Journal of International Scholarship, 2026, Volume 1, Issue 2, e011006
https://doi.org/10.65030/jis.011006
www.jintscholar.com

The Night Sky and Religious–Spiritual Orientation: Associations of Noctcaelador with Existential Well-Being, God Image, and Religious Orientation

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Abstract

This study investigated if noctcaelador, psychological attachment to the night sky, is related to spiritual-religious functioning. Participants (N = 236) completed self-report measures of noctcaelador, religious and existential well-being, God image, and intrinsic and extrinsic religious orientation. Noctcaelador was unrelated to intrinsic religiosity and religious well-being but was associated with less existential well-being and perceptions of God as less loving. Noctcaelador also was associated with an extrinsic-social religious orientation and more perceptions of God as controlling. Regression analyses identified lower existential well-being and more extrinsic-social orientation as significant independent predictors of noctcaelador, although effect sizes were modest. These findings suggest that night sky attachment may be more strongly linked to experiential and context-dependent meaning-making than to internally integrated religious commitment. Limitations and implications for relationships between noctcaelador and spirituality are discussed.

Keywords: Noctcaelador; Night sky; Spirituality; Religiosity; Existential well-being; Religious orientation; God image

Received: 2026-04-02
Accepted: 2026-04-12

Citation: Kelly WE. The night sky and religious–spiritual orientation: Associations of noctcaelador with existential well-being, God image, and religious orientation. Journal of International Scholarship. 2026;1(2):e011006. doi:10.65030/jis.011006

1. Introduction

Interest in the night sky has been a persistent feature of human experience and has been associated with aesthetic appreciation, meaning making, and, at times, spiritual or religious interpretations [1,2]. In contemporary contexts, engagement with the night sky continues to evoke feelings of awe, wonder, and perceived connectedness to something larger than the self [3,4].

One construct developed to examine individual differences in responses to the night sky is noctcaelador, defined as a trait-like psychological attachment to the night sky [5]. Noctcaelador has been associated with psychological absorption, perceptual curiosity, and aesthetic engagement, suggesting that it reflects a disposition to attend to complex, emotionally evocative stimuli [6-8]. Noctcaelador reflects a relatively stable individual difference rather than a purely situational interest and is related to cognition, personality, and behavioral engagement [9]. For example, noctcaelador has been linked to need for cognition, rational coping and problem-solving tendencies [10,11], openness to experience [12], and frequency and approach to night sky watching behaviors including astro-tourism and planetarium

attendance [13,14]. Other work has connected noctcaelador to neurocognitive style indicators such as inconsistent handedness [15]. In addition, qualitative work indicates that some individuals experience the night sky as meaningful, restorative, and spiritually significant [16,17]. However, the extent to which noctcaelador relates to established domains of religiosity and spirituality remains unclear.

Previous literature distinguishes between religiosity and spirituality, as well as among different functional dimensions of religious orientation. Religiosity is typically conceptualized as engagement with organized belief systems, practices, and institutions, whereas spirituality refers more broadly to the search for or experience of meaning, purpose, and feelings of transcendence [18,19]. Both religiosity and spirituality are multidimensional constructs. For example, the Spiritual Well-Being framework differentiates between religious well-being, reflecting one's perceived relationship with God, and existential well-being, reflecting a sense of meaning and life purpose [20,21]. Similarly, the intrinsic-extrinsic model of religious orientation distinguishes between internalized religious commitment (intrinsic orientation) and more instrumental or external socially motivated engagement [22,23].

Beyond definitional distinctions, dimensions of religiosity and spirituality show differential associations with psychological and behavioral processes. Intrinsic religiosity is linked to internalization of beliefs, psychological adjustment, and coherence in values and identity, whereas extrinsic orientations reflect more socially or instrumentally motivated engagement [22-24]. Spiritual well-being, particularly existential well-being, is associated with perceived life meaning, life satisfaction, and psychological functioning, while religious well-being reflects aspects of one's perceived relationship with God [20,25,26]. Recent work indicates these relationships are not uniform, with religiosity and spirituality showing differential, and sometimes opposing, associations with mental health depending on form, internalization, and context [27,28]. Internalized forms are more consistently associated with adaptive outcomes, whereas externally oriented forms show weaker or more variable associations [27-29,]. More broadly, religiosity and spirituality relate to coping, emotional regulation, and stress responses: these associations vary by dimension and degree of integration [18,30,31].

One theoretical framework that may help explain how religiosity-spirituality may relate to noctcaelador is the psychic structure model [9]. This model proposes that individuals with more permeable and less integrated self-structures may be particularly receptive to the night sky and more likely to use it as a means of psychological regulation and restoration of coherence. Permeable psychological boundaries allow greater intake of affective and symbolic experience but may also be associated with reduced stability or integration of self-representations [32,33]. Within this framework, the night sky may function as a stable, aesthetically complex external referent that facilitates psychological regulation and perceived coherence, particularly among individuals with less consolidated internal structures [34].

Extending this framework to the religious-spiritual domain suggests that noctcaelador may relate differentially to dimensions of religiosity and spirituality that vary in the degree of internalization, coherence, and functional role. Specifically, higher noctcaelador may be less strongly associated with internally integrated religious commitment and more strongly associated with dimensions reflecting contextual, perceptual, or meaning-related aspects of religious-spiritual functioning.

The present study examined the relationship between noctcaelador and multiple dimensions of religious-spiritual orientation, including religious and existential well-being, perceptions of God, and intrinsic and extrinsic religious motivations. It was hypothesized that noctcaelador would show weaker or negligible associations with intrinsic religiosity and religious spiritual well-being, negative associations with existential well-being and positively valanced perceptions of God, and positive associations with extrinsic-social religious orientation.

2. Methods

2.1 Participants and Procedure

Participants included 236 adults (183 women, 53 men) enrolled in undergraduate psychology courses at a small university in the southern United States. The average participant age was 24.58 years (SD =

6.93), ranging 18–48, median = 22. Most of the sample identified themselves as White/Caucasian (n = 186, 78.8%), followed by Black or African American (n = 37, 15.7%), Latinx (n = 3, 1.3%), Asian (n = 2, 0.8%), Native American (n = 5, 2.1%), and "other" (n = 3, 1.3%).

The study was carried out in accordance with the Helsinki Declaration of 2000 and ethical principles of the American Psychological Association. Measures were completed anonymously as "paper and pencil" questionnaires in small group settings. No time limits were used for survey completion. A small amount of extra course credit was provided in exchange for participation

2.2 Measures

2.2.1 Noctcaelador Inventory. The 10-item Noctcaelador Inventory [35] measures psychological attachment to the night sky ("Having time to look at the night sky is important to me"). Participants respond using a 5-point scale from 1 (Strongly disagree) to 5 (Strongly agree). Higher total scores indicate more noctcaelador. Validity and a 1-month retest reliability of .88 have been reported [35,36].

2.2.2 Spiritual Wellbeing Scale. The Spiritual Wellbeing Scale [25] includes two 10-item subscales measuring religious ("My relation with God contributes to my sense of well-being") and existential ("I believe there is some real purpose for my life") spiritual wellbeing. Participants respond using a 6-point scale from 1 (Strongly disagree) to 6 (Strongly agree). Higher total scores indicate more religious or existential wellbeing as appropriate for each scale. Validity and 10-week retest reliabilities between .82–.88 have been reported [21].

2.2.3 Loving and Controlling God Scale. The Loving and Controlling God Scale includes 2 5-item subscales with opposite anchored responses measuring perceptions in one's life that God is loving (e.g., "Loving… Hating") or controlling (e.g., "Controlling… Uncontrolling") [37]. Participants respond using a 7-point scale (e.g., 1 = Rejecting, 7 = Accepting). Higher total scores indicate experiences of God as more loving or controlling as appropriate for each scale. Adequate validity and internal consistency reliabilities ranging from .60–.89 have been reported [37,38].

2.2.4 Age Universal Religious Orientation Scale. The Age Universal Religious Orientation Scale includes 3 subscales measuring functions of religiosity for respondents: Intrinsic (6 items, "I try hard to live my life according to my religious beliefs"), Extrinsic Social (3 items, "I go to church mostly to spend time with my friends") and Extrinsic Personal (3 items, "What religion offers me is comfort in times of trouble and sorrow") scales [22,39]. Participants respond using 1 (Strongly disagree) to 5 (Strongly agree) scale. Higher scores indicate more intrinsic, extrinsic personal, or extrinsic social orientations to religion as appropriate for each scale. Support for the validity and internal consistency reliabilities ranging from .82–.90 have been reported [23,39,40].

2.3 Data Analyses

Statistical analyses were done using SPSS v. 30 for Windows (IBM Corp., Armonk, N.Y., USA). Pearson product moment correlation coefficients were calculated to examine relationships between noctcaelador and other variables. Correlation and beta coefficient effect sizes were considered small, medium, or large if they reached .10, .30, and .50, respectively [41]. A simultaneous linear regression was calculated to examine which religious-spiritual scales uniquely related to noctcaelador. Results were considered significant if $p < .050$ (two-tailed).

3. Results

As presented in Table 1, higher scores on noctcaelador were significantly negatively correlated with existential spiritual well-being, perceptions of God as loving, and positively correlated with extrinsic-social religious orientation. Noctcaelador was also positively correlated with perceptions of God as controlling. Correlations with religious spiritual well-being, intrinsic religious orientation, and extrinsic-personal religious orientation were small and not statistically significant. Effect sizes for significant correlations were small according to conventional benchmarks [41].

Internal consistency reliabilities were generally adequate; however, it should be noted that three variables fell below the conventional .70 threshold (Table 1). As such, corrections for attenuation were computed [42]. However, these adjustments did not appreciably alter the pattern or magnitude of the observed relationships, suggesting reliability did not limit the observed results.

Table 1: Scale Descriptive Statistics and Correlations with Noctcaelador				
Variable	**r**	**M**	**SD**	**α**
Noctcaelador	--	26.56	9.00	.940
Religious Spiritual Wellbeing	–.07	50.24	10.12	.937
Existential Spiritual Wellbeing	–.15*	46.16	7.94	.867
Loving God Scale	–.16*	25.47	4.78	.786
Controlling God Scale	–.15*	19.69	5.24	.621
Internal Religious Orientation	–.01	21.60	4.30	.798
Extrinsic-Social Religious Orientation	.17**	6.18	1.98	.695
Extrinsic-Personal Religious Orientation	.03	10.41	2.34	.633
Note: N = 236. *p < .05 **p < .01.				

Before interpreting the simultaneous linear regression with noctcaelador as the criterion and all religious-spiritual variables entered as predictors, multicollinearity was examined. Variance inflation factors (VIFs) were below 3.61, indicating multicollinearity was not problematic [43]. The regression results indicated that the overall model was significant, $F(7, 228) = 2.92$, $p = .006$, with Adjusted $R^2 = .054$.

As shown in Table 2, existential spiritual well-being and extrinsic-social religious orientation emerged as significant, independent predictors of noctcaelador. The Loving God Scale approached, but did not attain, significance. All other predictors were not statistically significant.

Table 2: Regression Results Predicting Noctcaelador			
Variable	**β**	**t**	**p**
Religious Spiritual Wellbeing	.14	1.16	.247
Existential Spiritual Wellbeing	–.16	2.15	.032
Loving God Scale	–.19	1.87	.063
Controlling God Scale	–.08	1.13	.261
Internal Religious Orientation	.08	0.83	.407
Extrinsic-Social Religious Orientation	.16	2.50	.013
Extrinsic-Personal Religious Orientation	.01	0.08	.936
	$R^2 = .054$ (adj), $F = 2.92$, $p = .006$		

4. Discussion

The present study examined the relationship between noctcaelador and multiple dimensions of religious-spiritual functioning, with the aim of clarifying whether attachment to the night sky aligns more closely with internally integrated religious belief systems or with more context-dependent and perceptual forms of meaning-making. Overall, the findings were largely consistent with the hypotheses, demonstrating that noctcaelador shows a differentiated pattern of associations across religious-spiritual domains rather than a uniform relationship with religiosity or spirituality.

Consistent with expectations, noctcaelador demonstrated negligible associations with intrinsic religiosity and religious spiritual well-being. This pattern suggests that attachment to the night sky is not strongly related to internally integrated or institutionally grounded religious commitment [18,22]. These findings converge with prior research indicating that noctcaelador is not strongly linked to conventional religious engagement during leisure time [44], though it is associated with nontraditional or nonmaterial belief orientations [45]. Taken together, the results suggest that noctcaelador reflects a form of experiential or aesthetic engagement that operates relatively independently of traditional religious structures. Importantly, noctcaelador is conceptually distinct from general experiences of awe

or spirituality, as it reflects a stable, domain-specific attachment to the night sky rather than a transient emotional response or generalized orientation toward feelings of transcendence.

In contrast, noctcaelador was associated with lower existential spiritual well-being, less positively valanced perceptions of God, and higher extrinsic-social religious orientation. These findings support the expectation that noctcaelador relates differentially across dimensions of religious-spiritual functioning, although the anticipated positive association with favorable perceptions of God was not observed. Prior work linking noctcaelador to mistrust of authority figures [46] may partially account for its association with perceiving God as more controlling and less loving, although this interpretation remains tentative.

The observed pattern of relationships is broadly consistent with the psychic structure model of noctcaelador [9,34], which proposes that individuals with more permeable and less integrated self-structures may be particularly responsive to the night sky and may use it as a source of psychological regulation or experiential coherence. Within this framework, differential associations across religious-spiritual dimensions may reflect variation in the degree to which meaning systems are internally consolidated versus contextually or experientially engaged. Because constructs central to this model (e.g., boundary permeability, self-structure integration) were not directly assessed, the findings should be interpreted as consistent with, but not a direct test of, this framework. Moreover, the present data do not permit conclusions regarding causal pathways. One possible interpretation needing further investigation is that noctcaelador may be associated with alternative forms of meaning-making that are less aligned with conventional measures of existential well-being, although this remains speculative and requires direct empirical testing.

An alternative, and not mutually exclusive, explanation is that attachment to the night sky reflects broader cognitive-affective dispositions such as openness to experience, absorption, or sensitivity to complex and emotionally evocative stimuli, along with an outwardly directed attentional focus [3,6,7,12,47]. From this perspective, the observed relationships may reflect shared underlying dispositions that influence both responses to the night sky and patterns of religious-spiritual functioning, rather than a direct relationship between noctcaelador and religiosity per se. Similarly, lower scores on existential well-being may reflect not only reduced perceived meaning as assessed by conventional measures [20], but also a mismatch between standardized assessments and more individualized or experiential forms of meaning-making. This interpretation is broadly consistent with prior findings relating, though not significantly, noctcaelador to lower purpose in life [48].

The magnitude of observed effects was modest, and the regression model accounted for a relatively small proportion of variance in noctcaelador. However, this is consistent with the expectation that noctcaelador reflects a multifaceted construct influenced by a broader constellation of cognitive, personality, and experiential variables [9]. Religious-spiritual variables therefore appear to represent one component within a broader network rather than a primary explanatory domain.

Several limitations of the current study should be noted. The cross-sectional design does not allow causal inference of relationships between religiosity and noctcaelador. The use of an undergraduate sample may limit generalizability, and several measures demonstrated lower internal consistency, although corrections for attenuation suggested minimal impact on results. Identification as religious was not assessed, which limits interpretation of how these findings may differ across individuals with varying baseline levels of religiosity. In addition, the measures used may not fully capture noninstitutional or individualized forms of spirituality that could be more closely aligned with noctcaelador.

Future research could extend these findings by incorporating longitudinal designs, directly assessing constructs central to the psychic structure model, and including broader measures of meaning-making and nontraditional spirituality. For instance, recent findings indicate that noctcaelador is associated with connection with nature, which may also tap spiritual-like dimensions [49]. Qualitative approaches may also help clarify how individuals high in noctcaelador interpret and integrate their experiences of the

night sky within broader systems of meaning. For example, McNiven [50] found that younger individuals described stargazing as associated with feelings of transcendence and connection with God and the universe, experiences that may not be fully captured by standard self-report measures.

In conclusion, noctcaelador appears to be associated with a differentiated pattern of religious-spiritual correlates characterized by minimal association with intrinsic religiosity and selective relationships with existential and contextual dimensions. These findings underscore the importance of distinguishing among dimensions of religiosity and spirituality and suggest that attachment to the night sky reflects a form of engagement not fully captured by traditional religious frameworks.

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