

## Pet attachment, spiritual well-being, and stress in muslims: A mediation model

Nisa Hermawati<sup>1\*</sup>, Nur'aini Azizah<sup>2</sup>, Rifa Shaumi Noviani<sup>3</sup>

<sup>1,2,3</sup> Faculty of Psychology UIN Sunan Gunung Djati Bandung, Indonesia

Corresponding Author\*: [nuraini.azizah@uinsgd.ac.id](mailto:nuraini.azizah@uinsgd.ac.id)

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### ABSTRACT

Stress is a common challenge faced by Muslim university students, particularly in navigating academic, social, and developmental pressures. To mitigate these burdens, students seek emotional support from companion animals, such as cats. This study examined whether spiritual well-being mediates the relationship between pet attachment and perceived stress among Muslim university students who are cat owners, recruited through convenience sampling at the Zoom Vet Team Animal Clinic to ensure methodological transparency. A quantitative approach was used with 188 respondents completing the Lexington Attachment to Pets Scale (LAPS), the Spiritual Well-Being Scale, and the Perceived Stress Scale (PSS). Mediation analysis (PROCESS Model 4) revealed that pet attachment was significantly associated with lower perceived stress (total effect:  $B = -0.18$ ,  $p < .001$ ). Pet attachment also significantly predicted higher spiritual well-being ( $B = 0.52$ ,  $p < .001$ ), which in turn predicted lower stress levels ( $B = -0.22$ ,  $p < .001$ ). The indirect effect was significant ( $ab = -0.11$ , 95% CI  $[-0.17, -0.06]$ ), indicating partial mediation, while the direct effect remained significant but reduced ( $B = -0.07$ ,  $p = .041$ ). These findings demonstrate that pet attachment functions as both a psychological and spiritual coping resource, reducing stress directly and indirectly through enhanced spiritual well-being. The study highlights the importance of incorporating spiritual dimensions into stress and coping models for Muslim populations and supports the development of culturally sensitive mental health interventions that recognize human-animal bonds as potential protective factors.

## INTRODUCTION

Stress is a prevalent psychological concern among university students, who often face intense academic demands, social pressures, financial challenges, and developmental transitions into adulthood. Recent studies showed that university students worldwide continue to report high levels of stress (Almanasef, 2021), which negatively affect their mental health and academic functioning (Al-Qahtani & Alsubaie, 2020; Son et al., 2020; Zhang et al., 2023). For Muslim university students, stress may be further shaped by unique cultural and religious expectations, such as balancing academic responsibilities with religious obligations, maintaining modest behavior, navigating family expectations, and coping with stigma surrounding mental health help-seeking (Abdullah et al., 2021). Recent evidence has documented elevated levels of stress, anxiety, and burnout among Muslim student populations, underscoring the urgent need to identify protective factors that can promote resilience and well-being (Hasan et al., 2023; Rahman et al., 2021).

Among Muslim university students, stress is shaped not only by academic and social pressures but also by cultural and religious characteristics that influence daily routines, identity formation, and coping behaviors (Khan & Watson, 2006). These commitments often require time management, discipline, and situational adjustment, which may intensify stress when combined with demanding academic schedules (Abdullah et al., 2021). Therefore, understanding the unique characteristics and lived experiences of Muslim students is essential for developing culturally sensitive strategies that strengthen psychological resilience while supporting spiritual well-being.

Given the multiple academic, social, and religious stressors faced by Muslim university students, it becomes important to identify protective factors that can support their psychological resilience (Sari & Sutarto, 2023). One such factor that has received increasing attention is human–animal interaction, specifically pet attachment. Pet attachment refers to the emotional bond formed between individuals and their companion animals, often characterized by affection, companionship, and perceived social support (Johnson et al., 1992). From a theoretical perspective, pet attachment can be explained through attachment theory (Bowlby, 1982), which posits that humans seek comfort, security, and emotional regulation through attachment figures, particularly during stressful periods. Companion animals may serve as alternative attachment figures providing unconditional acceptance and consistent emotional support, which can be especially valuable when students experience limited social resources or cultural barriers to expressing distress (Zilcha-Mano et al., 2011). In addition, the biophilia hypothesis (Wilson, 1984) suggests that humans possess an innate tendency to connect with other living beings. In this context, pet attachment may function as one of the external coping resources that help Muslim students manage stress alongside other cultural, social, and spiritual factors.

Previous studies have demonstrated that strong pet attachment is associated with reduced stress, increased emotional stability, and improved subjective well-being (McConnell et al., 2011; Purewal et al., 2017). Companion animals, particularly cats and dogs, are known to provide comfort, a sense of purpose, and nonjudgmental companionship, which may help students regulate emotions and cope with daily stressors (Wood et al., 2015).

Similarly, spiritual well-being has been identified as another important protective factor against stress (Solichah et al., 2025; Susanti et al., 2025). According to Paloutzian & Ellison (1982), spiritual well-being is a multidimensional construct consisting of two core components: religious well-being (RWB)—one's perceived relationship with God or a higher power—and existential well-being (EWB)—one's sense of meaning, purpose, inner peace, and life satisfaction independent of formal religious practice. From a theoretical perspective, spiritual well-being is grounded in the spiritual well-being model proposed by Ellison (1983), which conceptualizes it as comprising two dimensions: religious well-being, reflecting one's relationship with God or a higher power, and existential well-being, reflecting one's sense of life purpose and satisfaction. This framework aligns with the broader multidimensional models of well-being (Fisher, 2011), which posit that spiritual health interacts with physical, psychological, and social domains to promote holistic functioning.

Within Muslim populations, spiritual well-being encompasses both religious and existential dimensions, including *tawakkul* (trust in God), gratitude, remembrance (*dhikr*), and acceptance of divine will (Raiya et al., 2008). Recent studies consistently showed that higher levels of spiritual well-being are associated with lower perceived stress, reduced anxiety, and better psychological adjustment among Muslim students and adults (Abdullah et al., 2021; Hasan et al., 2023; Rahman et al., 2021).

While both pet attachment and spiritual well-being independently contribute to stress reduction, previous research has provided valuable insights into their psychological benefits. Studies have shown that individuals with higher levels of pet attachment report lower perceived stress, reduced loneliness, and greater emotional well-being (McConnell et al., 2011; Stanley et al., 2014). Additionally, individuals with higher spiritual well-being tend to experience lower anxiety, greater life satisfaction, and enhanced coping capacity when facing adversity (Kim & Esquivel, 2011; Pargament et al., 2013). These findings suggested that both emotional bonds with pets and spiritual connectedness can serve as important protective factors that promote resilience and psychological health.

Moreover, research has demonstrated that spiritual well-being often interacts with other psychological factors—such as social support, emotional attachment, and positive affect—to buffer the impact of stress, for example, individuals with strong spiritual well-being tend to report greater meaning in life, stronger coping strategies, and improved emotional stability (Frados et al., 2022; Arslan & Yildirim, 2021). These findings suggested that spiritual well-being does not operate in isolation but contributes to broader psychological processes that protect against stress.

However, few studies have examined how these variables may interact with one another. In particular, there is limited research that integrates pet attachment and spiritual well-being within the context of Muslim university students—a group whose unique cultural and religious framework may shape how emotional and spiritual resources are utilized. The emotional benefits derived from pet companionship may enhance spiritual experiences such as inner peace, gratitude, and connectedness, which in turn contribute to lower stress levels. Thus, it is theoretically plausible that spiritual well-being serves as a mediating mechanism through which pet attachment influences perceived stress.

Despite growing interest in the mental health of Muslim university students, research integrating pet attachment, spiritual well-being, and stress within Muslim populations remains scarce. Existing studies often examined these constructs separately—such as the benefits of pet companionship, the protective role of spiritual well-being, or stress management in Muslim youth (Baldacchino & Buhagiar, 2003; Baldacchino & Buhagiar, 2003; Yandri et al., 2025)—but very few have explored how these factors may interact within a single explanatory model. This gap is particularly important given that, for Muslims, spiritual well-being is deeply embedded in practices and experiences such as *tawakkul*, *dzikir*, and *sakinah*, which may shape how emotional relationships and coping processes operate.

Based on prior evidence and conceptual reasoning, it is hypothesized that higher levels of pet attachment will be associated with lower levels of perceived stress, and that this relationship will be mediated by spiritual well-being. Specifically, students with stronger emotional bonds to their cats are expected to experience enhanced spiritual well-being—reflected in feelings of peace, gratitude, trust in God, and connectedness—which, in turn, contributes to reduced perceived stress. This mediation model, therefore, tests a plausible psychological–spiritual pathway that has not yet been empirically examined in Muslim cat-owner student populations.

## METHODS

The study involved 188 Muslim university students who own cats as companion animals. Participants were recruited using a convenience sampling technique from visitors to the Zoom Vet Team Animal Clinic in [Bandung, Indonesia]. Inclusion criteria included: (1) being identified as Muslim, (2) ranging from 18 years or older, and (3) having owned at least one cat for a minimum of

three months. Although adults aged 18 and above were eligible, all individuals who participated were currently enrolled as university students, aligning the sample with the study's stated target population. The final sample comprised 138 females (73.4%) and 50 males (26.6%), with ages ranging from 18 to 45 years ( $M = 27.1$ ,  $SD = 6.3$ ). All participants voluntarily consented to participate in the study.

Pet attachment was measured using the Lexington Attachment to Pets Scale (LAPS; Johnson et al., 1992), a 23-item self-report scale assessing emotional closeness and attitudes toward pets. Items are rated on a 4-point Likert scale (1 = strongly disagree to 4 = strongly agree), with higher scores indicating stronger emotional attachment to the pet. The scale demonstrated strong reliability in the present sample (Cronbach's  $\alpha = .89$ ), indicating very good internal consistency.

Spiritual well-being was measured using a culturally adapted version of the Spiritual Well-Being Scale (SWBS; Paloutzian & Ellison, 1982). The 20-item scale assesses two dimensions—religious well-being and existential well-being—rated on a 6-point Likert scale from 1 (strongly disagree) to 6 (strongly agree). The adaptation process involved translation and back-translation, review by experts in Islamic psychology, and minor wording adjustments to ensure fit with Muslim beliefs and practices (e.g., replacing terms implying general theism with language more aligned with Islamic concepts of God, and clarifying references to meaning and life purpose in ways consistent with the Islamic worldview). These steps ensured the instrument's cultural and religious appropriateness, and the adapted measure showed excellent reliability (Cronbach's  $\alpha = .91$ ), reflecting very high internal consistency.

Perceived stress was measured using the Perceived Stress Scale (PSS-10; Cohen et al., 1983), a 10-item instrument assessing feelings of unpredictability, overload, and lack of control in daily life. Responses are given on a 5-point Likert scale ranging from 0 (never) to 4 (very often), with higher scores representing greater perceived stress. In the present study, the PSS-10 demonstrated acceptable to good internal consistency (Cronbach's  $\alpha = .85$ ), indicating that the scale reliably captured participants' stress levels.

Participants were approached at the Zoom Vet Team Animal Clinic while waiting for or after completing veterinary services. After receiving a brief explanation of the study, individuals who met the inclusion criteria were invited to participate. Upon providing informed consent, participants completed a printed questionnaire containing demographic information and the three main scales (LAPS, SWBS, and PSS). Questionnaire completion took approximately 15–20 minutes. participation was voluntary and anonymous.

All data were analyzed quantitatively. Descriptive statistics and Pearson correlation coefficients were calculated to explore associations among pet attachment, spiritual well-being, and perceived stress. The mediating effect of spiritual well-being on the link between pet attachment and stress was examined using the PROCESS macro (Model 4; Hayes, 2018). To evaluate the indirect pathway, a bootstrapping method with 5,000 resamples and 95% bias-corrected confidence intervals was applied. Evidence of mediation was established when the confidence interval excluded zero.

## RESULTS AND DISCUSSION

Descriptive statistics and correlation analyses were conducted to examine the relationships between pet attachment, spiritual well-being, and perceived stress among Muslim students. As shown in Table 1, pet attachment was positively correlated with spiritual well-being ( $r = .41$ ,  $p < .001$ ), and spiritual well-being was negatively correlated with perceived stress ( $r = -.53$ ,  $p < .001$ ). This latter association represented the strongest correlation observed in the analysis, indicating that higher levels

of spiritual well-being are most robustly linked to lower perceived stress. Additionally, pet attachment was negatively correlated with perceived stress ( $r = -.29$ ,  $p < .001$ ), suggesting that stronger emotional bonds with pets are associated with both greater spiritual well-being and reduced stress levels.

**Table 1.**

*Means, Standard Deviations, and Correlations among Variables (N = 188)*

Variable	M	SD	1	2	3
Pet Attachment (1)	76.3	9.5	-		
Spiritual Well-Being (2)	88.4	11.6	0.41**	-	
Perceived Stress (3)	19.7	5.4	-0.29**	-0.53**	-

\* $p < 0.05$ . \*\* $p < 0.001$

Mediation effects were examined using PROCESS Model 4 (Hayes, 2018) with 5,000 bootstrap re-samplings. The results, presented in Table 2, showed that pet attachment significantly predicted spiritual well-being, which in turn was associated with lower perceived stress. The total effect of pet attachment on perceived stress was significant, indicating an overall negative association between the two variables. The indirect effect through spiritual well-being was also significant, with a 95% bootstrap confidence interval that did not include zero, demonstrating that spiritual well-being functions as a meaningful mediating pathway. However, the direct effect of pet attachment on perceived stress remained statistically significant ( $p = .041$ ) even after spiritual well-being was included in the model. This pattern—significant total effect, significant indirect effect, yet a remaining significant direct effect—indicates partial mediation, meaning that while spiritual well-being explains part of the relationship between pet attachment and stress, it is not the sole mechanism, and additional pathways may also contribute to this association.

**Table 2**

*Results of Mediation Analysis Testing the Indirect Effect of Pet Attachment on Perceived Stress Through Spiritual Well-Being*

Path	B	SE	t	P	95% CI (Bootstrap)
Total effect (Pet Attachment → Perceived Stress)	-0.18	0.05	-3.60	< .001	[-0.27, -0.09]
a path (Pet Attachment → Spiritual Well-Being)	0.52	0.09	5.78	< .001	[0.34, 0.70]
b path (Spiritual Well-Being → Perceived Stress)	-0.22	0.04	-5.50	< .001	[-0.30, -0.13]
Direct effect (Pet Attachment → Perceived Stress, controlling for Spiritual Well-Being)	-0.07	0.04	-2.05	.041	[-0.14, -0.003]
Indirect effect (Pet Attachment → Spiritual Well-Being → Perceived Stress)	-0.11	—	—	—	[-0.17, -0.06]

Overall, these findings supported the study hypothesis that spiritual well-being partially mediates the relationship between pet attachment and perceived stress. This suggested that students who form stronger emotional bonds with their pets tend to experience greater spiritual well-being, characterized by feelings of peace and connectedness, which in turn helps reduce their stress levels. The results highlighted the importance of integrating both emotional and spiritual resources in promoting psychological resilience among Muslim university students.

The results indicated that stronger attachment to pets is linked to reduced stress, with spiritual well-being partially accounting for this connection. Consistent with prior research, participants who reported higher levels of emotional closeness, companionship, and affectionate interaction with their cats also tend to show lower stress levels. These attachment indicators mirrored findings from McConnell et al., (2011) and Brooks et al., (2018), who demonstrated that pets offer stability, routine, emotional comfort, and nonjudgmental support—factors that are especially valuable during periods of psychological strain. In the present study, attachment dimensions such as feeling soothed by the pet, perceiving the pet as a companion, and seeking comfort from the pet appeared to be the most prominent contributors to stress reduction.

The results also showed that individuals with stronger pet attachment reported higher spiritual well-being, which subsequently contributed to lower perceived stress. Spiritual well-being in this sample included aspects of inner peace (*sakinah*), gratitude, a sense of meaning, and connectedness to God, all of which showed significant positive associations with pet attachment. Participants who experienced positive emotions during interactions with their cats—such as calmness, joy, compassion, and mindfulness—also tend to endorse greater spiritual tranquility and acceptance. This supports earlier work demonstrating that positive emotional experiences can broaden individuals' capacity for reflection, gratitude, and spiritual awareness (Fredrickson, 2001; Kim & Esquivel, 2011).

Furthermore, within the Islamic context, spiritual well-being reflects *tawakkul*, *sabr*, and *rida* (trust, patience, acceptance). The emotional grounding offered by pets may facilitate these states by fostering a sense of routine, responsibility, and empathy, which helps individuals feel more connected and purposeful. Previous research has shown that spirituality is one of the strongest predictors of resilience and reduced psychological distress among Muslims (Abdullah et al., 2019; Aflakseir & Coleman, 2009). Thus, the present study provided empirical evidence that spiritual well-being represents an internal protective pathway through which pet companionship may influence mental health.

The analysis of stress indicators revealed that participants with higher levels of pet attachment and spiritual well-being reported lower levels of overwhelm, loss of control, irritability, and difficulty coping—key dimensions of perceived stress. These specific reductions suggested that both emotional and spiritual mechanisms may buffer against cognitive overload and emotional dysregulation, two outcomes commonly linked with chronic stress among Muslim adults navigating academic, social, and religious demands. This aligned with studies showing that pet interaction reduces physiological stress markers such as cortisol and increases oxytocin (Nilsson et al., 2020), while spiritual well-being reduces cognitive rumination and enhances emotional regulation (Pargament et al., 2013). When combined, these mechanisms create a multi-layered buffer that supports psychological stability in everyday life.

The partial mediation observed in this study highlights the presence of two distinct pathways through which pet attachment influences perceived stress. First, the indirect pathway (pet attachment → spiritual well-being → stress) reflects the spiritual mechanism. Stronger attachment to pets was associated with greater spiritual well-being—manifested through enhanced feelings of peace, gratitude, trust in God (*tawakkul*), and inner tranquility (*sakinah*). These spiritual states, in turn, helped lower perceived stress. This aligns with Islamic well-being models in which meaning-making, acceptance of divine decree, and cognitive-spiritual coping strategies provide an important buffer against psychological distress.

Second, the direct pathway (pet attachment → stress) indicates that pet attachment reduces stress independently of spirituality. This suggests the presence of additional mechanisms not captured

by spiritual well-being. Consistent with attachment theory Bowlby (1982), pets can act as secure bases that provide predictability, emotional safety, and comfort. Beyond that, pets may reduce stress by offering companionship, informal social support, alleviation of loneliness, and facilitation of emotional regulation—all of which can occur even without changes in religious or spiritual experiences. Taken together, these two pathways explain why the mediation was partial rather than full. Spiritual well-being contributed a meaningful indirect effect, but the remaining significant direct effect demonstrates that pet attachment exerts its stress-reducing influence through both spiritual and non-spiritual mechanisms that operate in parallel.

Cats hold a unique cultural and historical position in many Muslim communities, often viewed as clean, gentle, and spiritually valued animals. This cultural affinity may strengthen the emotional significance of owning a cat and possibly enhance its role in promoting calmness and compassion. Islamic narratives surrounding kindness to animals may further reinforce feelings of moral and spiritual fulfillment when caring for a cat. These cultural meanings may partly explain why pet attachment among Muslim adults shows a distinct connection to spiritual well-being—an association that may differ from non-Muslim populations, where spirituality may not be closely tied to pet care.

These findings highlight the potential value of integrating emotional and spiritual factors when developing mental health interventions for Muslim populations. For many Muslims, caring for animals can naturally reinforce core spiritual concepts such as *tawakkul* (trustful surrender to God) and *sakinah* (inner tranquility). The daily routines of feeding, grooming, and attending to a pet cultivate compassion (*rahmah*)—a value strongly emphasized in Islamic teachings—as well as mindfulness, attentiveness, and gentleness in action. These practices can deepen a sense of gratitude (*syukur*) and reflection on God's mercy, thereby strengthening the spiritual resources that support resilience. From the perspective of the Broaden-and-Build Theory (Fredrickson, 2001), positive emotions derived from affectionate interactions with pets—such as joy, warmth, and calm—can broaden momentary thought–action repertoires and gradually build enduring spiritual resources, including meaning, acceptance, and a stable sense of divine trust.

Therapists working within culturally sensitive frameworks may therefore find it beneficial to explore clients' relationships with pets as a gateway to discussing emotional regulation, routine-building, comfort, and spiritual grounding. Universities, community centers, and campus mental health programs may also consider incorporating animal-assisted or spirituality-informed well-being activities for students experiencing stress. Additionally, promoting responsible pet ownership could indirectly support psychological well-being in ways that resonate with Islamic values and everyday spiritual practice.

As with any research, several limitations must be acknowledged. The convenience sampling method limits generalizability, and the cross-sectional design prevents causal inference. The sample focused exclusively on cat owners, so the findings may differ for owners of other pets or for individuals who cannot or do not choose to have companion animals. Future research should explore whether specific dimensions of pet attachment (e.g., emotional dependence, companionship, caregiving) show stronger associations with spiritual well-being. Longitudinal studies may also help clarify whether changes in pet attachment predict long-term improvements in stress and spirituality. Additionally, qualitative methods could illuminate how Muslim adults interpret the spiritual meaning of pet companionship in their own daily lives.

This study demonstrated that spiritual well-being partially mediates the relationship between pet attachment and perceived stress among Muslim adults, highlighting the intertwined nature of emotional and spiritual factors in psychological resilience. Recognizing these multidimensional

pathways can help develop more holistic, culturally grounded mental health strategies that honor both emotional needs and spiritual values.

## CONCLUSION

This research examined how spiritual well-being functions as a mediator in the link between pet attachment and perceived stress among Muslim adults. The results showed that stronger attachment to pets is associated with enhanced spiritual well-being, which subsequently relates to reduced stress levels. The partial mediation outcome further suggested that, beyond the indirect influence through spirituality, pet attachment itself directly contributes to stress reduction.

These findings emphasized the complex and multifaceted aspects of stress management, especially in religious and cultural settings where spirituality is a key element. In Muslim communities, combining emotional support from pets with spiritual practices can provide a meaningful approach to improving mental health. Such integration offers a culturally appropriate method to promote overall well-being and resilience.

Future studies are recommended to investigate these relationships in larger and more diverse populations, utilizing longitudinal or experimental methods to better understand causality. Exploring additional mediating factors such as social support, gratitude, or mindfulness may provide deeper insights into the intricate connections between pet ownership, spirituality, and mental well-being. Such research can help clarify how these variables interact and influence mental health outcomes over time.

For practitioners, the present findings offer several practical applications within culturally sensitive counseling frameworks. A counselor might guide clients to reflect on moments of gratitude (*syukur*) associated with the comforting presence of their cats, helping them recognize how these feelings contribute to experiences of *sakinah* (inner tranquility). In sessions addressing stress or emotional overwhelm, practitioners can invite clients to examine how interactions with their pets help regulate emotions—such as through routine, warmth, or companionship—and connect these experiences with spiritual coping themes like *tawakkul* (trust in God) or acceptance of life's uncertainties. Counselors can also encourage clients to intentionally incorporate pet-related routines as grounding practices, using feeding or grooming as opportunities for mindfulness, compassion, and calming emotional rhythms. Additionally, practitioners working with Muslim students or young adults may use pet companionship as an accessible entry point to discuss spiritual strengths, resilience-building, and sources of meaning. These concrete and culturally resonant strategies can support more holistic intervention planning that acknowledges both emotional and spiritual dimensions of well-being.

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