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Development and Validation of a Teacher Self-Regulation Model Based on Self-Efficacy, Resilience, and Spiritual Intelligence in Girls' Upper Secondary Schools in West Azerbaijan Province

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A B S T R A C T

Purpose: This study aimed to develop and validate a comprehensive model of teacher self-regulation based on the predictive roles of self-efficacy, resilience, and spiritual intelligence among female secondary school teachers in West Azerbaijan Province.

Methods and Materials: This applied, exploratory research employed a mixed-methods design. In the qualitative phase, data were collected from 15 academic experts in education and psychology through semi-structured interviews and analyzed using inductive content analysis. The identified themes formed the basis for constructing the Teacher Self-Regulation Questionnaire. In the quantitative phase, data were gathered from 364 female high school teachers using validated instruments measuring self-regulation, self-efficacy, resilience, and spiritual intelligence. The measurement model was evaluated using confirmatory factor analysis (CFA), and the structural model was tested through structural equation modeling (SEM) using SPSS-25 and AMOS-24.

Findings: Results indicated that teacher self-regulation had a significant direct effect on self-efficacy ($\beta = 0.355$, $p < 0.001$), resilience ($\beta = 0.504$, $p < 0.001$), and spiritual intelligence ($\beta = 0.192$, $p < 0.001$). Self-efficacy significantly mediated the relationship between self-regulation and both resilience (indirect $\beta = 0.093$, $p < 0.001$) and spiritual intelligence (indirect $\beta = 0.146$, $p < 0.001$). The total effect of self-regulation on resilience and spiritual intelligence was also significant ($\beta = 0.597$ and $\beta = 0.338$, respectively; $p < 0.001$). Model fit indices confirmed acceptable structural validity ($\chi^2/df = 2.93$, CFI = 0.944, GFI = 0.911, RMSEA = 0.073).

Conclusion: The findings support a multidimensional model in which teacher self-regulation serves as a central mechanism influencing self-efficacy, resilience, and spiritual intelligence.

Keywords: *Teacher Self-Regulation, Self-Efficacy, Resilience, Spiritual Intelligence, Structural Equation Modeling, Secondary Education*

1. Introduction

In the face of the increasing complexities of the modern educational environment, especially within secondary schools, the demand for teachers who can effectively self-regulate their behaviors, emotions, and pedagogical strategies has become more pressing than ever. Teacher self-regulation—defined as the ability to consciously plan, monitor, and evaluate one's own performance and adapt it accordingly—has been recognized as a critical component of teacher effectiveness and student outcomes (Panadero, 2017). Particularly in the female secondary education sector of West Azerbaijan province, where socio-cultural and psychological challenges intersect, the cultivation of self-regulatory capacities in teachers can have transformative implications for educational equity and excellence.

Self-regulated teachers are not merely instructional facilitators; they are adaptive professionals capable of responding thoughtfully to classroom dynamics and pedagogical challenges. The development of such capacities does not occur in a vacuum but is deeply influenced by internal traits such as self-efficacy, resilience, and spiritual intelligence. These constructs have been consistently identified as predictors and facilitators of self-regulated learning and behavior in both students and teachers (Dignath, 2016; Faraj Zadeh et al., 2020; Vattøy, 2020). Self-efficacy, as Bandura originally proposed, pertains to individuals' beliefs in their capabilities to execute behaviors necessary to produce specific outcomes. In the educational context, high teacher self-efficacy has been linked with increased instructional innovation, classroom management effectiveness, and emotional well-being (Derakhshan & Fathi, 2024; Mateo, 2024).

In tandem, resilience refers to the capacity to recover and grow from adversity—a psychological asset crucial for sustaining professional performance amid the inevitable pressures of teaching. Resilient teachers are more likely to persist through challenges and maintain emotional balance, qualities that are indispensable for supporting student learning and classroom harmony (Pillay et al., 2022; Sotiriadis & Galanakis, 2022). Moreover, recent psychological literature has placed growing emphasis on spiritual intelligence as an additional and often overlooked dimension of professional competence in teachers. Spiritual intelligence—encompassing existential thinking, personal meaning-making, and a heightened state of awareness—provides educators with an internal compass that guides their teaching philosophy, moral reasoning, and interpersonal interactions (Jafari & Mollaei, 2019; Utami et al., 2022).

Understanding the interconnectedness of these constructs is essential for educational research and practice. The triadic relationship among self-regulation, self-efficacy, and resilience has been supported by various empirical models. For instance, studies show that self-regulation can mediate the effects of self-efficacy on academic resilience and long-term professional development (Tamannaeifar & Arbabi Ghohroudi, 2023; Zou et al., 2023). Other scholars have argued for a reciprocal model in which self-regulation not only derives from but also reinforces self-efficacy beliefs, creating a feedback loop that contributes to greater professional stability and psychological endurance (Asdolahzadeh et al., 2021; da Costa Júnior et al., 2024).

In the Iranian educational context, this relationship assumes even greater significance. Teachers, especially in female-only schools, frequently face structural limitations, cultural expectations, and emotional demands that make psychological resilience and personal empowerment essential. Research within the national context has shown that Iranian teachers often struggle with emotional exhaustion and lack of motivation—conditions that could be mitigated through interventions aimed at enhancing self-regulation and spiritual awareness (Enayati Shabkolai et al., 2023; Jabarooti & Bagherimajd, 2023). Spiritual intelligence, in particular, has emerged as a powerful predictor of well-being and adaptive coping strategies among Iranian educators, supporting the inclusion of this construct in models of teacher development (Ebrahimi & Esmaeili, 2023; Jafari & Mollaei, 2019).

Beyond the personal level, self-regulated teaching has institutional and pedagogical implications. It contributes to the development of learner autonomy, classroom engagement, and more meaningful student–teacher interactions. Self-regulated teachers model metacognitive practices that students can emulate, thereby fostering a culture of reflective learning in the classroom (Lai & Hwang, 2016; Panadero, 2017). Moreover, teachers who are high in self-regulation are more likely to implement differentiated instructional strategies, manage classroom conflicts constructively, and maintain sustained motivation across the academic year (Dignath, 2016; Mateo, 2024).

Despite the recognized importance of these constructs, research that systematically integrates self-regulation, self-efficacy, resilience, and spiritual intelligence into a unified model of teacher development remains limited—particularly in the context of Iranian secondary education. Most existing

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studies examine these variables in isolation or within student populations (khawwaf et al., 2024; Paz-Baruch, 2025), while the dynamic interplay of these constructs within the professional life of teachers has received less empirical attention. To fill this gap, the current study aims to develop and validate a comprehensive model of teacher self-regulation based on self-efficacy, resilience, and spiritual intelligence among female secondary school teachers in West Azerbaijan province.

2. Methods and Materials

2.1. Study Design and Participants

This study adopted a mixed-methods approach (qualitative–quantitative), which was guided by the nature and main objective of the research: to develop and validate a self-regulation model for teachers based on self-efficacy, resilience, and spiritual intelligence in girls' upper secondary schools in West Azerbaijan Province. The qualitative strand focused on exploring the non-measurable parameters—namely, the discovery of dimensions, components, and indicators of teacher self-regulation—using a deep, interpretive understanding of the construct. The quantitative strand, in contrast, was designed to examine measurable relationships between variables and utilized a descriptive correlational design to determine the structure and associations among the components. Overall, this research was applied-exploratory in nature, aimed at testing the efficacy of theoretical frameworks in the field of teacher self-regulation and generating validated, actionable knowledge that can inform educational policy and practice in Iran.

In the qualitative phase, participants included academic experts and specialists in educational sciences, teacher training, and psychology. They were purposefully selected to ensure relevance to the study's domain and rich theoretical and practical insights. Data saturation was reached after 15 interviews, though the number was initially set as approximately 10–15 experts. Participants held advanced degrees and had published or conducted research in fields directly relevant to the subject.

2.2. Data Collection

In the qualitative phase, data were collected using inductive content analysis through semi-structured in-depth interviews and document reviews. The researchers initially consulted academic literature, including scholarly books, peer-reviewed journal articles, and prior dissertations related to teacher self-regulation. The qualitative interviews followed a flexible protocol: a few guiding questions related to the construct of teacher self-regulation initiated the conversation, with further questions emerging during the interview based on participant responses. This iterative process allowed exploration of deeper themes. The interviews were designed around the study's research objectives and helped uncover the underlying dimensions and indicators of teacher self-regulation.

The interview process was formalized with introductory briefings and informed consent, ensuring that participants clearly understood the study's aims and their role. Participants were free to elaborate on their responses. As interviews progressed, specific follow-up questions emerged based on initial responses, allowing the research to evolve dynamically. Once the researcher began encountering redundant responses and no new conceptual information emerged, theoretical saturation was declared, and the interviews concluded.

Data from interviews were transcribed and analyzed in stages. The first stage involved identifying basic themes by breaking down the interview texts into the smallest meaningful conceptual units. In the next stage, these basic themes were compared and grouped into broader, organizing themes. Finally, overarching global themes were extracted from the organizing ones, forming a structured thematic network that informed the early version of the teacher self-regulation model.

2.3. Data Analysis

The qualitative data were analyzed using inductive content analysis. The process involved three stages. In the first stage, frequently mentioned or theoretically significant segments of interview text were coded as basic themes. In the second stage, these basic themes were grouped into abstract, higher-order organizing themes. In the third stage, the organizing themes were merged to form comprehensive global themes. These themes collectively represented the theoretical structure of teacher self-regulation and enabled the construction of a preliminary model. The relationships among basic, organizing, and global themes were mapped to create a thematic network, following the framework proposed by Braun and Clarke (2006).

In the quantitative phase, the statistical population included all teachers working in girls' upper secondary schools in West Azerbaijan Province during the academic

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year 2021–2022. Based on structural equation modeling requirements and factor analysis considerations, the minimum sample size was determined using Klein's (2010) recommendation: a ratio of 20 participants per estimated parameter. Therefore, a sample size of at least 360 was deemed adequate. To account for the potential of incomplete responses, the final sample included 364 teachers.

A multistage cluster sampling method was used to select participants. First, cities within the province were randomly selected as clusters. Then, within each city, schools were selected based on the relative size of the educational population and proportional representation of grades.

Quantitative data were collected using four close-ended questionnaires. The key instrument was a researcher-made Teacher Self-Regulation Questionnaire, developed based on the findings of the qualitative phase and theoretical framework of the study. Item generation followed both deductive and inductive logic. The deductive approach relied on literature review and theoretical definitions, ensuring content validity. The inductive approach was grounded in the interview findings, with items directly reflecting themes identified from expert input.

Initially, a pool of 101 items was created. After removing redundant and poorly formulated items, the questionnaire was reduced to 45 items across eight dimensions and 30 subcomponents. These included self-evaluation (15 items, 5 components), self-leadership (6 items, 5 components), self-management (5 items, 4 components), self-learning (8 items, 4 components), self-control (3 items, 3 components), self-motivation (4 items, 3 components), self-monitoring (2 items, 3 components), and self-judgment (2 items, 3 components). The final instrument also included a demographic section covering age, marital status, education level, and teaching experience.

In the quantitative data analysis, both descriptive and inferential statistical techniques were employed. Descriptive statistics included frequency, percentage, mean, standard deviation, skewness, and kurtosis, used to summarize the demographic characteristics and research variables. Inferential statistics involved structural equation modeling (SEM) and confirmatory factor analysis (CFA) to test the theoretical model and evaluate relationships between constructs. The analyses were performed using SPSS-25 and AMOS-24 software packages.

3. Findings and Results

In the qualitative phase of the study, the goal was to identify the core components, dimensions, and indicators that constitute the construct of teacher self-regulation. This was achieved through inductive content analysis of expert interviews, which were coded and categorized into progressively abstract thematic levels. Through this process, 101 initial codes were distilled into 30 organizing themes (components), which were then grouped into 8 overarching global themes (factors), as detailed in Table 1.

Table 1

Overarching Themes (Factors) and Their Corresponding Organizing Themes (Components)

No.	Organizing Themes (Components)	Overarching Theme (Factor)
1	Personal Awareness	Self-Evaluation
2	Environmental Awareness	
3	Social Awareness	
4	Behavioral Awareness	
5	Interpersonal Awareness	
6	Metacognitive Knowledge	Self-Leadership
7	Evaluation	
8	Mental Operations	
9	Strategy Formation	
10	Experience	
11	Internal Resources	Self-Management
12	Resource Sharing	
13	Resource Leadership	
14	Resource Quality	
15	Creation of Specific or Distinctive Stimuli	Self-Learning
16	Enhanced Comprehension and Self-Efficacy	
17	Improvement of Learning Processes	
18	Active Learning Methods	
19	Emotion and Behavior Management	Self-Control

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20	Self-Actualization	
21	Self-Control Processes	
22	Being Proactive	Self-Motivation
23	Self-Stimulation Skills	
24	Inner and Spiritual Activation	
25	Cognitive–Behavioral Strategies	Self-Monitoring (Regulatory)
26	Personality Traits	
27	Acquired Behaviors	
28	Focus on and Exploration of Behavioral Aspects	Self-Judgment
29	Diverse Strategic Approaches	
30	Detail-Oriented Thinking	

The first global theme identified was self-evaluation, which encompasses five components: personal awareness, environmental awareness, social awareness, behavioral awareness, and interpersonal awareness. These elements reflect a teacher's capacity to engage in reflective observation of their own identity, context, and social environment, which forms the foundation for meaningful self-regulation.

The second global theme was self-leadership, comprising metacognitive knowledge, evaluation, mental operations, strategic thinking, and experiential learning. These components highlight the teacher's internal ability to navigate challenges, set purposeful directions, and manage cognitive and strategic processes to enhance their professional performance.

The third global theme was self-management, which included internal resource management, sharing of resources, leadership over resources, and the quality of resources utilized. This dimension focuses on how teachers organize, allocate, and optimize their physical, cognitive, and emotional resources in the teaching process.

Self-directed learning emerged as the fourth theme and was defined by four components: the ability to generate specific motivational stimuli, increase reading comprehension and self-efficacy, improve learning processes, and apply active learning methods. This theme reveals how teachers initiate, sustain, and refine their own learning efforts to maintain professional growth.

The fifth theme, self-control, included managing emotions and behaviors, self-actualization, and the execution of self-regulatory processes. These components illustrate the ability of teachers to regulate emotional impulses, maintain professional composure, and pursue long-term personal and professional goals.

The sixth theme, self-motivation, contained three components: being proactive, self-stimulation skills, and inner spiritual activation. These indicators reflect the intrinsic drive teachers possess to stay engaged, persevere through difficulties, and connect to deeper sources of purpose and meaning in their roles.

The seventh theme, self-monitoring (regulatory structuring), involved cognitive-behavioral strategies, personality traits, and acquired behavioral patterns. This factor emphasizes how teachers continuously evaluate and adjust their behaviors and thoughts in response to situational demands and personal standards.

Finally, the eighth theme, self-judgment, incorporated attention to and exploration of behavioral aspects, various strategic approaches, and detail-oriented thinking. These dimensions represent teachers' critical reflection on their actions and outcomes, enabling them to assess the effectiveness of their strategies and make necessary improvements.

Overall, the qualitative analysis revealed that teacher self-regulation in girls' upper secondary schools in West Azerbaijan Province is a multifaceted construct encompassing eight core dimensions—self-evaluation, self-leadership, self-management, self-directed learning, self-control, self-motivation, self-monitoring, and self-judgment—comprising a total of 30 components. These themes were drawn from the thematic consolidation of 101 coded segments from expert interviews and represent the foundational structure for developing a comprehensive model of teacher self-regulation.

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Table 2

Mean, Standard Deviation, and Cronbach's Alpha Coefficient of Research Variables

Variable	Mean	Standard Deviation	Cronbach's Alpha
Resilience – Personal Competence	18.78	5.14	0.74
Resilience – Trust in One's Instincts	16.64	4.43	0.76
Resilience – Positive Acceptance	14.19	4.21	0.65
Resilience – Control	7.33	2.56	0.67
Resilience – Spiritual Influences	4.99	2.13	0.61
Spiritual Intelligence – Existential Thinking	25.43	5.26	0.86
Spiritual Intelligence – Personal Meaning Prod.	17.63	4.47	0.89
Spiritual Intelligence – Conscious Awareness	20.84	5.45	0.77
Spiritual Intelligence – State Expansion	21.52	5.58	0.80
Self-Efficacy – Learner Engagement	25.70	5.75	0.84
Self-Efficacy – Instructional Strategies	27.44	6.67	0.81
Self-Efficacy – Classroom Management	24.60	7.12	0.89
Self-Regulation – Self-Evaluation	48.76	9.91	0.93
Self-Regulation – Self-Leadership	19.64	4.53	0.84
Self-Regulation – Self-Management	17.50	3.79	0.87
Self-Regulation – Self-Learning	25.14	6.01	0.75
Self-Regulation – Self-Control	10.29	3.51	0.88
Self-Regulation – Self-Motivation	13.04	3.98	0.79
Self-Regulation – Self-Monitoring	6.16	2.17	0.64
Self-Regulation – Self-Judgment	5.71	2.23	0.66

As shown in Table 2, the mean scores for each of the study's main and sub-variables reflect a moderate to relatively high level of presence among participants. Among the dimensions of resilience, personal competence had the highest mean (M = 18.78, SD = 5.14), while spiritual influences had the lowest (M = 4.99, SD = 2.13). For spiritual intelligence, existential critical thinking (M = 25.43, SD = 5.26) and personal meaning production (M = 17.63, SD = 4.47) demonstrated high levels. In the self-efficacy domain, instructional strategies (M = 27.44, SD = 6.67) showed the highest mean. Regarding teacher self-regulation, self-evaluation (M = 48.76, SD = 9.91) and self-learning (M = 25.14, SD = 6.01) were reported as dominant aspects. All Cronbach's alpha coefficients ranged from 0.61 to 0.93, indicating acceptable to excellent internal consistency for all scales and subscales used in the study.

Prior to conducting inferential analyses, the necessary statistical assumptions for parametric testing were examined and confirmed. The assumption of normality was assessed through skewness and kurtosis indices for each variable, all of which fell within the acceptable range of ±2, indicating no significant deviation from normal distribution. Linearity was visually inspected using scatterplots, which revealed linear relationships among the main variables. Homoscedasticity was also evaluated and confirmed through residual plots, which showed consistent variance across predicted values. Additionally, multicollinearity was checked by calculating variance inflation factors (VIF), all of which were well below the threshold of 10, indicating the absence of significant multicollinearity among predictors. These results confirmed that the dataset met the key assumptions required for subsequent structural equation modeling and regression analyses.

Table 3

Model Fit Indices of the Measurement Model

Fit Indices	Initial Model	Modified Model	Recommended Cutoff
Chi-Square (χ^2)	689.29	468.80	–
Degrees of Freedom	164	160	–
χ^2/df	4.20	2.93	< 3
GFI (Goodness of Fit)	0.859	0.911	> 0.90
AGFI (Adjusted GFI)	0.816	0.858	> 0.85
CFI (Comparative Fit)	0.906	0.944	> 0.90
RMSEA (Root Mean Sq. Err)	0.095	0.073	< 0.08

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As presented in Table 3, the initial measurement model did not meet acceptable fit criteria across all indices, except for the CFI value (CFI = 0.906). The χ^2/df ratio (4.20), GFI (0.859), AGFI (0.816), and RMSEA (0.095) fell outside recommended thresholds, indicating a need for model improvement. Consequently, the model was refined in four steps by allowing covariances between selected indicator errors. Following this adjustment, the modified model achieved an acceptable fit, with χ^2/df reduced to 2.93, CFI improved to 0.944, GFI increased to 0.911, AGFI to 0.858, and RMSEA reduced to 0.073. These results confirm that the revised measurement model fits the collected data well and can be used for further analysis in the structural model.

Table 4

Standardized Factor Loadings of Indicators in the Measurement Model

Latent Variable – Indicator	β	p-value
Resilience – Personal Competence	0.815	0.001
Resilience – Trust in One's Instincts	0.712	0.001
Resilience – Positive Acceptance	0.822	0.001
Resilience – Control	0.804	0.001
Resilience – Spiritual Influences	0.757	0.001
Spiritual Intelligence – Existential Thinking	0.855	0.001
Spiritual Intelligence – Personal Meaning Prod.	0.744	0.001
Spiritual Intelligence – Awareness	0.942	0.001
Spiritual Intelligence – State Expansion	0.905	0.001
Self-Efficacy – Learner Engagement	0.748	0.001
Self-Efficacy – Instructional Strategies	0.811	0.001
Self-Efficacy – Classroom Management	0.868	0.001
Self-Regulation – Self-Evaluation	0.730	0.001
Self-Regulation – Self-Leadership	0.668	0.001
Self-Regulation – Self-Management	0.812	0.001
Self-Regulation – Self-Learning	0.581	0.001
Self-Regulation – Self-Control	0.761	0.001
Self-Regulation – Self-Motivation	0.663	0.001
Self-Regulation – Self-Monitoring	0.613	0.001
Self-Regulation – Self-Judgment	0.619	0.001

Figure 1

Structural Model

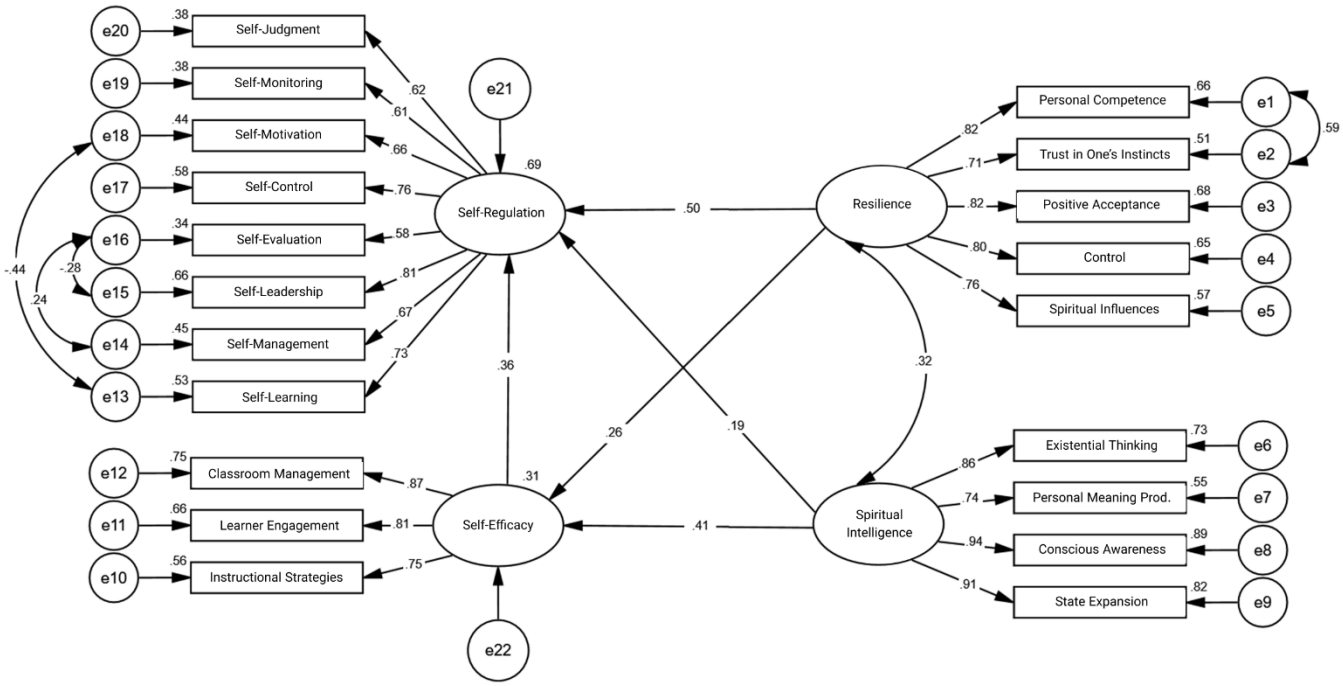

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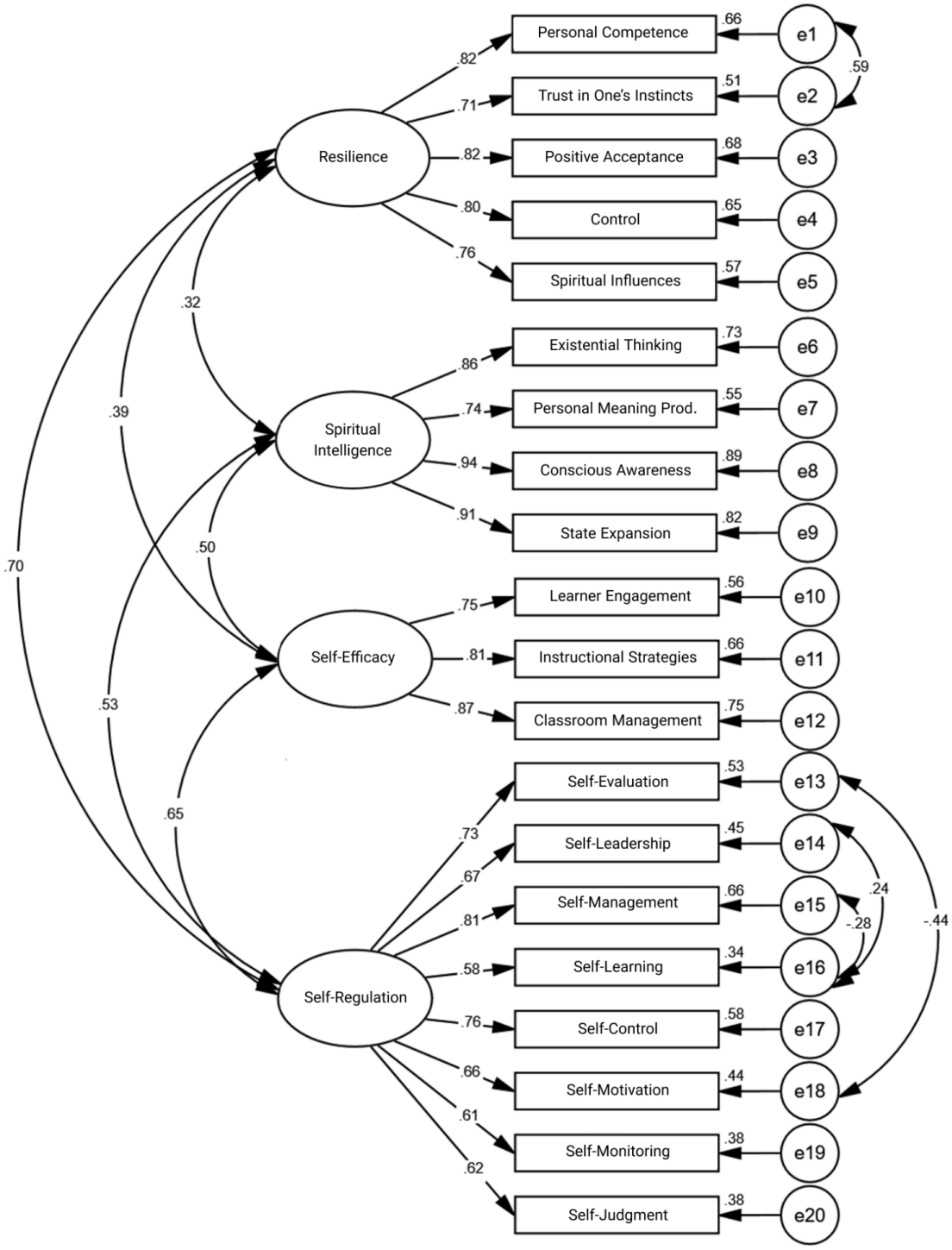
Figure 2

Measurement Model



According to Table 4, all standardized factor loadings were statistically significant ($p < 0.001$) and above the acceptable threshold of 0.32, indicating strong item reliability. The highest loading was observed for the indicator awareness under the spiritual intelligence dimension ($\beta = 0.942$), while the lowest was for self-learning under self-regulation ($\beta = 0.581$). Based on Tabachnick and Fidell's (2007) classification, loadings above 0.71 are considered excellent, between 0.63–0.70 very good, 0.55–0.62 good, 0.45–0.54 fairly good, and 0.32–0.44 low. As all

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observed values exceed 0.55, with many falling in the very good to excellent range, the indicators are deemed valid and effective measures of their respective latent variables. These findings support the structural integrity of the measurement model and its readiness for application in structural equation modeling.

Table 5

Total, Direct, and Indirect Path Coefficients Between Research Variables in the Structural Model

Effect Type	Pathway	b	S.E	β	p
Direct	Spiritual Intelligence ← Self-Efficacy	0.390	0.058	0.412	0.001
Direct	Spiritual Intelligence ← Self-Regulation	0.461	0.134	0.192	0.001
Direct	Resilience ← Self-Efficacy	0.178	0.040	0.263	0.001
Direct	Resilience ← Self-Regulation	0.864	0.096	0.504	0.001
Direct	Self-Efficacy ← Self-Regulation	0.899	0.143	0.355	0.001
Indirect	Spiritual Intelligence ← Self-Efficacy ← Self-Regulation	0.351	0.070	0.146	0.001
Indirect	Resilience ← Self-Efficacy ← Self-Regulation	0.160	0.040	0.093	0.001
Total	Spiritual Intelligence ← Self-Regulation	0.812	0.134	0.338	0.001
Total	Resilience ← Self-Regulation	1.024	0.098	0.597	0.001

As shown in Table 5, all direct and indirect effects in the structural model were statistically significant ($p < 0.001$), supporting the hypothesized relationships among the variables. In terms of direct effects, self-efficacy had a strong positive impact on both spiritual intelligence ($\beta = 0.412$) and resilience ($\beta = 0.263$), while self-regulation had a positive and substantial effect on spiritual intelligence ($\beta = 0.192$), resilience ($\beta = 0.504$), and self-efficacy ($\beta = 0.355$). These findings confirm the central role of teacher self-regulation as a foundational construct influencing both self-efficacy and the outcome variables.

Regarding indirect effects, self-regulation influenced spiritual intelligence and resilience through the mediating role of self-efficacy, with indirect β coefficients of 0.146 and 0.093, respectively. These pathways also reached statistical significance, indicating that self-efficacy partially mediates the relationships between self-regulation and both outcome variables. The total effects reveal that self-regulation exerts a strong cumulative influence on spiritual intelligence ($\beta = 0.338$) and resilience ($\beta = 0.597$), further highlighting its pivotal role in the overall model structure. This supports the theoretical assumption that enhancing self-regulation capacities in teachers can significantly improve both their psychological resilience and spiritual orientation within professional contexts.

4. Discussion and Conclusion

The purpose of this study was to develop and validate a model of teacher self-regulation based on the predictive roles of self-efficacy, resilience, and spiritual intelligence among female high school teachers in West Azerbaijan Province. The results of the structural equation modeling demonstrated that self-regulation significantly and positively predicts both self-efficacy and resilience. Additionally, self-regulation had a direct and indirect effect on spiritual intelligence through the mediating role of self-efficacy. The model's overall fit indices confirmed that the proposed model provides an acceptable representation of the relationships among the variables, indicating that teacher self-regulation serves as a foundational construct influencing other psychological competencies in the educational context.

The finding that teacher self-regulation significantly predicts self-efficacy is in alignment with existing literature that emphasizes the interdependence between metacognitive control and beliefs in personal competence. According to Zimmerman's self-regulated learning theory, teachers who engage in planning, monitoring, and evaluating their own teaching behaviors are more likely to develop strong self-efficacy beliefs, as they observe the positive impact of their reflective practices on student learning (Panadero, 2017). This finding is consistent with the results of Derakhshan and Fathi (2024), who demonstrated that self-regulation and self-efficacy act as mutually reinforcing variables in the development of language teaching competence (Derakhshan & Fathi, 2024). Similarly, the significant path from self-regulation to self-efficacy in this study aligns with the findings of Mateo (2024), who reported that teachers with high levels of self-regulation tend to set realistic goals, monitor their teaching processes, and ultimately develop stronger professional self-confidence (Mateo, 2024).

The results also showed that self-regulation is a strong predictor of resilience, supporting previous theoretical frameworks that emphasize the role of cognitive-emotional regulation in coping with professional stress and adversity.

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Teachers with higher self-regulatory capacities are more likely to bounce back from setbacks and adapt to changes in the educational environment (Sotiriadis & Galanakis, 2022). This result supports the findings of Pillay et al. (2022), who found that self-regulation directly influences emotional resilience and positive affect in the workplace (Pillay et al., 2022). Likewise, Zou et al. (2023) reported that in adolescents, self-regulation plays a key role in maintaining long-term goal adherence through the mediating role of resilience and self-efficacy, which resonates with the mediational pathways observed in this study (Zou et al., 2023).

Furthermore, the finding that self-efficacy mediates the relationship between self-regulation and both spiritual intelligence and resilience adds to the growing body of literature that frames self-efficacy as a bridge between regulatory capacities and broader psychological outcomes. Teachers with strong self-regulation skills may not automatically exhibit resilience or spiritual maturity unless they possess the belief that their efforts will be effective. This belief in personal efficacy serves to mobilize effort and perseverance—key ingredients for developing spiritual awareness and psychological recovery from stress (Tamannaeifar & Arbabi Ghohroudi, 2023). The mediating role of self-efficacy in this study is in line with findings by da Costa Júnior et al. (2024), who emphasized that anti-procrastination behaviors (a form of self-regulation) are not sufficient unless individuals also believe in their ability to succeed (da Costa Júnior et al., 2024).

The significant relationship between self-regulation and spiritual intelligence—both directly and indirectly—offers compelling insight into the cognitive and existential dimensions of the teaching profession. This finding is supported by the work of Utami et al. (2022), who found that spiritual intelligence and faith are enhanced in individuals who possess higher self-regulatory capacities, particularly in religious and value-oriented societies (Utami et al., 2022). Jafari and Mollaei (2019) also argued that students' spiritual intelligence is positively related to their use of self-regulated learning strategies, a relationship that seems to hold true for teachers as well (Jafari & Mollaei, 2019). In the Iranian educational context, where teaching is often intertwined with moral and spiritual responsibilities, the ability to reflect on one's internal world and regulate one's behavior in alignment with spiritual values becomes particularly salient.

The current findings also echo the work of Dignath (2016), who noted that teachers' ability to foster self-regulated learning in students is closely related to their own self-efficacy and regulatory competence (Dignath, 2016). Lai and Hwang (2016) further demonstrated that interventions aimed at improving teacher self-regulation, such as flipped classroom models, enhance not only teacher effectiveness but also student learning outcomes (Lai & Hwang, 2016). Therefore, the present study not only contributes to theory but also reinforces the practical value of developing self-regulatory capacities in educators, especially those working in challenging or culturally rich environments like West Azerbaijan.

Additionally, the observed associations between resilience and spiritual intelligence highlight an important integrative dimension in teacher psychology. According to Ebrahimi and Esmaeili (2023), resilience is not just about emotional endurance but is also significantly shaped by internal belief systems and meaning-making processes—both of which are captured by spiritual intelligence (Ebrahimi & Esmaeili, 2023). This view is echoed in the model by Enayati Shabkolai et al. (2023), who found that cognitive flexibility and self-regulation can be enhanced through interventions that also address existential and spiritual dimensions (Enayati Shabkolai et al., 2023). Therefore, the co-existence and mutual reinforcement of resilience and spiritual intelligence in this study underscore the need for multidimensional models of teacher development.

Despite the important contributions of this study, several limitations must be acknowledged. First, the study was limited to female teachers in girls' secondary schools in West Azerbaijan province, which restricts the generalizability of the findings. Gendered cultural expectations and institutional dynamics specific to this population may influence the relationships among the variables in ways that may not apply to male teachers or educators in other provinces or countries. Second, the reliance on self-report questionnaires introduces the possibility of response bias, such as social desirability or overestimation of psychological traits. Third, although the structural equation modeling supports the proposed relationships, the cross-sectional nature of the data limits causal inference. Longitudinal studies are needed to determine the temporal stability and directionality of the observed effects. Finally, while the model integrates major psychological dimensions, other potential influences such as organizational support, teaching experience, and personality traits were not included and may account for additional variance in teacher self-regulation.

Future research should aim to expand the demographic and geographical scope of the sample to include male

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teachers, primary school educators, and participants from various provinces and cultural contexts. Additionally, longitudinal studies would be valuable for investigating how teacher self-regulation evolves over time and how it interacts with other psychological and institutional factors. Experimental studies can also be designed to test the effectiveness of professional development programs that target self-regulation, self-efficacy, resilience, and spiritual growth simultaneously. Moreover, qualitative research could deepen our understanding of the subjective experiences of teachers as they navigate the challenges of maintaining internal coherence in high-demand environments. Finally, incorporating additional variables such as emotional intelligence, job satisfaction, or leadership support may offer a more comprehensive model of teacher well-being and performance.

In terms of practical application, educational policymakers and school administrators should prioritize the development of self-regulation skills in teacher training and professional development programs. Designing workshops that integrate reflective practices, emotional regulation techniques, and spiritual development can help teachers cultivate resilience and purpose in their professional lives. Schools should also provide structured opportunities for teachers to engage in peer mentoring, goal-setting, and collaborative problem-solving, all of which reinforce self-efficacy and self-directed behavior. Additionally, curriculum developers and educational leaders should consider integrating concepts of spiritual intelligence and resilience into teacher education syllabi, thereby equipping future educators with the psychological tools needed to thrive in increasingly complex classroom environments. Ultimately, empowering teachers from within—through psychological insight and personal growth—can lead to more adaptive, motivated, and impactful educational systems.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the study and participated in the research with informed consent.

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