



Psychological and Spiritual Pathways to Reduced Risk-Taking: Evidence from Structural Equation Modeling

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ARTICLE INFO

Article History:

Received: November 18, 2025

Revised: December 04, 2025

Accepted: December 05, 2025

Available Online: December 06, 2025

Keywords:

Spiritual Intelligence

Resilience

Religious Belief, Moral Identity

Risk Taking Behavior

Structural Equation Modeling (SEM)

Female Students

Funding:

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ABSTRACT

This study uses Structural Equation Modeling (SEM) to examine how Spiritual intelligence, Resilience, Religious belief, and moral identity together influence risk taking behavior of female university students in Pakistan. However previous researches studied these variables individually, the current study utilizes SEM model to evaluate the relationship of these variables within one integrated model. Data were collected from 60 students aged 16-22 who showed higher level risk taking behavior. Spiritual intelligence Self-Report Inventory (SISI-24; King, 2008), Connor-Davidson Resilience Scale (CR-RISC: Connor & Davidson, 2003), Religious Orientation-Revised (ROS-R; Gorsuch & McPherson, 1989), Moral Identity Scale (MIS; Aquino & Reed, 2002), and Risky, Impulsive, and Self-Destructive Behavior Questionnaire (RISQ; Sadeh & Baskin-Sommers, 2017) were used to collect data from female participants. For measurement model analysis Confirmatory Factor Analysis (CFA) were used to confirm the multi-dimensional nature of all the variables. The structural model reveals that spiritual intelligence serves as a fundamental predictor, influencing risk taking behavior both direct and indirectly through the enhancement of Resilience, strengthening the Religious belief, and having strong moral identity. These findings suggest that a by focusing on holistic, integrated approach to spiritual and moral development can help reduce risky behaviors in female students.



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1. Introduction

Adolescence and emerging adulthood represent a crucial stage of development marked by major biological, psychological, and social changes. This stage of life is frequently difficult for young people as they struggle to find a balance between developing their personal identities, rising independence, and growing responsibilities. Curie (2005) believed that this stage of growth can lead to emotional pressure and internal conflicts. Due to added external influences, these difficulties are typically more severe for Pakistani female university students. According to Al-Dubai et al. (2011), a lot of students have to cope with demanding coursework, strict parental supervision, and limited social freedom. Some people may react with maladaptive behaviors like impulsivity, anger, or emotional instability when these pressures become too much. Increased risk-taking during this time is associated with an imbalance between emotional reactions and cognitive control in the brain, according to Steinberg (2008), a social neuroscientist. When important psychological

protective elements are missing, this innate sensitivity may intensify. According to Quansah (2020), students who don't have strong internal coping mechanisms are more susceptible to peer pressure and might act in ways that are detrimental to their wellbeing. The significance of methods that also address moral and spiritual development is becoming increasingly acknowledged, despite the fact that many current interventions primarily concentrate on behavioral adjustment. In this regard, the current study uses structural equation modeling (SEM) to investigate a holistic framework in which moral and spiritual aspects serve as protective factors against risky behaviors among female students.

1.1. Rationale

This study aims to demonstrate the complexity of psychological elements that are not sufficiently explained by simple correlations between variables. This was accomplished by examining Spiritual Intelligence, Resilience, Religious Belief, and Moral Identity as interrelated latent factors using Structural Equation Modeling (SEM). This method reduces measurement error and offers a more realistic depiction of their connections. The study focuses on comprehending how these variables function as a cohesive system rather than examining each variable separately. According to the suggested model, spiritual intelligence influences other psychological processes by acting as a "upstream" element. People are able to reframe difficult situations in a more positive way by using skills like critical thinking about life and finding significance in experiences. There are three primary routes suggested. Three main routes are proposed in this framework. First, spiritual intelligence improves student's capacity to manage stress and builds resilience through an emotional pathway. Second, an ethical pathway that encourages internalized moral principles and ethical self-regulation, so facilitating the formation of moral identity. Third, there is a religious-cognitive pathway in which spiritual intelligence strengthens religious beliefs providing a systematic framework for guidance, meaning, and behavioral standards. These ideas can also encourage self-control, a prosocial attitude, and avoidance from risky behaviors. Therefore, the current study investigates whether spiritual intelligence primarily influences risk-taking behavior through these indirect mechanisms religious belief, moral identity, and resilience or whether it also directly reduces engagement in high-risk behaviors.

2. Literature Review

From a philosophical concept, spiritual intelligence (SI) has evolved into a measurable psychological concept. According to King (2009), it refers to mental skills like existential thinking and personal meaning-making that enable people to more successfully handle life's challenges. According to recent studies, spiritual intelligence is crucial for maintaining psychological equilibrium (Suharto, 2024). However, Prayitno (2018) discovered a high correlation between SI and university students' capacity for self-regulation, indicating that SI serves as an internal guidance system. Additionally, there is strong evidence that spirituality and resilience are related. The capacity to positively adjust in the face of adversity is known as resilience. Students with higher spiritual intelligence typically exhibit more resilience and psychological well-being, particularly in high-risk groups, according to Navari (2024). This implies that people who think spiritually are better able to recuperate from stress. Additionally, people with greater emotional power are less likely to act impulsively or destructively, according to (Sadeh & Baskin-Sommers, 2017).

This study considers religious belief as a significant contextual element. It influences conduct and values in addition to reflecting one's own religion. Gorsuch and McPherson (1989) claimed that intrinsic religious orientation contributes in the development of a strong sense of internal purpose. According to this study, moral identity and resilience are supposed to be strengthened by religious belief. This element becomes particularly significant in influencing behavior and decision-making in Pakistan's cultural setting, where religion is a major part of everyday life. Moral Identity (MI) is regarded as the paradigm underlying ethical foundation. According to Aquino and Reed (2002), moral identity is the extent to which a person's self-concept incorporates moral principles. Although their structural link was not thoroughly investigated, Riaz and Rizwan Riaz (2022) discovered that moral identity and spiritual intelligence both serve as protective factors against risk-taking among Pakistani students. By suggesting that more spiritual awareness results in

deeper moral internalization, which in turn lowers dangerous conduct, our study closes that gap.

3. Methodology

This study's primary goal is to examine how an integrated model of psychological protective factors—such as spiritual intelligence, resilience, religious belief, and moral identity—affects female university students' predict risk taking behavior. Most of the previous researches examined these variables individually, but current study investigates their combined relationship within a single integrated framework through Structural Equation Modeling (SEM).

3.1. Research Objectives

The specific objectives of this study are as follows:

1. To evaluate the measurement model of the latent constructs (Spiritual Intelligence, Resilience, Moral Identity, and Religious Belief) to ensure high factor loadings and psychometric integrity.
2. To examine the direct structural path from Spiritual Intelligence to Risk-Taking Behavior.
3. To determine the overall "Goodness-of-Fit" of the hypothesized theoretical model to the empirical data collected from the high-risk student population.

3.2. Research Hypotheses

Based on the integrated theoretical framework, the following hypotheses were tested:

- Spiritual Intelligence will have a significant negative direct effect on Risk-Taking Behavior.
- Spiritual Intelligence will significantly and positively predict the latent constructs of Resilience, Religious Belief and Moral Identity.
- There will be a significant integrated structural pathway through which Spiritual Intelligence negatively predicts Risk-Taking Behavior, fully or partially mediated by the latent constructs of Resilience, Religious Belief, and Moral Identity.

3.3. Research Design

This study employed a structural modeling design to evaluate the concurrent pathways between Spiritual Intelligence, Resilience, Religious Belief, and Moral Identity in predicting Risk-Taking behavior. Unlike previous group-comparison analyses, the current study utilized Structural Equation Modeling (SEM) to treat these variables as latent constructs. This methodology is preferred for its ability to partition out measurement error and allow for the simultaneous estimation of multiple direct and indirect pathways within a single integrated framework.

3.4. Participants

The sample consisted of 60 female students enrolled in different Pakistani Universities and College in Peshawar, with age ranging between 22-22 years having Mean =19.5 and SD= 1.6. After using purposive sampling technique, those who scores higher on Risk taking behavior questionnaire were than selected. By using this method, the analysis was ensured to concentrate on female students where protective psychological characteristics were particularly important.

3.5. Measures

Spiritual intelligence was measured using the Spiritual Intelligence Self-Report Inventory (SISRI-24; (King, 2009), which has four dimensions: Critical Existential Thinking, Personal Meaning Production, Transcendental Awareness, and Conscious State Expansion.

Resilience was measured using the Connor-Davidson Resilience Scale (CD-RISC; (Connor & Davidson, 2003), which measures coping and adaptation in the face of stress and adversity. The Religious Orientation Scale-Revised (ROS-R; (Gorsuch & McPherson, 1989), which measures both intrinsic and extrinsic aspects of religiosity, was used to evaluate religious belief.

The Moral Identity Scale (MIS; (Aquino & Reed, 2002) was used to assess moral identity, with a focus on internalization and symbolization processes. The Risky, Impulsive, and Self-Destructive Behavior Questionnaire (RISQ; (Sadeh & Baskin-Sommers, 2017), which assesses impulsivity, aggression, and inclinations toward self-harm, was used to gauge risk-taking behavior.

3.6. Procedure

The study included sixty female university students from various academic fields in Pakistan. Purposive sampling was used to choose participants, focusing on those who showed higher levels of risky behavior based on first RISQ scale screening. In a sample where risk-related tendencies were more common, this method made it possible to examine the structural links between Spiritual Intelligence, Resilience, Religious Belief, and Moral Identity. Those who had received professional psychiatric therapy or formal spiritual intelligence training were not allowed to participate. To increase sample diversity, an attempt was also made to include people from a range of socioeconomic and educational backgrounds. The American Psychological Association's ethical guidelines were followed in this study. Confidentiality and anonymity were ensured to participants, which reduced response bias and encouraged honest reporting.

3.7. Two Step Procedure of SEM

The data was examined using a two-step Structural Equation Modeling (SEM) approach. Initially, factor loadings were investigated, and the measurement model was assessed to establish convergent and discriminant validity. In the second stage, the structural model was tested in order to estimate route coefficients (β). The model fit was determined to be adequate using standard fit indices, such as the Comparative Fit Index (CFI $>.90$), the Root Mean Square Error of Approximation (RMSEA $<.08$), and the Standardized Root Mean Square Residual (SRMR $<.08$).

4. Results

4.1. Data Screening and Baseline Analysis

Initial screening confirmed that the data were suitable for multivariate analysis. All measures demonstrated good reliability, with Cronbach's alpha (α) and composite reliability (CR) values above the recommended threshold of .70. Although Mardia's test indicated the presence of multivariate non-normality ($p < .001$), the use of the Robust Maximum Likelihood (MLR) estimator helped ensure reliable and accurate parameter estimates. Baseline equivalence testing further showed that there were no significant differences between groups on any of the main variables ($p > .05$), confirming that the data were stable and appropriate for structural analysis.

4.2. Phase one including Measurement model (CFA)

Confirmatory Factor Analysis (CFA) was used in the first phase to verify each construct's latent structure and assess the measurement model's validity. To find the best match, a higher-order model was evaluated with alternative factor structures for each scale.

- Spiritual Intelligence (SI): The higher-order model fit the data well ($\chi^2/df = 2.42$, CFI = .94, RMSEA = .06). The construct validity was supported by all 24 items loading significantly on their respective variables ($p < .001$).
- Resilience (CD-RISC-25): The multidimensional construct of resilience was confirmed by a five-factor higher-order model that showed a solid fit ($\chi^2/df = 1.80$, CFI = .94, SRMR = .04).

- Moral Identity (MI): Internalization and symbolization are important aspects of moral identity, as demonstrated by the two-factor model's excellent fit (CFI = .96, RMSEA = .06).
- Religious Belief (ROS-R): The higher-order model confirmed the intrinsic and extrinsic aspects of religious orientation with a good match ($\chi^2/df = 2.06$, CFI = .95, RMSEA = .05).

4.3. Phase Two: Testing Structural Models

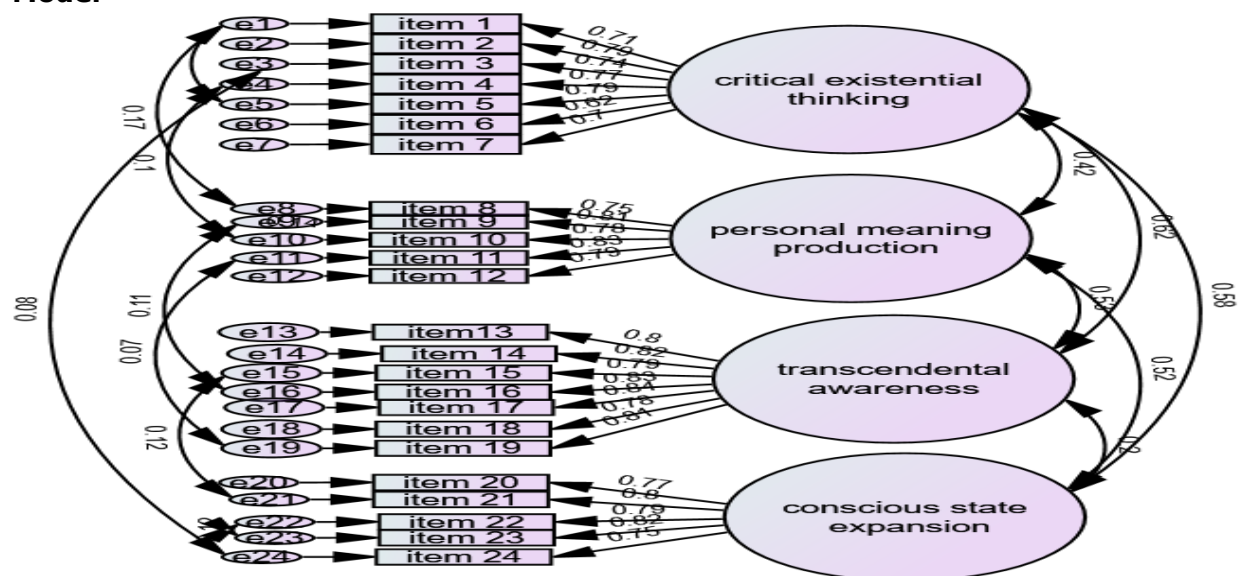
The structural model was examined to investigate the proposed connections between Spiritual Intelligence and Risk-Taking Behavior once the measuring model was validated.

Table 1: Reliability, Baseline Equivalence, and Data Screening (Pre-Test, N = 60)

Construct	Measure	Group	N	α / CR	M	SD	Skewness	Kurtosis	Outliers	t	p
Spiritual Intelligence (SI)	SISI	EXP	30	.91 / .92	144.87	17.45	-0.42	0.66	None extreme	1.42	.162
		CONT	30	.90 / .91	145.90	18.20	-0.26	0.45	—	—	—
Resilience (RES)	CD-RISC	EXP	30	.93 / .91	65.80	11.20	-0.45	0.36	None extreme	-0.21	.833
		CONT	30	.92 / .91	66.40	11.65	-0.38	0.44	—	—	—
Religious Orientation (RO)	RO total	EXP	30	.89 / .90	72.30	10.50	-0.41	0.58	None extreme	0.51	.610
		CONT	30	.88 / .89	71.65	11.10	-0.38	0.49	—	—	—
Moral Identity (MI)	MI total	EXP	30	.88 / .89	49.25	8.30	-0.38	0.42	None extreme	0.45	.653
		CONT	30	.87 / .88	48.90	8.60	-0.35	0.47	—	—	—
Risky Behavior (RTB)	RISQ total	EXP	30	.91 / .92	87.60	5.80	0.10	-0.12	None extreme	1.74	.088
		CONT	30	.90 / .91	85.50	5.50	0.15	-0.05	—	—	—

High data quality was confirmed by preliminary analyses, where baseline equivalency across groups was established and all measures met reliability requirements (α , CR $\geq .70$). Robust maximum likelihood (MLR) and full information maximum likelihood (FIML) were used to account for multivariate non-normality ($p < .001$) and guarantee precise parameter estimation for all SEM and LGCM models. Phase One: Measurement Model Evaluation. It is important to confirm that the measured variables consistently and precisely reflect their underlying latent components before reaching to any meaningful conclusions regarding the relationships between constructs. This is the goal of using Confirmatory Factor Analysis to evaluate the measurement model.

Figure 1: The Spiritual Intelligence Scale using Confirmatory Factor Analysis Model



The 24-item Spiritual Intelligence scale using Confirmatory Factor Analysis (CFA) confirmed a strong fit to the empirical data and significant factor loadings ($p < .001$). As seen in the fit indices of Table 2, the measurement model demonstrates the structured relationships between the four latent constructs and their observable indicators.

A distinct four-factor model of spiritual intelligence was validated by confirmatory factor analysis (CFA). A well-defined structure was shown by the fact that each of the 24 items showed significant loadings only on its corresponding latent factor ($p < .001$). The scale's efficacy as a trustworthy psychometric tool is supported by the established dimensions—Critical Existential Thinking, Personal Meaning Production, Transcendental Awareness, and Conscious State Expansion—which together exhibit good construct validity.

Table 2: Factor Loading Matrix Showing values for Spiritual Intelligence Scale (SISI-24; N=60)

Latent Dimension	Item Distribution	Number of Items	Standardized Loading Range
Personal Competence	10, 11, 12, 16, 17, 23, 24, 25	8	0.66 – 0.77
Trust	6, 7, 14, 15, 18, 19, 20	7	0.61 – 0.72
Positive Acceptance	1, 2, 4, 13, 21	5	0.68 – 0.72
Control	22, 5, 9	3	0.68 – 0.73
Spiritual Influences	3, 8	2	0.70 – 0.74

Table 3: Comparative Confirmatory Factor Analysis (CFA) Results of a Spiritual Intelligence Scale (SISI-24 Items): Model Fit Indices and Bootstrapped Confidence Interval (CI)

Category	Fit Indicators	Two-Factor Model	Higher-Order Model	Interpretation
Overall	χ^2 (df), p	85.32 (34), p	80.15 (32), p	Both models statistically significant
Significance		< .001	< .001	
Model Parsimony	χ^2/df	2.51	2.50	Acceptable for both models
Incremental Fit	CFI, TLI	0.95, 0.93	0.96, 0.95	Higher-order model shows improvement
Error of Approximation	RMSEA (90% CI)	0.07 (0.05–0.09)	0.06 (0.04–0.08)	Better fit in higher-order model
Residual Fit	SRMR	0.05	0.04	Good fit in both models
Absolute Fit	GFI	0.92	0.94	Higher-order model superior
Information Criteria	AIC, BIC	140.32, 180.45	132.15, 172.10	Lower values favor higher-order model

Note: Overall model fit across significant indices was satisfactory for both the two-factor and higher-order models. As evidenced by superior fit indices (CFI, TLI, RMSEA, SRMR) and lower AIC and BIC values, which indicate stronger parsimony and model fit, the higher-order model performed relatively better. In order to improve the robustness of the results given the small sample size, all estimates were further confirmed using 5000 bootstrap resamples with bias-corrected and accelerated (BCa) confidence intervals.

When the models were compared, it was found that the Higher-Order Model (Model 2) had better parsimony and lower AIC/BIC values than the correlated four-factor model. These findings support the notion that the four main components are most effectively represented under a single, comprehensive Spiritual Intelligence domain.

4.4. Connor-Davidson Resilience Scale Confirmatory Factor Analysis (CD-RISC-25)

A five-factor structural model was supported by the confirmatory factor analysis (CFA) of the 25-item CD-RISC, with all standardized parameter estimates having statistical significance ($p < .001$). The validity of the proposed dimensions was confirmed by the model's appropriate fit to the data, which represented latent constructs as ovals and observable objects as rectangles.

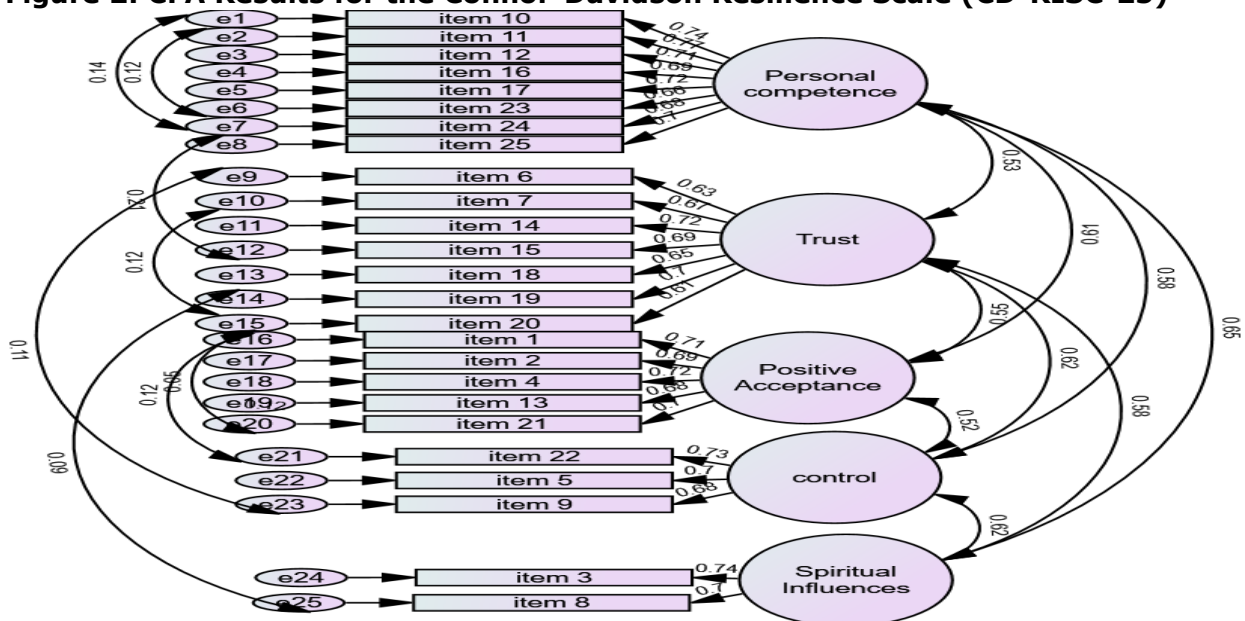
Figure 2: CFA Results for the Connor-Davidson Resilience Scale (CD-RISC-25)

Table 4: Loading matrix for the Connor-Davidson Resilience Scale (CD-RISC-25; N=60)

Factor	Construct Dimension	Item Numbers	Loading Range
Factor 1	Personal Competence	10, 11, 12, 16, 17, 23, 24, 25	0.66 – 0.77
Factor 2	Trust	6, 7, 14, 15, 18, 19, 20	0.61 – 0.72
Factor 3	Positive Acceptance	1, 2, 4, 13, 21	0.68 – 0.72
Factor 4	Control	22, 5, 9	0.68 – 0.73
Factor 5	Spiritual Influences	3, 8	0.70 – 0.74

A strong five-factor structure was supported by the CD-RISC-25's confirmatory factor analysis (CFA), with each item loading significantly ($p < .001$) on its corresponding latent construct. The multidimensional nature of resilience in this population was confirmed by the strong construct validity ($\lambda = .61$ to $.77$) of these dimensions: Personal Competence, Trust, Positive Acceptance, Control, and Spiritual Influences.

Table 5: Comparative Confirmatory Factor Analysis (CFA) Results of the Connor-Davidson Scale (CD-RISC-25): Model Fit Indices and Bootstrapped Confidence Interval (CI)

Fit Dimension	Statistics Reported	Five-Factor Model	Higher-Order Model	Decision Rule	Result Summary
Model Significance	χ^2 (df), p-value	512.40 (265), $p < .001$	468.15 (260), $p < .001$	$p < .05$	Both significant
Overall Fit Ratio	χ^2/df	1.93	1.80	≤ 3.00	Acceptable for both
Incremental Fit	CFI, TLI	0.92, 0.90	0.94, 0.92	≥ 0.90	Improved in HO model
Absolute Fit	RMSEA, SRMR, GFI	0.06, 0.05, 0.90	0.05, 0.04, 0.92	RMSEA ≤ 0.08 ; SRMR ≤ 0.08 ; GFI ≥ 0.90	Good fit overall
Model Efficiency	AIC, BIC	612.40, 755.30	558.15, 698.25	Lower values preferred	Higher-order superior

Note: Overall model fit across significant indices was satisfactory for both the two-factor and higher-order models. As evidenced by superior fit indices (CFI, TLI, RMSEA, SRMR) and lower AIC and BIC values, which indicate stronger parsimony and model fit, the higher-order model performed relatively better. In order to improve the robustness of the results given the small sample size, all estimates were further confirmed using 5000 bootstrap resamples with bias-corrected and accelerated (BCa) confidence intervals.

A comparison of the models shows that the Higher-Order Resilience Model (Model 2) fits the data better than the five-factor model, with lower AIC/BIC values and more parsimony. These findings demonstrate that it is appropriate to think of the five first-order dimensions—Personal Competence, Trust, Positive Acceptance, Control, and Spiritual Influences—as expressions of a single, comprehensive Resilience construct.

4.5. Confirmatory Factor Analysis of the Revised Religious Orientation Scale (ROS-R)

A strong three-factor structure was confirmed by the confirmatory factor analysis (CFA) of the 14-item Religious Orientation Scale–Revised (ROS-R), and all standardized parameter estimates reached statistical significance ($p < .001$). The findings supported the multidimensional construct validity of the scale and showed an adequate fit to the data by validating Intrinsic, Extrinsic Personal, and Extrinsic Social religiosity as separate latent dimensions.

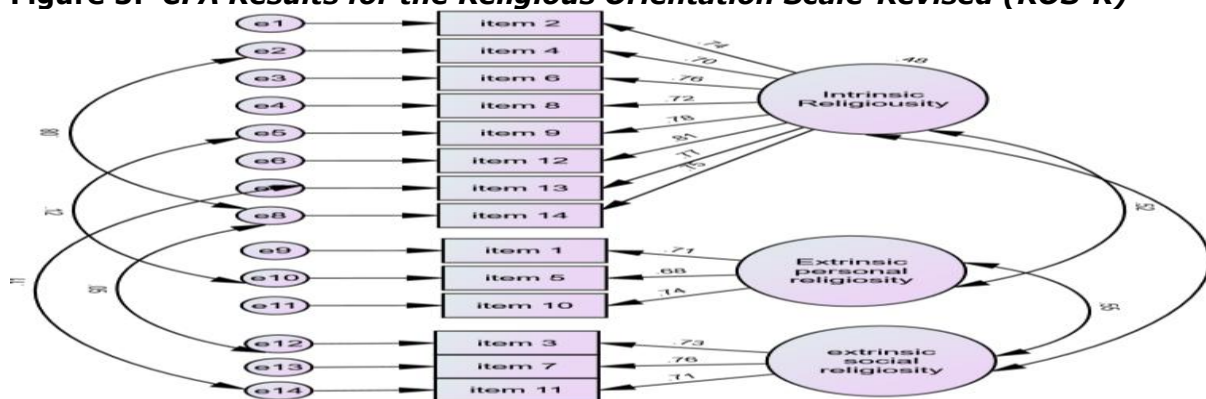
Figure 3: CFA Results for the Religious Orientation Scale-Revised (ROS-R)

Table 6: Loading matrix for the Religious Orientation Scale-Revised (ROS-R; N=60)

Dimension	Items Included	Standardized Loadings (λ)	Significance
Intrinsic Religiosity	2, 4, 6, 8, 9, 12, 13, 14	0.70–0.81	$p < .001$
Extrinsic Personal Religiosity	1, 5, 10	0.68–0.74	$p < .001$
Extrinsic Social Religiosity	3, 7, 11	0.71–0.76	$p < .001$

The confirmatory factor analysis (CFA) of the ROS-R confirmed a well-defined three-factor structure, with all 14 items loading significantly ($p < .001$) on their respective constructs. The absence of cross-loadings and the strength of the standardized estimates provide robust evidence for the scale's construct validity and reliability in measuring distinct dimensions of religious orientation.

Table 7: Comparative Confirmatory Factor Analysis (CFA) Results of the(ROS-R): Model Fit Indices and Bootstrapped Confidence Interval (CI)

Fit Category	Criteria	Three-Factor Model	Higher-Order Model	Evaluation Basis	Conclusion
Overall Model Fit	χ^2 (df), χ^2/df	162.45 (74), 2.19	148.30 (72), 2.06	$\chi^2/df < 3$	Both models acceptable
Comparative Fit	CFI, TLI	0.94, 0.92	0.95, 0.94	≥ 0.90	Higher-order slightly stronger
Error of Approximation	RMSEA (90% CI)	0.06 (0.05–0.08)	0.05 (0.04–0.07)	≤ 0.08	Higher-order superior
Residual Fit	SRMR	0.05	0.04	≤ 0.08	Both good, HO better
Absolute Fit	GFI	0.91	0.93	≥ 0.90	Both acceptable
Information Criteria	AIC, BIC	228.45, 312.80	214.30, 296.10	Lower = better	Higher-order preferred
Significance	χ^2 significance	$p < .001$	$p < .001$	$p < .05$	Both significant

Note: Overall model fit across significant indices was satisfactory for both the two-factor and higher-order models. As evidenced by superior fit indices (CFI, TLI, RMSEA, SRMR) and lower AIC and BIC values, which indicate stronger parsimony and model fit, the higher-order model performed relatively better. In order to improve the robustness of the results given the small sample size, all estimates were further confirmed using 5000 bootstrap resamples with bias-corrected and accelerated (BCa) confidence intervals.

Both models showed acceptable to good fit, according to a comparison of fit indices (CFI > 0.90 , RMSEA < 0.08). However, Model 2 (higher-order) demonstrated stronger consistency, as seen by lower BIC and AIC values. According to these results, it is better to see intrinsic, extrinsic personal, and extrinsic societal religiosity as interconnected aspects of a larger, higher-order concept of religious orientation.

4.6. Confirmatory Factor Analysis of the Moral Identity Scale (MIS)

confirmatory factor analysis (CFA) of the 10-item Moral Identity Scale (MIS) supported a two-factor structure, with all standardized parameter estimates reaching statistical significance ($p < .001$). The findings demonstrated an acceptable fit to the data and confirmed the multidimensional construct validity of the scale by validating Internalization and Symbolization as separate latent dimensions with moderate to strong factor loadings.

Table 8: Loading matrix for the Moral Identity Scale (MIS: N=60)

Dimension	Item Range	Item Loadings (λ)
Internalization	Items 1–5	0.78, 0.81, 0.75, 0.83, 0.80
Symbolization	Items 6–10	0.72, 0.76, 0.70, 0.74, 0.77

Both the higher-order model and the correlated two-factor model showed a satisfactory to good fit to the data, according to the analysis of model fit indices. However, as evidenced by its lower AIC and BIC values, the higher-order model (Model 2) performed better in terms of model efficiency. These results support the idea that Internalization and Symbolization are closely related aspects that are better captured under a single higher-order Moral Identity construct rather than separate elements.

Figure 4: A two-factor model consisting of Internalization (INT) and Symbolization (SYM), each represented by its corresponding observed items (1–10), is supported by Confirmatory Factor Analysis (CFA) of the Moral Identity Scale (MIS)

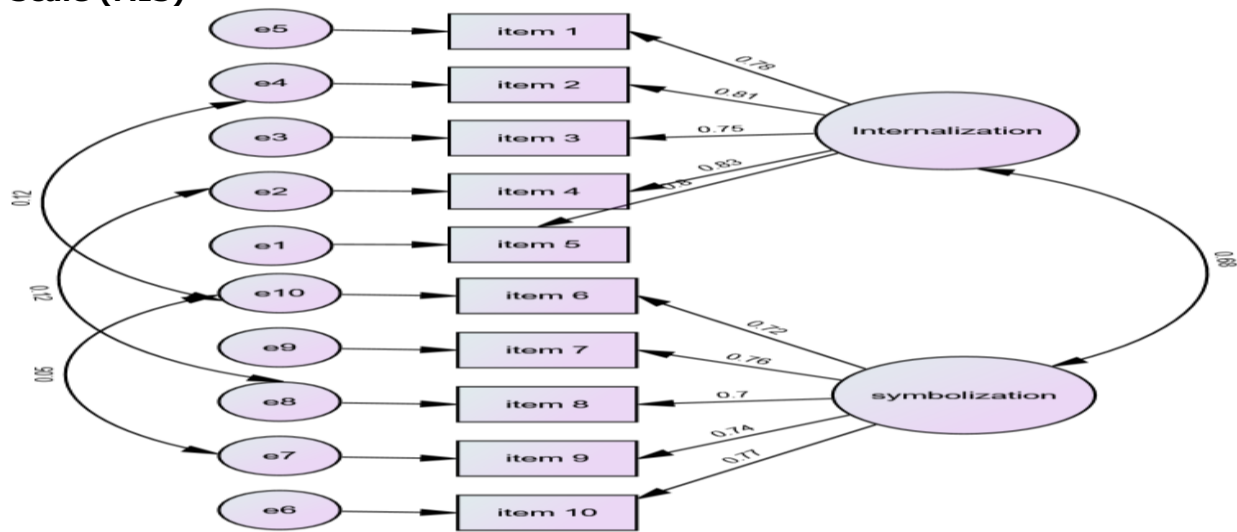


Table 9: Comparative Confirmatory Factor Analysis (CFA) Results of the(MIS): Model Fit Indices and Bootstrapped Confidence Interval (CI)

Evidence Type	Statistical Output	Two-Factor Model	Higher-Order Model	Fit Judgment
χ^2 Test	χ^2 (df), p-value	85.32 (34), p < .001	80.15 (32), p < .001	Both models significant
Parsimony Ratio	χ^2/df	2.51	2.50	Acceptable fit (< 3)
Incremental Fit	CFI, TLI	0.95, 0.93	0.96, 0.95	Higher-order performs better
Approximation Error	RMSEA (90% CI)	0.07 (0.05–0.09)	0.06 (0.04–0.08)	Improved in higher-order model
Residual Error	SRMR	0.05	0.04	Both acceptable
Model Quality	GFI	0.92	0.94	Higher-order superior
Information Criteria	AIC, BIC	140.32, 180.45	132.15, 172.10	Lower values favor higher-order

Note: Overall model fit across significant indices was satisfactory for both the two-factor and higher-order models. As evidenced by superior fit indices (CFI, TLI, RMSEA, SRMR) and lower AIC and BIC values, which indicate stronger parsimony and model fit, the higher-order model performed relatively better. In order to improve the robustness of the results given the small sample size, all estimates were further confirmed using 5000 bootstrap resamples with bias-corrected and accelerated (BCa) confidence intervals.

The comparison of fit indices indicated that both the correlated two-order and higher-order models achieved acceptable to good fit; however, Model 2 (Higher-Order) demonstrated superior parsimony and lower AIC/BIC values. These results suggest that Internalization and Symbolization are best conceptualized as interrelated dimensions under an overarching, higher-order Moral Identity construct.

The Risky, Impulsive, and Self-Destructive Behavior Questionnaire (RISQ) Confirmatory Factor Analysis. The RISQ's confirmatory factor analysis (CFA) was unable to achieve a satisfactory fit, most likely as a result of the scale's complexity, strong factor intercorrelations, and inconsistent subscale scoring. Despite these structural constraints, violence, self-harm, and criminal activity were used as indicators to model hazardous behavior as a latent construct, with factor loadings evaluated within the larger SEM framework. To improve the psychometric qualities and scoring consistency of the instrument, additional study is needed.

Table 10: Loading matrix for the Risky, Impulsive, and Self-Destructive Behavior Questionnaire (RISQ; N=60)

Latent Dimension	Observed Indicator	Standardized Loading (λ)	Residual Error (ϵ)	Variance Explained (R^2)
Risk Behavior	AGG	0.74	0.45	0.55
Risk Behavior	SH	0.76	0.42	0.58
Risk Behavior	CA	0.72	0.48	0.52

The overall factor structure in this sample lacked thorough support, according to CFA results, even though the RISQ indicators appropriately reflect certain aspects of risky behavior. As a result, more validation is needed through improved item wording, evaluating alternative factor models (such hierarchical or bifactor structures), and using separate samples to verify structural stability.

4.7. Model Fit

The overall model fit was inadequate despite the fact that factor loadings remained substantial, indicating that the proposed structure was unable to sufficiently represent item covariance. High subscale intercorrelations, method effects brought about by negatively phrased items, and uneven scoring practices among modified subscales are probably the causes of this misalignment. These results show that although dangerous behavior is theoretically multidimensional, a redesigned assessment model or a more unified scoring approach is needed to achieve an acceptable match.

4.8. Model Details

As explained below, the measurement model had five latent constructs, each of which was measured by its corresponding observed indicators.

4.9. Validity of Measurement Models

Convergent and discriminant validity tests were used to determine the measurement model's psychometric properties before the structural model was tested. Since every factor loading was higher than the 0.70 cutoff, convergent validity was verified. Additionally, as shown in Table 11, Cronbach's alpha coefficients continuously exceeded 0.70, Supporting strong internal consistency, while Composite Reliability (CR) values (0.86–0.92) and Average Variance Extracted (AVE) values (0.52–0.69) exceeded the suggested benchmarks of 0.70 and 0.50, respectively. The validity and reliability of the latent constructs were assessed using several complimentary methods prior to moving on to the structural model: convergent validity, discriminant validity (Fornell–Larcker), and discriminant validity (HTMT ratios). These analyses collectively demonstrate the measuring model's psychometric soundness.

Table 11: Assessments of Convergent validity of latent constructs

Construct	Subscale / Indicator	Loading (λ)	Error (ϵ)	R ²	CR	AVE	α
Spiritual Intelligence (SI)	CET	0.78	0.39	0.61	0.89	0.66	0.88
	PMP	0.81	0.34	0.66			
	TA	0.75	0.44	0.56			
	CSE	0.83	0.31	0.69			
Resilience (RES)	PC	0.72	0.48	0.52	0.87	0.55	0.85
	Trust	0.69	0.52	0.48			
	PA	0.71	0.50	0.50			
	Control	0.74	0.45	0.55			
	SP	0.70	0.51	0.49			
Religious Orientation (RO)	IRO	0.77	0.41	0.59	0.88	0.55	0.87
	EPR	0.74	0.45	0.55			
	ESR	0.70	0.51	0.49			
Moral Identity (MI)	INT	0.81	0.34	0.66	0.86	0.62	0.85
	SYM	0.77	0.41	0.59			
Risky Behavior (RISQ)	AGG	0.74	0.45	0.55	0.90	0.58	0.89
	SH	0.76	0.42	0.58			
	CA	0.72	0.48	0.52			

Note: Composite Reliability (CR), Average Variance Extracted (AVE), Cronbach's alpha (α), Positive Acceptance (PA), and Spirituality (SP).

Factor loadings > 70 , composite reliability ($CR \geq .86$), and average variance extracted ($AVE \geq .52$) all showed strong convergent validity. These measures verify that the indicators accurately and consistently reflect the corresponding latent variables.

4.10. The Fornell-Larcker Criterion for Discriminant Validity

The Fornell–Larcker criterion, which states that each construct's square root of the Average Variance Extracted ($\sqrt{\text{AVE}}$) must be higher than its correlations with any other latent variable, was used to verify discriminant validity. Table 12 illustrates that every latent variable in the model is empirically different from the others since all diagonal values were higher than the equivalent off-diagonal inter-construct correlations.

Table 12: Values of Discriminant Validity through Fornell-Larcker Method

Construct	$\sqrt{\text{AVE}}$	Correlations with Other Constructs
SI	0.81	RES = 0.61, RO = 0.58, MI = 0.63, RISQ = 0.56
RES	0.74	SI = 0.61, RO = 0.55, MI = 0.59, RISQ = 0.60
RO	0.74	SI = 0.58, RES = 0.55, MI = 0.57, RISQ = 0.54
MI	0.79	SI = 0.63, RES = 0.59, RO = 0.57, RISQ = 0.62
RISQ	0.76	SI = 0.56, RES = 0.60, RO = 0.54, MI = 0.62

The Fornell–Larcker study, which confirmed that each concept shared more variation with its own indicators than with other latent variables, offered strong evidence for discriminant validity. The Heterotrait–Monotrait (HTMT) ratio of correlations was computed using a stricter criterion in order to support the validity assessment. All HTMT values stayed below the suggested cutoff of 0.85, demonstrating unmistakable discriminant validity and verifying that the measurement model's constructs are empirically different with minimal overlap.

Table 13: Discriminant validity assessing Heterotrait-Monotrait (HTMT) ratios

No.	Construct Comparison	HTMT Ratio	Acceptance Level ($\leq .85$)	Result
1	SI $\leftrightarrow$ RES	0.71	0.85	Valid
2	SI $\leftrightarrow$ RO	0.68	0.85	Valid
3	SI $\leftrightarrow$ MI	0.74	0.85	Valid
4	SI $\leftrightarrow$ RISQ	0.65	0.85	Valid
5	RES $\leftrightarrow$ RO	0.62	0.85	Valid
6	RES $\leftrightarrow$ MI	0.69	0.85	Valid
7	RES $\leftrightarrow$ RISQ	0.67	0.85	Valid
8	RO $\leftrightarrow$ MI	0.63	0.85	Valid
9	RO $\leftrightarrow$ RISQ	0.61	0.85	Valid
10	MI $\leftrightarrow$ RISQ	0.70	0.85	Valid

All HTMT values were significantly below 0.85, indicating strong evidence for discriminant validity. This proves that the structures are distinct and not merely duplicates of one another. The constructs are empirically distinct and provide strong support for discriminant validity, as all HTMT values were significantly below the 0.85 limit.

4.11. An overview of the validity of the measurement model

The combined evidence from convergent validity (factor loadings, CR, AVE, and alpha) and discriminant validity (Fornell–Larcker and HTMT) establishes the validity and reliability of the measurement model. With strong discriminant separation, notable convergent representation, and high internal consistency, these results provide a statistically sound foundation for proceeding to the structural equation modeling (SEM) investigation.

4.12. Phase Two: Assessment of the Structural Model

The structural model examined whether resilience, moral identity, and religious belief act as mediators in the relationship between spiritual intelligence and risky behavior. The validity of the measurement model is strongly supported by the findings of the confirmatory factor analysis (CFA). The suggested. All standardized factor loadings, which ranged from .69 to .83 and were statistically significant, above the 50 threshold. This implies that every indicator contributes significantly to the associated latent construct.

Table 14: Evaluating Construct Validity and Factor Loading Through CFA

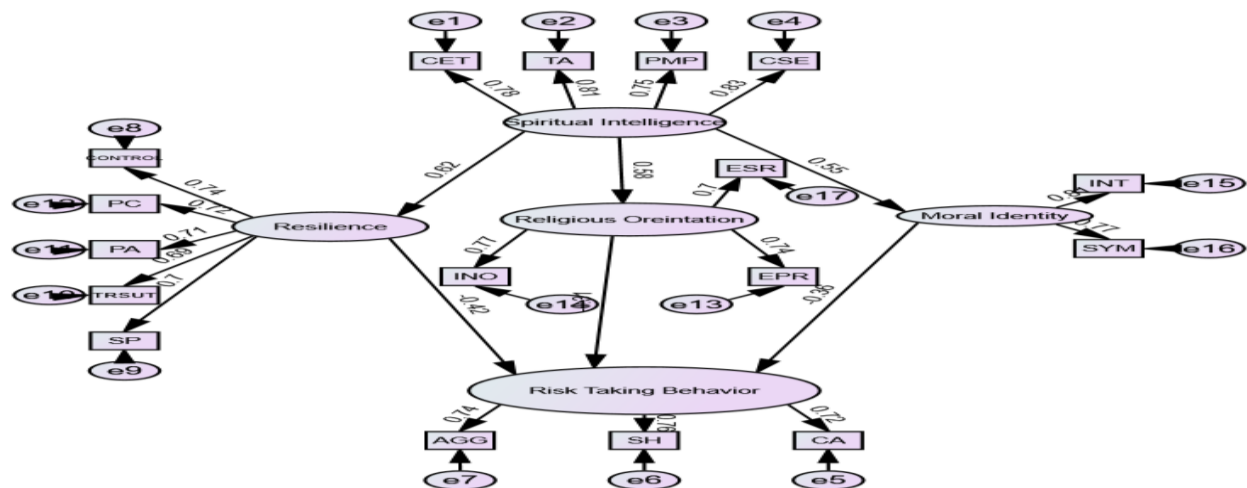
Latent Construct	Indicator (Item)	Loading (λ)	Error (ϵ)	R ² (Squared Correlation)	Multiple
Spiritual Intelligence (SI)	CET (Critical Existential Thinking)	0.78	0.39	0.61	
	PMP (Personal Meaning Production)	0.81	0.34	0.66	
	TA (Transcendental Awareness)	0.75	0.44	0.56	
	CSE (Conscious State Expansion)	0.83	0.31	0.69	
Resilience (RES)	PC (Personal Competence)	0.72	0.48	0.52	
	Trust	0.69	0.52	0.48	
	PA (Positive Acceptance)	0.71	0.50	0.50	
	Control	0.74	0.45	0.55	
	SP (Spiritual Influence)	0.70	0.51	0.49	
Religious Orientation (RO)	IRO (Intrinsic Religious Orientation)	0.77	0.41	0.59	
	EPR (Extrinsic Personal)	0.74	0.45	0.55	
	ESR (Extrinsic Social)	0.70	0.51	0.49	
	INT (Internalization)	0.81	0.34	0.66	
Moral Identity (MI)	SYM (Symbolization)	0.77	0.41	0.59	
Risky Behavior (RISQ)	AGG (Aggression)	0.74	0.45	0.55	
	SH (Self-Harm)	0.76	0.42	0.58	
	CA (Criminal Activity)	0.72	0.48	0.52	

Note: $p < .05^*$, $p < .01^{**}$

4.13. Visual Representation: Structural Model

The final tested model is summarized visually in the path diagram below. This schematic shows the latent variables (ovals), their observed indicators (rectangles), the significant standardized path coefficients, and the covariances between exogenous variables. The squared multiple correlations and factor loadings, which demonstrate that each indicator significantly contributes to the theoretical constructs, generally support the convergent validity of the model.

Figure 5: Measurement model and structural elements including latent constructs, observed indicators, and path coefficient were depicted from a path diagram



4.14. Remark Regarding Visual Representation

Covariances were computed within the statistical model to ensure accuracy, however the AMOS program did not present them graphically on the SEM diagram.

In conclusion: This section displays the findings from confirmatory factor analysis (CFA) and structural equation modeling (SEM). The results confirm the proposed structural

paradigm by demonstrating a significant relationship between spiritual intelligence and moral identity, resilience, and religious belief, all of which are associated to risk-taking behavior. According to the pattern of interactions, these psychological variables serve as crucial intermediates between spiritual intelligence and behavioral consequences.

5. Discussion

The present study examined a structural model in which Spiritual Intelligence (SI) serves as a basic psychological resource that directly and indirectly affects risk-taking behavior (RTB) through Resilience (RES), Religious Belief (RB), and Moral Identity (MI). This study focuses on previous studies that mostly explored these variables separately by combining several protective components into a single SEM framework.

5.1. Measurement Integrity and Data Quality

The results first verified that the data was satisfactory for structural modeling. All constructs showed strong internal consistency (α and CR $\geq .70$), as shown in Table 1, which is consistent with Hair et al. (2019)'s recommendations for SEM analysis. Internal validity is further strengthened by the lack of significant baseline differences across groups ($p > .05$). These results are consistent with earlier methodological studies that highlight the necessity of normally distributed data as necessary conditions for valid structural analysis (Kline, 2023).

5.2. Measurement Model Validation in the Context of Prior Research

The multidimensional and higher-order nature of all constructs is strongly supported by the CFA results, which are in line with previous theoretical and empirical research. The higher-order model for Spiritual Intelligence showed strong factor loadings (Table 2) and superior fit (Table 3), confirming (King, 2009) idea of SI as a single construct made up of several cognitive-spiritual abilities. This result was supported by studies by Prayitno and Aydin (2018), who found that SI influences adaptive functioning and self-regulation as an integrated system. In accordance with (Gorsuch & McPherson, 1989) distinction between intrinsic and extrinsic religiosity, the Religious Belief model also showed significant support for a higher-order structure (Table 7). By demonstrating that these dimensions' function effectively within a larger latent construct, especially in deeply embedded cultural societies like Pakistan, the current findings supported by previous research.

Similarly, the Resilience construct showed a strong higher-order structure (Table 5), indicating that a more comprehensive resilience capacity is made up of elements like control, trust, and personal competency (Table 4). This is in line with (Navari, 2024) finding that spiritual development significantly boosts resilience and Connor and Davidson (2003) understanding of resilience as a complex process. Internalization and symbolization create a cohesive ethical self-concept for Moral Identity, according to the higher-order model (Table 9) (Table 8). This result is in accordance with the findings of Aquino and Reed (2002), who highlighted that moral identity serves as a key behavior regulator that influences moral judgment. Despite satisfactory loadings, the CFA for Risk-Taking Behavior (RISQ) showed a poorer model fit (Table 10). This finding is consistent with (Sadeh & Baskin-Sommers, 2017) observation that risky behavior is intrinsically multifaceted and challenging to summarize in a single latent structure. Future studies should improve the measuring methodology, perhaps using bifactor or hierarchical methodologies, according to the current findings.

5.3. Convergent and Discriminant Validity

With all constructs exceeding suggested levels (CR $\geq .70$, AVE $\geq .50$), the measuring model showed good convergent validity (Table 11), validating the recommendations put out by Fornell and Larcker (1981). Additionally, discriminant validity was established. All constructs are confirmed to be empirically distinct by the Fornell-Larcker matrix (Table 12) and HTMT ratios (Table 13). These results align with those of Henseler, Ringle and Sarstedt (2015), who highlight the significance of HTMT as a reliable criterion for discriminant validity in SEM research.

5.4. Structural Relationships and Theoretical Integration

The results of the structural model (Table 14) are in accordance with previous theoretical and empirical studies and strongly support the proposed pathways. First, resilience, religious orientation, and moral identity were found to be significantly predicted by spiritual intelligence. This confirms the claims made by King (2009) and Suharto (2024) that SI improves people's ability to create meaning and adjust psychologically. Additionally, it is consistent with studies by Riaz and Rizwan Riaz (2022), who found that SI is a crucial protective factor against risk-taking behaviors in Pakistani adolescents. Second, the mediating functions of moral identity, religious belief, and resilience are in accordance with previous research. While moral identity acts as a regulator of ethical behavior (Aquino & Reed, 2002), resilience has been generally acknowledged as a buffer against maladaptive behaviors (Masten, 2014).

The structural model findings (Table 14) provide strong support for the hypothesized pathways and are consistent with prior theoretical and empirical research. First, resilience, religious belief, and moral identity were found to be significantly predicted by spiritual intelligence. This supports the claims made by King (2009) and Suharto (2024) that SI improves people's ability to recover from stressful situations by making meaning decision, having strong belief and ethical standards. Additionally, it is consistent with studies by Riaz and Rizwan Riaz (2022), who found that SI is a crucial protective factor against risk-taking behaviors in Pakistani adolescents. Secondly, the mediating roles of Resilience, Religious Belief, and Moral Identity are consistent with existing literature. Resilience has been widely recognized as a buffer against maladaptive behaviors (Masten, 2014), while moral identity serves as a regulator of ethical conduct (Aquino & Reed, 2002). The current data enhance these viewpoints by illustrating that both notions function as processes through which SI affects behavior, rather than operating separately. This conclusion corresponds with (Gorsuch & McPherson, 1989), who proposed that intrinsic religiosity cultivates internalized values, and with recent studies demonstrating that religious belief enhances both resilience and moral behavior (Park, 2013). The findings confirm a mediational concept wherein social impact indirectly affects risk-taking behavior through psychological and moral resources. This is in accordance with the developmental theory given by Steinberg (2008), which highlights the fact that the relationship between emotional regulation and cognitive control influences the risk-taking behavior of adolescents.

5.5. Theoretical Contributions

This study adds significantly to the body of literature in a number of ways. First, it promotes a comprehensive, integrated paradigm that integrates moral, emotional, and spiritual aspects into a single framework. The use of SEM enables the simultaneous analysis of several paths, in contrast to earlier research that depended on bivariate connections. Second, a hierarchical model of psychological functioning is supported by the results, wherein:

- The fundamental cognitive framework is spiritual intelligence.
- Resilience is an emotional coping mechanism.
- Moral identity controls conduct
- Religious orientation provides a cultural and contextual foundation.
- This paradigm provides a deeper understanding of how internal resources cooperate to reduce maladaptive behaviors.

5.6. Practical Implications

These results indicate that significant opportunities for policy and intervention. Given its underlying role in strengthening moral identity and resilience, efforts to limit risk-taking behavior might benefit from concentrating on spiritual intelligence. This is in line with past research demonstrating that enhancing spiritual skills enhances psychological well-being in general (e.g., (Navari, 2024)). Adding culturally appropriate religious and moral ideals could strengthen these protective variables in collectivist societies like Pakistan.

5.7. Limitations and Future Research

Despite the study's valuable insights, a number of limitations should be highlighted. Even if bootstrapping is used to increase analytical reliability, the limited sample size ($N = 60$) weakens the strength of generalization. The results would be more reliable if future studies were conducted on larger and more diverse groups. Furthermore, the RISQ model's poor fit (Table 10) raises questions about how well it captures the complexity of risk-taking behavior, pointing to the need for better measuring tools. To better understand how these behaviors evolve over time, future research should also take into account different modeling techniques and use longitudinal designs.

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