpreted as implying causal relationships between interpretation and perceived impact. Second, life impact was assessed retrospectively and may be influenced by memory biases or subsequent reinterpretations of the experience. Third, the outcome measure reflected perceived life impact rather than objective indicators of functioning or mental health. Positive perceived life impact should not be interpreted as objective evidence of better psychological functioning or lower psychopathology. However, previous work has clearly found that subjective perceptions are important for tracking objective health states [39]. Nevertheless, by separating the phenomenological experience from its interpretation, our findings suggest that spiritual meaning is strongly associated with how positively these experiences are perceived, independent of the raw experience itself. More broadly, results suggest that understanding psychotic-like experiences requires considering not only what people experience but also how those experiences are interpreted by them within broader cultural and religious contexts.

Table 1
Sample characteristics

Characteristic	Category	Value
Age, years	Mean (SD)	44.3 (15.3)
Age group	18–29	316 (21.0%)
	30–39	317 (21.0%)
	40–49	304 (20.2%)
	50–59	238 (15.8%)
	≥ 60	331 (22.0%)
Sex	Female	634 (42.1%)
	Male	872 (57.9%)
Region	Central-West	114 (7.6%)
	North	118 (7.8%)
	Northeast	395 (26.2%)
	South	227 (15.1%)
	Southeast	652 (43.3%)
Religious/spiritual affiliation	Afro-Brazilian religions	54 (3.6%)
	Catholic	515 (34.2%)
	Evangelical	326 (21.6%)
	Kardecist Spiritist	113 (7.5%)
	Other	96 (6.4%)
	Spiritual but not religious	309 (20.5%)
	Neither religious nor spiritual	93 (6.2%)

Table 2
Phenomenological descriptions of the psychotic-like nonordinary experiences examined in the study

INOE item	Neutral description	Related constructs in the psychosis literature	Relevance
Sensed presence	Feeling that someone or something is present despite no visible person	Presence hallucinations / sensed presence	Relevant for studying presence phenomena across contexts, especially bereavement, spiritual settings, immersive states, and hallucination-proneness, without assuming pathology [7,8,40–42]
Presence or communication with the deceased	Sensing or communicating with a deceased person	Bereavement-related hallucinations / sensed presence	
Auditory experience	Hearing voices or sounds without an identifiable source	Auditory hallucinations	Relevant because auditory hallucination-like experiences occur in people without need for care, but their clinical significance depends on distress, emotional valence, coping, controllability, and co-occurring risk factors [1,2]
Visual experience	Seeing people, lights or objects not perceived by others	Visual hallucinations	Relevant as a general-population perceptual anomaly that spans benign misperceptions to more severe forms, making it useful for studying phenomenological heterogeneity [10]
Tactile experience	Feeling touched or sensing bodily sensations without an external cause	Tactile hallucinations	Relevant because tactile anomalous sensations also occur outside clinical disorder and help map multisensory hallucination profile [10,43]
Olfactory experience	Smelling odors without an identifiable source	Olfactory hallucinations	Relevant for assessing less-studied non-auditory phenomena that occur in non-clinical, spiritual, and bereavement contexts and may indicate multisensory patterning [10,43,44]
Out-of-body experience	Experiencing oneself as located outside one's physical body	Autoscopic phenomena / out-of-body experiences	Relevant for studying body-self boundary disturbances and dissociative anomalous perceptions, which can occur in healthy populations and are not always distressing [45]

INOE item	Neutral description	Related constructs in the psychosis literature	Relevance
Another self within the body	Experiencing another identity or self within one's body	Passivity phenomena / disturbances of self-experience (depending on wording)	Relevant for assessing self-disturbance phenomena linked to psychosis-risk models, while recognizing that meaning depends strongly on wording and context [45,46]
Diminished sense of self	Feeling that one's sense of self has weakened or dissolved	Disturbances of basic self / depersonalization-related phenomena	Relevant for examining basic self-disturbance as a vulnerability dimension associated with subclinical positive symptoms and their persistence [38,46]
Perception of auras	Perceiving luminous fields around people or objects	Visual anomalous perceptions	Relevant as a visual anomalous perception that broadens assessment beyond classic hallucinations and captures milder, ambiguous, or spiritually interpreted visual phenomena within continuum models [10]
Animated objects	Perceiving inanimate objects as alive or intentional	Misidentification / visual anomalous perception	Relevant as an item on agency attribution and odd belief formation, captures anomalous perception and meaning attribution [47]
Animated places	Feeling that places possess agency or intentionality	Delusion-like attribution / anomalous perception	

Table 3. Mixed-effects model results

Model	Predictor	*b*	95% CI	*SE*	*df*	*t*	*p*	R^2
Model 1	Interpretation - Don't know	0.02	[-0.060, 0.093]	0.04	6,909	0.42	.671	.070
	Interpretation - Yes	0.68	[0.611, 0.742]	0.03	7,241	20.13	< .001	
Model 2	Interpretation - Don't know	0.02	[-0.051, 0.102]	0.04	6,890	0.65	.516	.079
	Interpretation - Yes	0.66	[0.592, 0.723]	0.03	7,235	19.63	< .001	
	Experience frequency	0.09	[0.067, 0.107]	0.01	7,170	8.51	< .001	
Model 3	Interpretation - Don't know	0.02	[-0.053, 0.100]	0.04	6,921	0.60	.551	.087
	Interpretation - Yes	0.65	[0.583, 0.716]	0.03	7,302	19.12	< .001	
	Experience frequency	0.08	[0.064, 0.104]	0.01	7,202	8.22	< .001	
	Affiliation - Afro-Brazilian religions	0.22	[-0.046, 0.479]	0.13	1,404	1.62	.106	
	Affiliation - Catholic	-0.04	[-0.236, 0.164]	0.10	1,886	-0.35	.724	
	Affiliation - Evangelical	-0.01	[-0.216, 0.198]	0.11	1,859	-0.09	.932	
	Affiliation - Kardecist Spiritist	0.16	[-0.070, 0.394]	0.12	1,660	1.37	.170	
	Affiliation - Other	0.17	[-0.076, 0.416]	0.13	1,721	1.35	.176	
	Affiliation - Spiritual but not religious	-0.04	[-0.250, 0.162]	0.10	1,825	-0.42	.673	
Model 4	Interpretation - Don't know	-0.01	[-0.084, 0.070]	0.04	394	-0.18	.860	.103

Note. The reference category for spiritual or religious interpretation was “No,” and the reference category for religious affiliation was “neither religious nor spiritual.” Models included random intercepts for experience type. Model 4 additionally included random slopes for spiritual or religious interpretation across experience types. b = unstandardized regression coefficient; SE = standard error; CI = confidence interval. R^2 values represent marginal R^2, reflecting the proportion of variance explained by the fixed effects.

Table 3. Mixed-effects model results

	Interpretation - Yes	0.61	[0.424, 0.795]	0.10	12	6.45	< .001
	Experience frequency	0.08	[0.061, 0.100]	0.01	7,155	7.95	< .001

Note. The reference category for spiritual or religious interpretation was “No,” and the reference category for religious affiliation was “neither religious nor spiritual.” Models included random intercepts for experience type. Model 4 additionally included random slopes for spiritual or religious interpretation across experience types. b = unstandardized regression coefficient; SE = standard error; CI = confidence interval. R^2 values represent marginal R^2, reflecting the proportion of variance explained by the fixed effects.

Declarations

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Competing interests

All authors declare no financial or non-financial competing interests.

Data availability

The datasets generated and/or analyzed during the current study are available in the OSF repository, https://osf.io/82bp9/overview?view_only=f20cae1f4f41424bb4be3bc9d5d5d82c

Code availability

The underlying code for this study is available in OSF and can be accessed via this link https://osf.io/82bp9/overview?view_only=f20cae1f4f41424bb4be3bc9d5d5d82c

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Figures

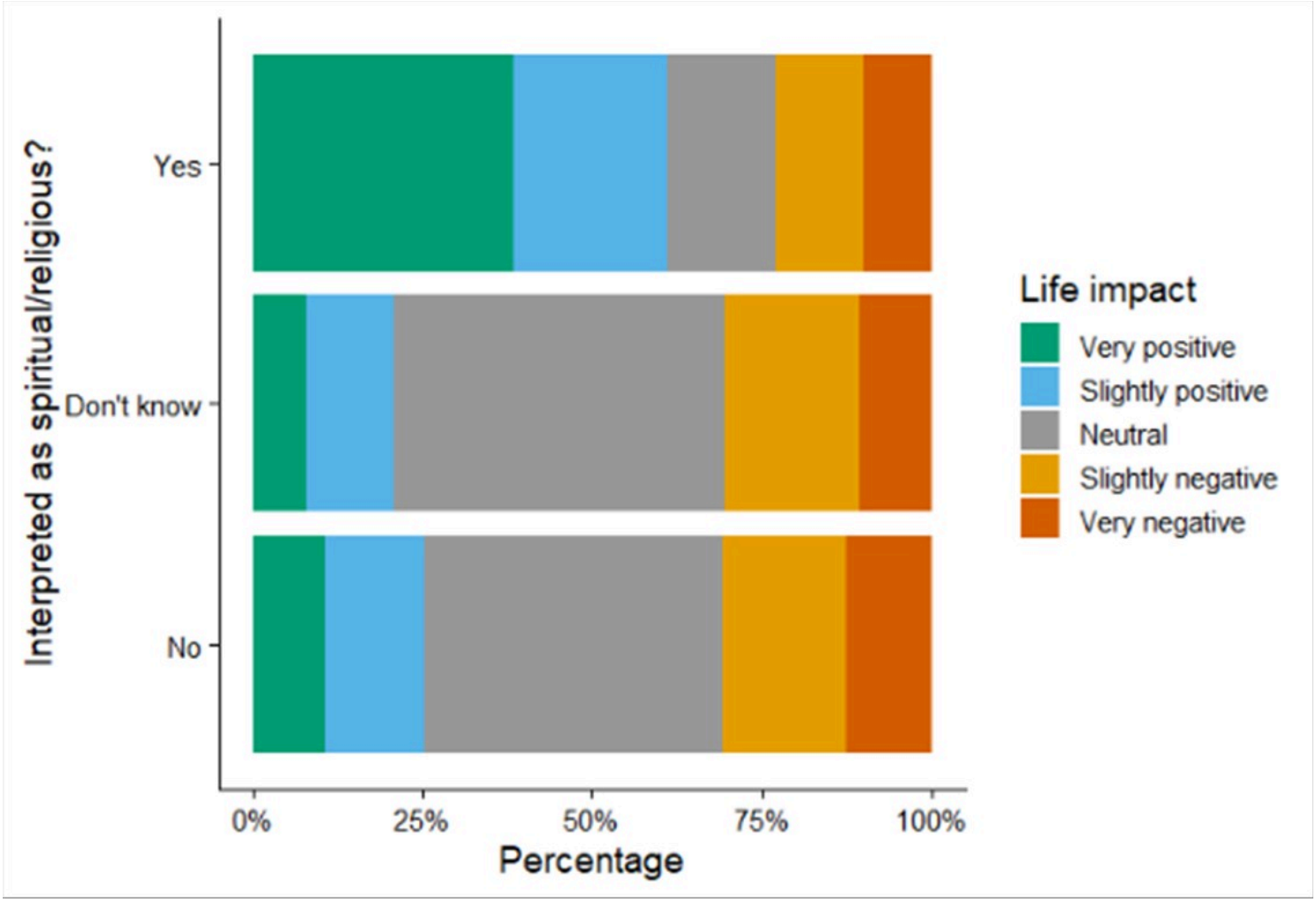


Figure 1

Distribution of perceived life impact by spiritual or religious interpretation

Note. Total observations were 3,198 for "Yes", 1,792 for "Don't know", and 2,378 for "No". Sample sizes refer to participant–experience observations rather than unique participants.

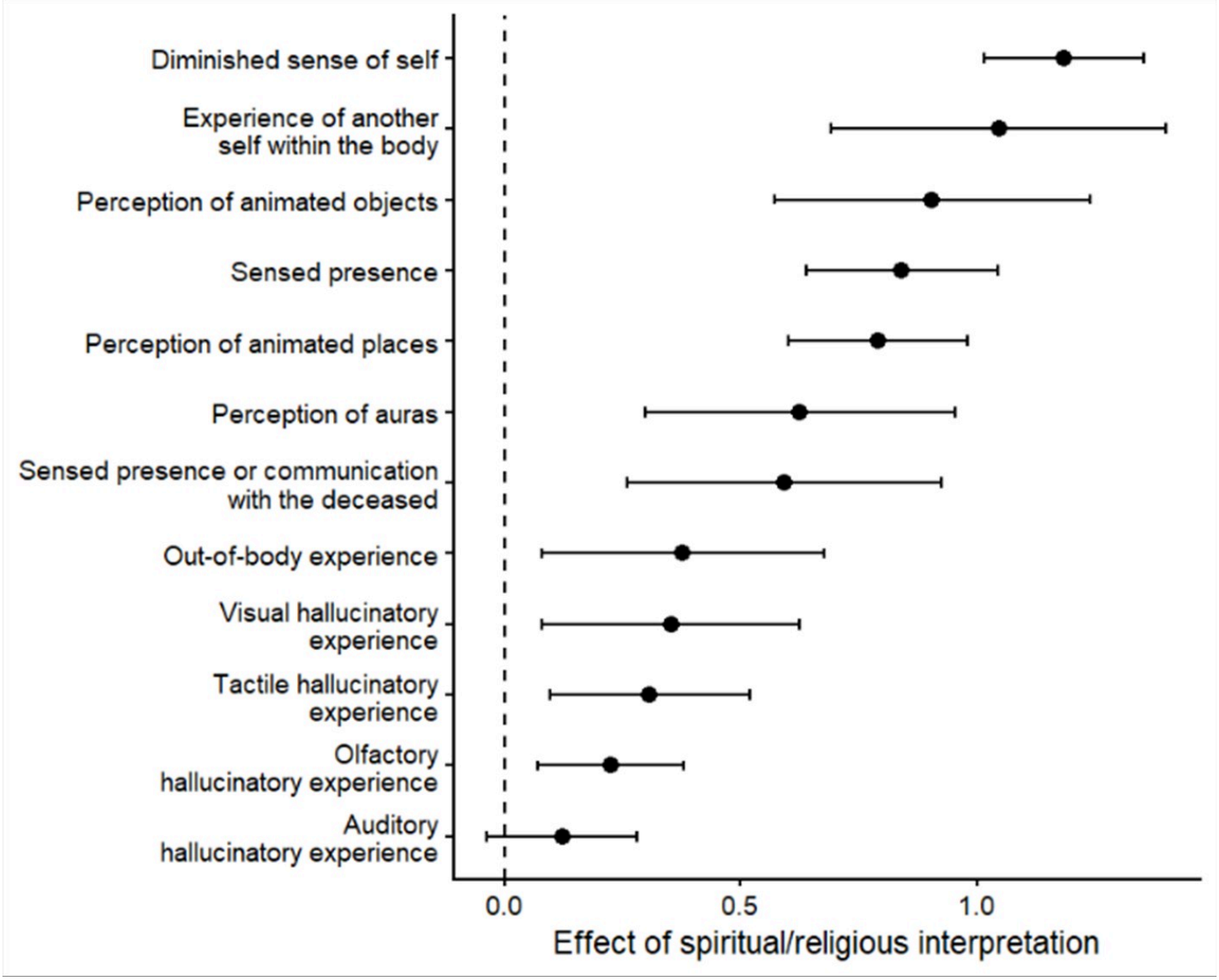


Figure 2

Association between spiritual or religious interpretation and perceived life impact across experience types

Note. Points represent unstandardized regression coefficients for the contrast between experiences interpreted as spiritual or religious (“Yes”) and those not interpreted as spiritual or religious (“No”), estimated separately for each experience type while adjusting for experience frequency. Error bars represent 95% confidence intervals.

Supplementary Files

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