

The Mediating Role of Cognitive Flexibility in the Relationship Between Islamic Religiosity and Moral Intelligence

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Abstract

Grounded in the theoretical premise that Islamic religiosity constitutes a comprehensive ethical framework that may foster cognitive adaptability, which in turn supports moral reasoning, this study investigated the mediating role of cognitive flexibility in the relationship between Islamic religiosity and moral intelligence among Muslim university students. Using a cross-sectional correlational design, data were collected from 637 students (115 males, 522 females) aged 18-23 years at Al-Azhar University in Egypt. Participants completed validated measures assessing Islamic religiosity (beliefs and commitment/practice), cognitive flexibility, and moral intelligence (responsibility, honesty, forgiveness, conscience, and compassion). Structural equation modeling revealed that Islamic religiosity positively correlated with both cognitive flexibility ($\beta = .27, p < .001$) and moral intelligence ($\beta = .39, p < .001$). Mediation analysis using Hayes's PROCESS macro with 5,000 bootstrap samples demonstrated that cognitive flexibility significantly mediated the religiosity-moral intelligence relationship, accounting for 37.3% of the total effect (indirect effect = .30, 95% CI [.21, .40]). The direct association between Islamic religiosity and moral intelligence remained significant ($\beta = .24, p < .001$), indicating partial mediation. Together, Islamic religiosity and cognitive flexibility explained 41.6% of the variance in moral intelligence. These findings suggest that religious engagement is associated with moral reasoning through dual pathways: directly through religiosity's inherent ethical framework, and indirectly through cognitive adaptability. The results have important implications for Islamic higher education, suggesting that interventions might integrate religious instruction with cognitive flexibility training to support students' ethical development.

INTRODUCTION

Contemporary Muslim university students navigate an increasingly complex moral landscape characterized by overlapping pressures that intensify ethical dilemmas and value conflicts. The prevailing secular-scientific worldview in higher education, coupled with liberalizing moral attitudes and politicized culture wars, fundamentally reshapes students' perspectives on justice, authority, and social norms, often creating tensions with religiously grounded values (Bročić & Miles, 2021; Dahliana & Almuahjir, 2025). Digital disruption through social media accelerates exposure to moral relativism and ethically ambiguous content, contributing to weakened moral discipline and confusion about Islamic principles (Mas'ud et

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al., 2025; Miezah et al., 2025; Mujiburrohman et al., 2025). Students frequently confront dilemmas involving academic integrity, balancing tolerance with boundary-setting, navigating digital ethics, and reconciling Islamic commitments with diverse campus values (Asif et al., 2020; Ibrahim et al., 2024).

Islamic religiosity warrants systematic investigation as a foundational influence on moral development because it constitutes a comprehensive ethical system that integrates belief, practice, and conduct into a unified moral framework (Bensaid & Machouche, 2019; Elmahjub, 2023; Şahin, 2018). Anchored in revelation and human nature (*fitrah*), Islamic morality regulates inner states, outward behavior, and social relations through core concepts such as *tawhid* and *tawakkul*, which function as fundamental elements of personality formation and self-regulation (Huda et al., 2019; Nuriman et al., 2024). Empirical evidence demonstrates that Islamic religiosity significantly predicts moral cognition, prosocial behavior, environmental responsibility, and professional integrity across diverse Muslim populations (Begum et al., 2021; Subchi et al., 2022; Zin et al., 2024). This makes Islamic religiosity both theoretically indispensable and empirically crucial for understanding moral intelligence development, necessitating rigorous, context-sensitive examination within Muslim communities (Chanifah et al., 2021; McLaren et al., 2021; Taufik, 2020).

Despite substantial correlational evidence linking religiosity to various moral outcomes, a critical limitation persists in understanding the psychological mechanisms underlying this relationship. While existing research documents associations between religious commitment and moral attitudes, virtues, and behaviors, it predominantly relies on cross-sectional designs that cannot specify how religiosity produces these outcomes (Saroglou et al., 2020; Wnuk, 2021, 2022). Recent studies have begun examining isolated mediators, such as forgiveness reducing workplace stress (Wnuk, 2022), moral foundations influencing utilitarian judgments (Paruzel-Czachura & Charzyńska, 2022), and workplace ethical climate affecting prosocial behavior (Otaye-Ebede et al., 2019). However, these investigations remain fragmented, addressing narrow outcomes rather than offering an integrative model of moral functioning. The field lacks comprehensive, longitudinal, and experimental work tracing concrete psychological pathways from religious commitment to enhanced moral intelligence (Jack et al., 2016; Jacquet et al., 2021).

Cognitive flexibility emerges as a theoretically appropriate mediating variable between religious engagement and moral reasoning because it captures the exact psychological processes through which individuals move from rigid rule adherence to nuanced ethical judgment. Defined as the ability to shift between mental sets, integrate diverse perspectives, and adapt thinking to changing contexts (Braem & Egner, 2018; Yalın & Aydin, 2025), cognitive flexibility enables the coordination of attention, inhibition, and higher-order control processes essential for moral deliberation (Tei et al., 2017). Research demonstrates that flexible moral decision-making requires switching between deontological and consequentialist perspectives while balancing conflicting considerations such as fairness versus welfare (Tei et al., 2022). When religious engagement incorporates empathy, perspective-taking, and rich moral discourse, it may cultivate precisely this type of adaptive, integrative cognition (Jack et al., 2016; Saroglou et al., 2020), potentially enabling individuals to navigate complex moral situations with sophistication (Killen & Dahl, 2021; Li et al., 2025).

Despite growing scholarly attention to religiosity's cognitive and moral dimensions, a critical empirical gap persists at the intersection of religious psychology, cognitive science, and moral development. While research has examined intelligence levels and cognitive styles in relation to religiosity, predominantly in Western mixed-religion contexts (Dürlinger & Pietschnig, 2022), and Islamic education literature has conceptually emphasized creativity, critical thinking, and moral responsibility (Şahin, 2018), no empirical investigation has tested cognitive flexibility as a mediating variable linking Islamic religiosity to moral intelligence

among Muslim university students. Existing studies have explored alternative associational pathways, such as religiosity's influence on entrepreneurial intentions through motivational variables (Jia et al., 2023), yet the specific cognitive flexibility and moral intelligence association remains unexplored. This absence represents a theoretically crucial research territory, as understanding how religious engagement associates with moral reasoning through cognitive adaptability could illuminate fundamental correlates of Muslim students' ethical development (Mahmud et al., 2024; Mardatillah et al., 2025).

The present study addresses this critical gap by examining cognitive flexibility as a mediating variable in the relationship between Islamic religiosity and moral intelligence among Muslim university students. Specifically, this investigation tests whether cognitive flexibility is associated with the religiosity–moral intelligence relationship as a statistical mediator. Drawing on a sample of students from Al-Azhar University in Egypt, the study employs structural equation modeling to assess the hypothesized mediation model. This research contributes to theoretical understanding by specifying a cognitive correlate linking religious engagement to moral functioning, while offering practical insights for Islamic higher education regarding the integration of religious instruction and cognitive skill development to support students' ethical reasoning in contemporary contexts.

METHODS

Study Design

This study employed a cross-sectional correlational design to examine the mediating role of cognitive flexibility in the relationship between Islamic religiosity and moral intelligence among Muslim university students. Data were collected at a single time point using a quantitative survey approach. The study utilized structural equation modeling to test the hypothesized mediation model, with Islamic religiosity as the independent variable (X), cognitive flexibility as the mediating variable (M), and moral intelligence as the dependent variable (Y).

Participants

The study employed two distinct samples drawn from Al-Azhar University in Egypt, selected using convenience sampling based on accessibility and voluntary participation. The psychometric validation sample consisted of 487 students (318 males, 169 females) recruited from the Faculty of Education for Boys and the Faculty of Human Studies for Girls in Dakahlia, with ages ranging from 18 to 23 years ($M = 19.18$, $SD = 1.24$). The main analytical sample comprised 637 students (115 males, 522 females) from the same faculties, aged 18 to 23 years ($M = 18.57$, $SD = 0.98$). The students were approached through their respective faculty coordinators, who distributed the survey link via official communication channels. Participation was entirely voluntary, and no incentives were offered. Participants were distributed across four academic grade levels, with the majority residing in urban areas. Detailed demographic characteristics for both samples are presented in Table 1.

Measures

Islamic religiosity was assessed using a 16-item scale developed by Mohd Dali et al. (2019), comprising two dimensions: Beliefs (6 items) and Commitment and Practice (10 items). Participants responded using a 5-point Likert scale ranging from 1 (never) to 5 (always). The scale demonstrated strong psychometric properties in the current study. Confirmatory factor analysis yielded acceptable model fit indices ($\chi^2/df = 2.968$, $GFI = .932$, $CFI = .949$, $RMSEA = .064$). Internal consistency reliability was excellent, with omega coefficients of .862 for Beliefs, .851 for Commitment and Practice, and .866 for the total scale, while Cronbach's alpha coefficients were .862, .853, and .875, respectively.

Table 1. Demographic Characteristics of Study Participants

Variable	Category	Psychometric Sample (N = 487)		Main Sample (N = 637)	
		n	%	n	%
Gender	Female	169	34.7	522	81.9
	Male	318	65.3	115	18.1
Grade Level	First	205	42.1	511	80.2
	Second	139	28.5	66	10.4
	Third	104	21.4	34	5.3
	Fourth	39	8.0	26	4.1
Residence	Rural	142	29.2	155	24.3
	Urban	345	70.8	482	75.7

Note. N = frequency, % = valid percentage of total sample.

Cognitive flexibility was measured using the 12-item unidimensional scale developed by Martin and Rubin (1995), which includes four reverse-scored items. Participants indicated their agreement on a 6-point Likert scale ranging from 1 (strongly agree) to 6 (strongly disagree). Confirmatory factor analysis supported the unidimensional structure with acceptable fit ($\chi^2/df = 4.628$, GFI = .922, CFI = .922, RMSEA = .076). The scale demonstrated strong internal consistency with omega and alpha coefficients of .863 and .862, respectively.

Moral intelligence was assessed using a comprehensive 38-item scale developed by Dacka and Noworol (2025), measuring five dimensions: Responsibility (8 items), Honesty (7 items), Forgiveness (9 items), Conscience (7 items), and Compassion (7 items). Participants responded on a 5-point Likert scale from 1 (strongly agree) to 5 (strongly disagree). The scale exhibited excellent psychometric properties with confirmatory factor analysis supporting the five-factor structure ($\chi^2/df = 3.247$, CFI = .910, TLI = .902, RMSEA = .068). Internal consistency was exceptional across all dimensions, with omega coefficients ranging from .888 to .947 and alpha coefficients from .879 to .945. The total scale demonstrated outstanding reliability with ω of .962 and α of .961.

Procedure

Data were collected electronically during the first semester of the 2025/2026 academic year using Google Forms. All three scales were translated from English to Arabic through a rigorous process involving three expert translators to ensure linguistic and cultural appropriateness for the Arabic-speaking participants. Students voluntarily participated after providing informed consent, and responses were anonymized to ensure confidentiality. The survey was administered in a single session, with participants completing all measures in sequence.

Data Analysis

Data analysis was conducted using SPSS version 27 for descriptive statistics and preliminary analyses, and AMOS version 26 for confirmatory factor analyses and structural equation modeling. Common method bias was assessed using Harman's single-factor test as a preliminary indicator; the first unrotated factor accounted for 18.321% of the total variance, well below the 50% threshold. However, it should be noted that Harman's single-factor test is widely regarded as a limited and insufficient standalone assessment of common method bias (Podsakoff et al., 2003). Accordingly, while this result provides a preliminary indication that common method variance may not be a dominant concern, it cannot be interpreted as fully resolving the possibility of method bias, and findings should be interpreted with this caveat in mind. Mediation analysis was performed using PROCESS macro Model 4 with 5,000 bootstrap samples to generate bias-corrected 95% confidence intervals for indirect effects, with statistical significance determined when confidence intervals did not include zero.

RESULTS

Prior to testing the hypothesized mediation model, preliminary analyses were conducted to examine the relationships among study variables. The correlation matrix presented in Table 2 reveals the bivariate associations between Islamic religiosity and its dimensions, cognitive flexibility, and moral intelligence and its five dimensions. Islamic religiosity demonstrated statistically significant positive correlations with both cognitive flexibility ($r = .27, p < .001$) and moral intelligence ($r = .39, p < .001$). When examining the dimensions of Islamic religiosity separately, Beliefs correlated positively with cognitive flexibility ($r = .28, p < .001$) and moral intelligence ($r = .33, p < .001$), while Commitment and Practice showed similar patterns with cognitive flexibility ($r = .23, p < .001$) and moral intelligence ($r = .37, p < .001$).

Cognitive flexibility exhibited substantial positive correlations with all dimensions of moral intelligence, with correlation coefficients ranging from $r = .33$ ($p < .001$) for Forgiveness to $r = .58$ ($p < .001$) for Responsibility. The overall correlation between cognitive flexibility and total moral intelligence was notably strong ($r = .60, p < .001$). Among the dimensions of moral intelligence, Forgiveness demonstrated the weakest correlation with Beliefs ($r = .08, p < .05$), representing the only relationship significant at the .05 level rather than the .001 level. The inter-correlations among moral intelligence dimensions ranged from moderate to strong, with coefficients between $r = .36$ and $r = .65$, indicating substantial shared variance while maintaining dimensional distinctiveness.

Table 2. Correlation Matrix of Study Variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Beliefs	1									
2. Commitment and Practice	.62**	1								
3. Islamic Religiosity	.82**	.95**	1							
4. Cognitive Flexibility	.28**	.23**	.27**	1						
5. Responsibility	.34**	.29**	.34**	.58**	1					
6. Honesty	.28**	.30**	.32**	.42**	.55**	1				
7. Forgiveness	.08*	.25**	.21**	.33**	.36**	.58**	1			
8. Conscience	.35**	.33**	.37**	.57**	.65**	.55**	.53**	1		
9. Compassion	.31**	.30**	.33**	.50**	.52**	.59**	.55**	.64**	1	
10. Moral Intelligence	.33**	.37**	.39**	.60**	.77**	.81**	.77**	.83**	.81**	1

Note. N = 637, ** $p < .001$, * $p < .05$.

Mediation Analysis

The hypothesized mediation model was tested using Hayes's PROCESS macro Model 4 with 5,000 bootstrap resamples to examine whether cognitive flexibility was associated with the relationship between Islamic religiosity and moral intelligence. The mediation analysis results are presented in Table 3, which displays the path coefficients for all direct and indirect effects within the model.

The analysis revealed that Islamic religiosity was significantly associated with cognitive flexibility ($\beta = .32, SE = .04, t = 7.21, p < .001$), with the model accounting for approximately 7.6% of the variance in cognitive flexibility scores ($R^2 = .07$). This relationship remained statistically significant with bootstrap confidence intervals that did not include zero [LLCI = .23, ULCI = .40]. The standardized coefficient for this path indicated a moderate positive association ($\beta = .27$).

Cognitive flexibility, in turn, showed a significant association with moral intelligence when controlling for Islamic religiosity ($\beta = .95, SE = .05, t = 16.85, p < .001$), demonstrating a substantial standardized coefficient ($\beta = .532$). Simultaneously, the direct association of Islamic religiosity with moral intelligence remained statistically significant after accounting for

the mediator ($\beta = .51$, $SE = .06$, $t = 7.80$, $p < .001$), with a standardized coefficient of .246. Together, Islamic religiosity and cognitive flexibility were associated with 41.6% of the variance in moral intelligence ($R^2 = .41$).

Table 3 Path Coefficients for Mediation Model

Path	B	SE	β	t	p	95% CI
Islamic Religiosity $\rightarrow$ Cognitive Flexibility	.32	.04	.27	7.21	< .001	[.23, .40]
Islamic Religiosity $\rightarrow$ Moral Intelligence	.51	.06	.24	7.80	< .001	[.38, .64]
Cognitive Flexibility $\rightarrow$ Moral Intelligence	.95	.05	.53	16.85	< .001	[.83, 1.06]

Note. N = 637, B = unstandardized coefficient, SE = standard error, β = standardized coefficient, CI = confidence interval.

The indirect association of Islamic religiosity with moral intelligence through cognitive flexibility was statistically significant, as indicated by bootstrap confidence intervals that excluded zero (indirect effect = .30, $SE = .04$, 95% CI [.21, .40]). The standardized indirect coefficient was .146, suggesting that cognitive flexibility was associated with approximately 37.3% of the total association between Islamic religiosity and moral intelligence. The total association of Islamic religiosity with moral intelligence was $\beta = .81$ ($SE = .07$, 95% CI [.66, .96]), corresponding to a standardized coefficient of .39. The direct association represented 62.7% of the total association, indicating partial mediation. The decomposition of effects is presented in Table 4.

Table 4 Total, Direct, and Indirect Effects in the Mediation Model

Effect Type	B	SE	β	95% CI	% of Total Effect
Total Effect	.81	.07	.39	[.66, .96]	100.0%
Direct Effect	.51	.06	.24	[.38, .64]	62.7%
Indirect Effect	.30	.04	.14	[.21, .40]	37.3%

The mediation model is illustrated in Figure 1, which depicts the standardized path coefficients for all relationships among variables. The configuration demonstrates that Islamic religiosity is associated with moral intelligence through two pathways: a direct association and an indirect association through cognitive flexibility.

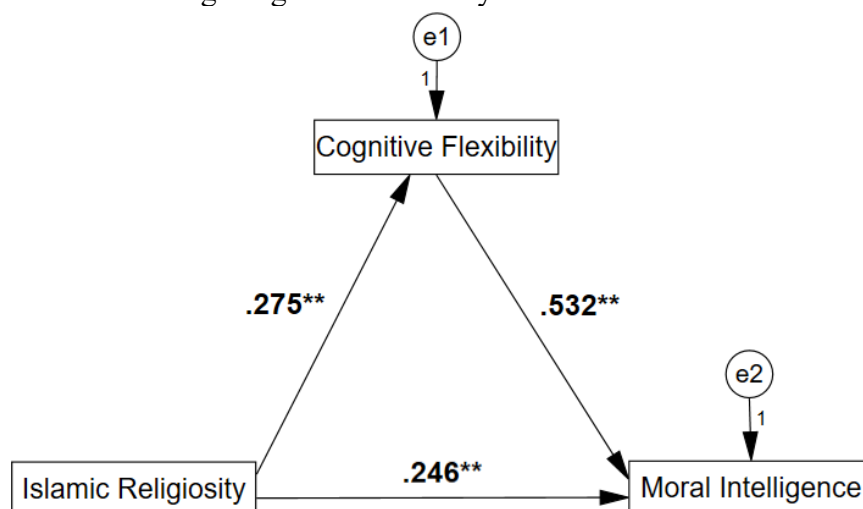


Figure 1. The Mediation Model

These findings support a partial mediation model in which cognitive flexibility is significantly associated with the link between Islamic religiosity and moral intelligence, while

Islamic religiosity also maintains a substantial direct association with moral intelligence independent of cognitive flexibility. The results indicate that both the direct association between Islamic religiosity and moral intelligence and the indirect association through cognitive flexibility were statistically significant, with cognitive flexibility accounting for 37.3% of the total association.

DISCUSSION

The present study's findings demonstrate that cognitive flexibility partially mediates the relationship between Islamic religiosity and moral intelligence among Muslim university students, accounting for 37.3% of the total effect. This partial mediation model reveals dual pathways through which religiosity influences moral reasoning: a direct pathway reflecting religiosity's inherent moral framework, and an indirect pathway operating through enhanced cognitive adaptability. The substantial direct effect (62.7%) suggests that Islamic religiosity's comprehensive ethical system—anchored in *tawhid*, *tawakkul*, and *fitrah*—directly shapes moral cognition independent of flexibility mechanisms. Concurrently, the significant indirect effect confirms that religious engagement cultivates mental adaptability, enabling students to shift between moral perspectives, integrate competing ethical considerations, and navigate complex dilemmas with more sophisticated judgment rather than rigid rule application.

A noteworthy finding in the correlation matrix is the markedly weak association between the Beliefs dimension of Islamic religiosity and Forgiveness ($r = .08$, $p < .05$), which stood apart from all other significant correlations in the study. This pattern tentatively suggests that holding Islamic beliefs at a cognitive or doctrinal level may not be strongly linked to forgiveness as a moral disposition, at least among this sample. This is conceptually interesting, as forgiveness in Islamic thought is often cultivated through active religious practice, behavioral commitment, and relational experience rather than through doctrinal belief alone (Wnuk, 2022). It is therefore plausible that the Commitment and Practice dimension of religiosity, which showed a notably stronger correlation with Forgiveness ($r = .25$, $p < .001$), may be more closely tied to the internalization of forgiveness as a moral value. These observations suggest that the relationship between religiosity and specific moral dimensions such as forgiveness may be more nuanced than aggregate correlations imply, and future research should examine whether different dimensions of religiosity differentially associate with distinct components of moral intelligence.

These findings align with empirical evidence demonstrating Islamic religiosity's predictive power for moral cognition, prosocial behavior, and professional integrity across Muslim populations (Begum et al., 2021; Subchi et al., 2022; Zin et al., 2024). The moderate positive correlation between religiosity and cognitive flexibility extends research documenting how religious engagement, incorporating empathy and perspective-taking cultivates adaptive cognition (Jack et al., 2016; Saroglou et al., 2020). The strong relationship between cognitive flexibility and moral intelligence supports literature emphasizing flexible decision-making's requirement for switching between deontological and consequentialist perspectives (Tei et al., 2022). However, this study addresses the critical gap identified in fragmented mediation research (Wnuk, 2022; Paruzel-Czachura & Charzyńska, 2022) by providing the first empirical test of cognitive flexibility as a specific psychological mechanism linking Islamic religiosity to comprehensive moral functioning.

The identification of cognitive flexibility as a mediating mechanism carries profound implications for Islamic higher education and student development programs. Universities should design interventions integrating religious education with cognitive training that explicitly cultivates mental adaptability, perspective-taking, and integrative thinking alongside traditional religious instruction. For example, educational approaches emphasizing critical engagement with Islamic texts, ethical deliberation on contemporary dilemmas, and perspective coordination can simultaneously strengthen religious commitment and cognitive flexibility.

The finding that religiosity maintains substantial direct effects underscores the value of authentic religious engagement rather than superficial exposure. Campus programs addressing the moral pressures identified—secular-scientific worldviews, digital ethics, academic integrity dilemmas, and value conflicts (Bročić & Miles, 2021; Ibrahim et al., 2024)—should leverage both pathways by grounding interventions in Islamic principles while fostering cognitive adaptability essential for navigating complex modern contexts.

Several methodological limitations constrain the interpretation and generalizability of these findings. The cross-sectional design precludes causal inference about directional relationships among variables, as temporal precedence cannot be established and bidirectional effects remain possible. The highly uneven gender distribution, with females comprising 81.9% of the main sample, represents a notable limitation that restricts the extent to which findings can be generalized to male Muslim university students or to gender-balanced populations. The predominance of female participants and recruitment from a single Islamic university in Egypt further limits generalizability to diverse educational contexts and Muslim populations in other cultural settings. Reliance on self-report measures introduces potential response biases, including social desirability and shared method variance, despite Harman's test indicating minimal concern. The study examined cognitive flexibility unidimensionally without disaggregating specific components that might differentially mediate religiosity's effects. Finally, the model explained 41.6% of moral intelligence variance, suggesting unmeasured variables—personality traits, family socialization, peer influences—warrant investigation as additional mediators or moderators.

Future investigations should employ longitudinal and experimental designs to establish temporal precedence and test whether interventions enhancing religious engagement or cognitive flexibility causally improve moral intelligence. Research should recruit gender-balanced samples across diverse educational institutions, geographic regions, and Muslim-minority contexts to assess cross-cultural generalizability. Studies should incorporate behavioral measures, peer ratings, and scenario-based moral reasoning tasks alongside self-reports to triangulate findings and reduce method bias. Investigating specific components of cognitive flexibility—attentional shifting, perspective integration, and inhibitory control—as distinct mediators could illuminate precise mechanisms. Research examining additional pathways, including moral emotions, religious coping, spiritual intelligence, and social support, would develop comprehensive models. Finally, studies should test whether relationships vary by religiosity levels, personality characteristics, or contextual factors to identify boundary conditions and inform targeted interventions for vulnerable student populations.

CONCLUSION

This study makes a significant theoretical contribution by demonstrating that cognitive flexibility serves as a meaningful psychological mechanism that partially mediates the relationship between Islamic religiosity and moral intelligence among Muslim university students. The findings reveal that religious engagement enhances moral reasoning through both direct pathways—reflecting religiosity's inherent moral framework rooted in Islamic principles—and indirect pathways operating through cultivated cognitive adaptability. By identifying this dual-pathway model, the research addresses critical gaps in understanding how religious commitment produces enhanced moral functioning, moving beyond correlational evidence to specify concrete psychological processes. These insights inform educational practice by highlighting the value of integrating authentic religious engagement with explicit cognitive flexibility training. The study advances theoretical frameworks linking religious psychology, cognitive science, and moral development while providing an empirical foundation for evidence-based interventions supporting Muslim students' ethical development.

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AUTHOR CONTRIBUTION STATEMENT

MAN conceptualized the study, drafted the manuscript, and critically revised all sections. AMI contributed to the literature review and data interpretation. AEI assisted in data collection and manuscript review. NKA contributed to the methodology design and data collection. ARI performed the statistical analysis and data visualization. AFA assisted in data interpretation and manuscript editing. All authors read and approved the final manuscript.

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