



Hadith-Based Religious Coping Model on *Tawakkal*: A Neuropsychological Analysis of Stress Reduction Mechanisms

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Abstract

The increasing prevalence of work-related stress, social uncertainty, and cognitive overload in modern society demands the development of religious coping strategies that are not only normative but also have a testable scientific basis, especially since there is still a lack of a conceptual model that integrates religious teachings with neuropsychological evidence. This study aims to formulate a conceptual model of religious coping based on *tawakkal* (religious trust), based on an analysis of the authenticity and meaning structure of hadiths, and to synthesize empirical evidence from the psychology of religion and neuroscience to explain the neuropsychological mechanisms of stress reduction associated with the practice of faith and submission to God. The study employed an integrative study design that included an analysis of the text of the *ṣaḥīḥ* hadith using *sanad-matn* criteria, a review of the psychology of religion literature from major databases such as PubMed and Scopus, and a synthesis of neuroimaging findings and stress biomarkers using a thematic synthesis approach. The results indicate that *tawakkal* functions as an active coping strategy that involves realistic cognitive appraisal, restructuring meaning by shifting perceptions of personal burden, strengthening a sense of control through belief in causal regularity, and internalizing adaptive expectations. Neuropsychological synthesis shows that religious practices consistent with the concept of *tawakkal* are associated with decreased amygdala activity, which reduces threat perception, increased prefrontal cortex involvement in emotion regulation, and activation of the reward system, which produces calm and adaptive motivation. These mechanisms contribute to decreased rumination, greater affective stability, and increased psychological resilience, thus making *tawakkal* a significant

potential basis for developing religious coping theory and values-based psychological interventions.

Keywords: *Tawakkal*; Religious Coping; Stress Regulation; Neuropsychology; Hadith

Abstrak

Peningkatan prevalensi stres terkait pekerjaan, ketidakpastian sosial, dan beban kognitif dalam masyarakat modern menuntut pengembangan strategi *coping religius* yang tidak hanya bersifat normatif, tetapi juga memiliki landasan ilmiah yang dapat diuji, khususnya karena masih terdapat kekosongan model konseptual yang mengintegrasikan ajaran keagamaan dengan bukti neuropsikologis. Penelitian ini bertujuan untuk merumuskan model konseptual *coping religius* berbasis tawakal berdasarkan analisis autentisitas dan struktur makna hadis; serta mensintesis bukti empiris dari psikologi agama dan *neuroscience* untuk menjelaskan mekanisme neuropsikologis reduksi stres yang terkait dengan praktik keyakinan dan penyerahan diri kepada Tuhan. Penelitian menggunakan desain kajian integratif yang meliputi analisis teks hadis *ṣaḥīḥ* melalui kriteria sanad-matan, peninjauan literatur psikologi agama dari database utama seperti PubMed, dan Scopus, serta sintesis temuan *neuroimaging* dan *biomarker* stres menggunakan pendekatan *thematic synthesis*. Hasil menunjukkan bahwa tawakal berfungsi sebagai strategi *coping* aktif yang melibatkan penilaian kognitif realistis, restrukturisasi makna melalui pengalihan persepsi beban personal, penguatan *sense of control* berbasis keyakinan pada keteraturan kausal, serta internalisasi harapan adaptif. Sintesis neuropsikologis memperlihatkan bahwa praktik religius yang sepadan dengan konsep tawakal berkaitan dengan penurunan aktivitas amigdala yang mengurangi persepsi ancaman, peningkatan keterlibatan korteks prefrontal dalam regulasi emosi, dan aktivasi sistem *reward* yang menghasilkan ketenangan serta motivasi adaptif. Mekanisme tersebut berkontribusi pada penurunan ruminasi, stabilitas afektif yang lebih konsisten, dan peningkatan ketahanan psikologis, sehingga tawakal memiliki potensi signifikan sebagai dasar pengembangan teori *coping religius* dan intervensi psikologis berbasis nilai.

Kata Kunci: Tawakal; *Coping* Religius; Regulasi Stres; Neuropsikologi; Hadis

Introduction

Psychological stress in modern society shows a significant upward trend in line with global social and economic changes. The WHO (2024) noted that the prevalence of severe stress in the adult population increased by 17% in the last decade, influenced by job instability, productivity demands, and excessive exposure to digital information. A report by the American Psychological Association (2023) confirmed that 72% of adult respondents reported chronic stress impacting quality of life and cognitive function. This surge underscores the urgent need for effective stress management strategies that are culturally appropriate for religious communities, particularly Muslims. The urgency of integrating religious approaches with empirical findings is growing, as conventional coping models have not fully addressed the spiritual aspects that shape emotional regulation and threat perception.

The concept of *tawakkal* in Islam represents an active attitude that combines optimal effort with complete trust in Allah, as emphasized in various hadiths that emphasize effort before surrender (Setiawan & Mufarihah, 2021). Theological

studies position *tawakkal* as a cognitive-affective mechanism that promotes perceptual stability and evaluative calm (Dalimuthe & Rambe, 2025). Pargament's (1997) theory of religious coping explains that religious belief functions as an appraisal framework capable of reducing the perception of internal threat. Contemporary psychological studies indicate that spiritual practices that internalize beliefs about dependence on a transcendent entity contribute to reduced sympathetic nervous system activation, strengthen self-regulation through the prefrontal cortex, and decrease cortisol secretion (Aggarwal, Wright, Morgan, Patton, & Reavley, 2023). These mechanisms highlight the potential of *tawakkal* as a religion-based coping strategy with a scientifically verifiable neuropsychological basis. However, the explicit link between the *tawakkal* hadith and these neural processes has not been widely studied.

Several previous studies reinforce the urgency of integrative, cross-disciplinary analysis. Lucchetti et al. (2020) found that religiosity contributes to cognitive flexibility by regulating the appraisal of threats. In contrast, Huda et al. (2022) demonstrated that spiritual coping, which combines effort and constructive surrender, can reduce long-term stress in Muslim populations. Braboszcz et al.'s (2017) findings on religious meditation demonstrated changes in brainwave activity related to relaxation and attentional focus. Afifah et al.'s (2024) study of the hadith affirmed the textual and historical meaning of *tawakkal*, but has not yet been directed toward constructing a measurable coping model. Kenwood et al. (2022) emphasized the role of the limbic system and prefrontal cortex in regulating stress responses through the HPA axis pathway. The synthesis of these five studies reveals a significant gap in the absence of a comprehensive model that integrates hadith teachings, religious coping theory, and neuropsychological mechanisms into an applicable framework.

The research problem formulation underlying this study encompasses three main questions: how can the hadiths on *tawakkal* be interpreted as a constructive religious coping principle; how do neuropsychological mechanisms work in reducing stress according to recent scientific findings; and how can both be integrated into a systematic and applicable religious coping model? The research objective is to formulate a model of *tawakkal*-based religious coping, built through the study of hadith and verified by neuropsychological mechanisms, thereby producing a scientific, relevant, and implementable conceptual framework in the context of modern life. The initial argument of this research is based on the understanding that *tawakkal*, as a core teaching in Islamic spirituality, has great potential to be a mental strengthening strategy in dealing with stress. The research contribution is expected to include expanding theoretical understanding of the relationship between religion and mental health, particularly through a neuropsychological approach that is still rarely used in hadith studies.

Method

This research method employs a qualitative-descriptive approach, incorporating qualitative content analysis and hermeneutic text analysis, to examine hadiths about *tawakkal* as the basis for developing a religious coping model. Primary data sources include hadiths obtained from the *Kutub al-Sittah*. In contrast, secondary data sources include classical and contemporary hadith commentaries, religious psychology literature, and neuropsychological studies of stress, all reviewed in scientific databases such as Scopus, PubMed, and Web of Science. Data selection was carried out using the following inclusion criteria: hadiths on the theme of *tawakkal* with a *sanad ṣaḥīḥ* or *ḥasan*, as well as scientific literature relevant to stress regulation; data that did not meet these criteria were excluded. Data collection techniques included keyword searches, *takhrīj al-Ḥadīṣ*, analysis of the historical-theological context, and a systematic search of the neuropsychological literature based on year range and thematic relevance. Data analysis included establishing units of analysis, open, axial, and selective coding, thematic categorization, and theoretical integration between the concepts of *tawakkal* and stress regulation mechanisms using neurobiological model-based concept mapping. Validation was conducted through conceptual triangulation and peer debriefing to minimize confirmation bias. The final stage involved constructing a conceptual model through analytical abstraction that systematically linked theological, psychological, and neurobiological dimensions.

Results and Discussion

Tawakkal in the Hadith as the Basis for Religious Coping

In Islamic tradition, *tawakkal* is an ethical principle that represents the integration of embracing empirical causes and submitting results to God. This operational definition is rooted in the Prophetic traditions, which provide a normative basis for the relationship between human endeavor and divine decree. The narration of al-Tirmiḏī (1975) states, “Tie your camel and then place your trust,” emphasizing that *tawakkal* is not synonymous with passivity. Ibn Ḥajar (1970) interpreted this statement as a correction to a fatalistic understanding that ignores empirical causes. Al-Mubārakfūrī (1993) emphasized that the command to tie the camel is a methodological instruction for human action to proceed within the corridor of causal rationality, which is part of obedience. This hadith serves as a reference point for defining *tawakkal* as a normative structure that combines active effort and belief in the reality of human limitations.

The hadith about birds, narrated by al-Tirmiḏī (1975) and considered *ḥasan ṣaḥīḥ* by al-Albānī (1995), provides a theological illustration that reinforces the aspect of effort in *tawakkal*. Birds leaving in the morning hungry and returning in the evening full serves as a metaphor for adaptive behavior that demands initiative without burdening oneself with claims of control over outcomes. Al-Suyūṭī (1997) interprets this hadith as affirming that *tawakkal* requires active action in harmony

with the natural pursuit of sustenance. Its relevance for religious coping lies in the mechanism of relieving the psychological burden of outcomes beyond human control while continuing to strive consistently. This demonstrates the internal structure of *tawakkal* that harmonizes agency with the acceptance of uncertainty.

This theological framework is clarified by the views of al-Ghazālī and al-Nawawī, which, although derived from the traditions of *fiqh* and ethics, remain relevant in strengthening the normative foundations of *tawakkal*. Al-Ghazālī (2009), through *Ihyā' 'Ulūm al-Dīn*, asserts that human endeavor is part of the causal order established by God, while the results are beyond the realm of human claims. Al-Nawawī (1976) divides *tawakkal* into two main elements: *ibtighā' al-Asbāb* (rational appropriation of causes) and *tafwīḍ al-Amr* (inner submission of affairs). These two elements form a conceptual balance at the heart of *tawakkal* and simultaneously provide the basis for religious coping: effort activates the capacity for action, while submission frees the individual from the pressure of the illusion of total control.

The socio-theological context of the hadith on *tawakkal* indicates that the teaching emerged as a correction to two extremes: fatalism, which negates effort, and magic, which attributes success to objects without a basis in Islamic law. Ibn al-Qayyim (2019) emphasized that the Prophet consistently provided guidance to prevent the community from abandoning physical causes under the pretext of surrender. The hadith on the prohibition of hanging amulets, narrated by al-Tirmizī (1975), serves as a warning against a distorted perception of control that shifts hope to irrational objects. Al-Ṭaḥāwī (1993) explained that this prohibition does not reject rational causes, but rather prevents inner dependence on false symbols. This analysis emphasizes that *tawakkal* is a middle path that maintains a balance between human effort and the purification of the heart's orientation.

This theological structure forms the foundation for religious coping, emphasizing inner stability through the relinquishment of claims to aspects beyond human control. Al-Qurtubī's (1964) interpretation suggests that *tawakkal* is a practical expression of faith that reduces inner stress because individuals are not under the pressure of absolute control over outcomes. This framework creates a faith-based coping model that combines the optimism of effort and spiritual serenity through an inner orientation directed toward God. The integration of effort and submission produces an ethical configuration consistent with rationality and provides a solid normative basis for developing a model of *tawakkal*-based religious coping.

Neuropsychological Mechanisms: Emotion Regulation, Prefrontal Cortex Activation, and Stress Response Reduction

Faith-based emotion regulation and adaptive surrender in *tawakkal* may operate through top-down mechanisms demonstrated in the neuropsychological literature on emotion regulation and meaning-focused coping. This process can be understood through conceptual mapping of empirical findings on cortico-limbic

interactions (Soufi Amlashi & Forstmeier, 2025). Adjusting threat perception through threat appraisal modulation reduces the limbic system's tendency to react impulsively, preventing amygdala activation from reaching hyperreactive levels (Yoon & Jung, 2025). A study by Gold, Morey, and McCarthy (2015) showed that reduced threat perception correlated with increased involvement of the dorsolateral and ventromedial prefrontal cortex, which plays a crucial role in controlling excessive emotional responses. This relationship is bidirectional, so prefrontal stability is not understood as a linear sequence, but as an interactive process flowing within the emotional control circuit.

Strengthening prefrontal activity reduces neural excitation in the amygdala (Liu et al., 2020). In this conceptual model, this mechanism is explained as a reduction in excitatory signals from the amygdaloid pathway, leading to a less intense hypothalamic response. The term "excitation" is retained without specifying specific neurotransmitters to maintain a clear empirical basis. A study by Melis et al. (2022) showed that stable and adaptive internal beliefs in various forms of spiritual regulation correlated with reduced amygdala reactivity and increased functional connectivity between the prefrontal cortex and limbic structures. This relationship is not understood as a direct effect of *tawakkal*, but rather as an inference from empirical findings of meaning-based emotional regulation practices that share functional similarities.

Corticolimbic modulation has the potential to influence the neuroendocrine system by adjusting the HPA axis. When threat perception decreases and amygdala activity is more controlled, the hypothalamus is less likely to send intense signals in the form of corticotropin-releasing hormone (CRH) (Engelke et al., 2021). Reduced CRH is associated with decreased adrenocorticotrophic hormone (ACTH) secretion in the pituitary, leading to decreased cortisol production (Guyon et al., 2017). This response aligns with research by Isehunwa et al. (2021), which showed that spiritual coping strategies and other religious practices correlate with reduced cortisol levels and improved endocrine balance. This understanding of the mechanism is positioned as a conceptual model, not as a direct causal claim due to *tawakkal*.

HPA-axis adjustments affect the autonomic nervous system, primarily by decreasing sympathetic dominance and increasing parasympathetic activity. Higher vagal tone has been identified as an indicator of autonomic stability and a greater capacity for adaptive emotional regulation (Ghiasi, Greco, Barbieri, Scilingo, & Valenza, 2020). A study by Walter and Altorfer (2022) showed that spiritual practices and religious surrender strategies are associated with increased heart rate variability, indicating a more stable physiological response. This mechanism is relevant for mapping the possible contribution of *tawakkal* in reducing the body's tendency to enter a state of hyperarousal that characterizes acute stress.

The interaction between the medial prefrontal cortex and the limbic system plays a central role in this integrative process. Stable activity in the ventromedial

prefrontal cortex and anterior cingulate cortex supports more adaptive emotional assessment and reduces the limbic system's reliance on impulsive responses (Hiser & Koenigs, 2018). This mechanism results in more efficient functional connectivity patterns, as illustrated in Andrewes and Jenkins' (2019) study, which emphasized the involvement of cortico-limbic circuits in shifting threat assessments. This conceptual model maps the potential alignment between the characteristics of *tawakkal* as a form of adaptive surrender and the mechanisms for reducing reactive emotional responses that have been empirically demonstrated in neuropsychological studies.

Reducing chronic cortisol exposure impacts the stability of neural structures, particularly the hippocampus, which is sensitive to stress hormone neurotoxicity (Knezevic, Nenic, Milanovic, & Knezevic, 2023). A study by Herman, Nawreen, Smail, and Cotella (2020) showed that spiritual and other contemplative practices that enhance emotion regulation are associated with protection of hippocampal integrity, while strengthening negative feedback on the HPA axis. This explanation serves as a conceptual framework for understanding how consistent *tawakkal* patterns can be associated with long-term stress regulation, without claiming direct evidence for the *tawakkal* practice itself.

These mechanisms demonstrate that *tawakkal*-based religious coping strategies can be scientifically mapped through a framework emphasizing prefrontal-amygdala integration, HPA-axis modulation, and autonomic balance. This pattern has the potential to generate physiological stability, as measured through objective indicators such as HRV, cortisol levels, and prefrontal activity dynamics in neuroimaging studies. This explanation is positioned as a theoretical model that aligns with modern neuropsychological literature on stress regulation, without positioning *tawakkal* as a directly tested biological variable.

Integrative Model of Religious Coping Based on *Tawakkal*

The formulation of a religious coping model based on *tawakkal* is built through three main components that are systemically interconnected: first, a theological foundation of meaning derived from the hadith; second, a cognitive regulatory mechanism; and third, neuropsychological modulation that plays a role in reducing stress. The hadith on *tawakkal*, which emphasizes the balance between effort, faith-based surrender, and acceptance of outcomes, presents a structured meaning scheme that places life events within a framework of transcendental control. This scheme functions as a meaningful architecture that guides the initial evaluation of stressors and shifts the perception orientation from absolute threats to conditions that can be managed through rational effort and spiritual reliance. Wnuk's (2024) findings suggest that internalizing religious beliefs with a coherent meaning structure enhances the positive reinterpretation of stressors and strengthens perceived spiritual control, making the theological component the foundational building block that initiates the coping process and provides direction

for the appraisal mechanism. At this stage, the concept of *tawakkal* is operationalized as an assessment framework—not just spiritual affection—that regulates how individuals conceptualize external pressures.

The integration of cognitive aspects into the model operates through three primary mechanisms: reducing cognitive biases, enhancing adaptive reappraisal, and augmenting problem-solving capacity. The *tawakkal* meaning schema functions as a superordinate structure that limits tendencies toward catastrophizing, overgeneralization, and rumination because individuals have a value framework that emphasizes rational effort, prudence, and acceptance of outcomes. This mechanism has a direct impact on restructuring the appraisal process, making stressor evaluations more objective and less filled with disproportionately negative predictions (Armario, Labad, & Nadal, 2020). Research by Atta, El-Ashry, and Mousa (2024) confirms that reduced rumination and strengthened adaptive reappraisal are strong predictors of emotional stability, making the integration of *tawakkal* into the appraisal process a relevant component of cognitive regulation. Furthermore, focusing on controllable aspects minimizes working memory load and increases decision-making efficiency (Paas & van Merriënboer, 2020). The cognitive regulatory structure in this model is operationalized as a series of top-down processes that bridge theological meaning with cognitive control capacity, making *tawakkal* not only a spiritual orientation but a system of regulating mental evaluation.

The neuropsychological component of the model reveals a biological pathway connecting meaning structures with cognitive processes. This mechanism is characterized by decreased limbic reactivity, enhanced prefrontal cortex mediation, and stabilization of physiological functions related to stress responses (Chen, Lambon Ralph, & Rogers, 2017). The internalization of *tawakkal* weakens threat stimuli during the appraisal stage, resulting in lower threat input from the amygdala. This is consistent with Kral et al. (2018), who found that religious practices based on deep faith reduce amygdala activity and increase prefrontal connectivity. Activation of the dorsolateral prefrontal cortex strengthens reappraisal and attentional control (Wyczesany et al., 2024), while the ventromedial prefrontal cortex integrates religious meaning with emotional experiences through the value evaluation pathway (Chang et al., 2025). This series of processes results in decreased cortisol and increased heart rate variability, demonstrating that *tawakkal* extends beyond cognitive aspects to physiological regulation through empirically verifiable neurocognitive pathways.

The interaction of these three components forms a structured, mechanistic flow: theological meaning schemas determine the direction of appraisal, appraisal influences cognitive control mechanisms, and cognitive control modulates neuropsychological responses that regulate stress reactivity. These mechanisms operate through a reciprocal relationship. Strengthening the meaning of *tawakkal*

enhances cognitive regulation, which in turn reduces threat input to the limbic system. Consequently, decreased limbic responses make it easier for individuals to maintain a meaningful orientation and exercise attentional control. This pattern creates a reciprocal stabilization loop, making *tawakkal* a multidimensional self-control system. These three components function as an integrative unit, not as separate stages, so the model has a conceptual foundation capable of explaining how religious meaning is connected to human mental function and biological systems.

The scientific contribution of this model lies in its ability to bridge the theological constructs of hadith, cognitive regulation theory, and neuropsychological mechanisms into a single, empirically testable framework. Classical models of religious coping, such as those by Pargament or Abu-Raiya, tend to position religiosity as a psychosocial factor (Dolcos, Hohli, Hu, & Dolcos, 2021). In contrast, this model positions *tawakkal* as an architecture of meaning that directly influences cognitive and neurobiological processes. The novelty of this model lies in integrating appraisal, mental control, and neural stabilization mechanisms into a coherent causal pathway. Its clinical relevance is evident in its compatibility with neuroregulation-based and cognitive intervention approaches such as mindfulness-based cognitive therapy without losing sight of Islamic epistemology. This model can be tested through a combination of psychometric measures related to religiously informed reappraisal, neurophysiological indicators such as HRV and amygdala response, and an experimental paradigm based on appraisal tasks. This structure demonstrates that *tawakkal* functions as a comprehensive and measurable religious coping system, not merely a spiritual attitude, with significant theoretical and practical contributions to the development of contemporary mental health approaches.

Conclusion

Tawakkal can be understood as a religious coping model that integrates active spiritual beliefs, cognitive restructuring of perceptions of control and uncertainty, and the potential modulation of neural regulation, as supported by the literature. This approach offers a transactional framework that complements religious coping theory and broadens neuropsychological perspectives. Theoretically, this model contributes to the development of the psychology of religion by clarifying the cognitive-affective mechanisms of *tawakkal* and enriching the dialogue between religious coping, Lazarus-Folkman stress theory, and neuroscience findings regarding prefrontal regulation and amygdala responses. Practically, this model has the potential to be applied in spirituality-based stress management interventions, religious counseling, and the development of psychoeducational modules that integrate *tawakkal* values in a standardized manner. This study has limitations, including its conceptual nature, reliance on the interpretation of the literature, lack of a tested operational definition, and failure to verify the neurobiological propositions through an empirical approach. Further

research is needed to develop a validated *tawakkal* construct, to develop reliable psychometric instruments, to test the neural aspects through fMRI or EEG, and to implement intervention trials in clinical and community populations to ensure the model's applicability.

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