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Predictors of self-regulated learning in English as a foreign language: motivation, self-efficacy, grit, and achievement goals

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ABSTRACT

Self-regulated learning (SRL) is pivotal for achievement in English as a foreign language (EFL); however, the combined roles of self-determined motivation, academic self-efficacy, grit, and achievement goal orientation have rarely been examined together in non-Western settings such as Kuwait. This study tested an integrated structural model linking these drivers to SRL. Employing a quantitative, correlational design with stratified random sampling, 431 Kuwaiti EFL learners from intermediate schools, secondary schools, and universities across six governorates completed 85 validated self-report items drawn from five adapted scales. Structural equation modeling (SEM) revealed a dynamic motivational network: achievement goal orientation predicted SRL (β=0.236) and positively influenced academic self-efficacy (β=0.268) and self-determined motivation (β=0.444). Self-determined motivation influenced SRL directly (β=0.133) and, via grit, indirectly (β=0.148), whereas academic self-efficacy exerted a powerful grit-transmitted effect (β=0.437). Total effects on SRL were substantial for self-determined motivation (β=0.370) and academic self-efficacy (β=0.501). Grit and goal orientation therefore constitute critical mechanisms through which motivation and efficacy are converted into sustained self-regulation. Interventions should simultaneously cultivate self-efficacy, foster intrinsic motivation, promote mastery goals, and build perseverance, offering a blueprint for autonomy-supportive environments that strengthen language attainment.

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1. INTRODUCTION

As a widely acknowledged global lingua franca, English channels access to academic knowledge, professional opportunities, and international communication, particularly in foreign language contexts such as Kuwait [1], [2]. However, attaining proficiency in English as a foreign language (EFL) remains a stubborn challenge in school systems dominated by teacher-centered, transmission-oriented pedagogies [3]. In Kuwait specifically, secondary and university EFL learners encounter a confluence of instructional constraints: heavy reliance on teacher-directed delivery, examination-oriented curricula, and limited authentic exposure to English outside the classroom, all of which curtail learner autonomy and weaken the development of self-regulatory competence [3], [4]. These conditions translate into observable classroom problems-overreliance on teacher scaffolding, shallow engagement with communicative tasks, and uneven language

proficiency-that become particularly consequential as learners transition to technology-enhanced, blended, and self-directed learning environments in which independent regulation is no longer optional but foundational. Such approaches often limit learners' active engagement and strategic involvement in the learning process, thereby constraining growth in self-regulated learning (SRL), understood as students' capacity to plan, oversee, and appraise their own learning [5], [6]. In addition, scarce opportunities for authentic language use beyond the classroom may heighten anxiety and weaken learners' confidence, which can subsequently erode their motivation to engage in SRL [4].

From a theoretical perspective, SRL is increasingly viewed as a multifaceted construct arising from the interplay of cognitive, motivational, and affective factors. Among these, self-determined motivation, academic self-efficacy, grit, and achievement goal orientation have emerged as central predictors of learner engagement and persistence [7]–[9]. Self-determined motivation reflects how far learners internalize and value their learning activities, whereas academic self-efficacy denotes learners' confidence in their ability to accomplish academic tasks successfully [10]. Grit - perseverance and effort sustained in pursuit of distant goals - has been associated with resilience in demanding learning contexts, while achievement goal orientation shapes the extent to which learners adopt mastery - or performance-oriented approaches to learning. Importantly, these constructs are not independent; rather, they interact in ways that influence learners' strategic behavior and sustained engagement, with self-efficacy occupying an especially central position in governing motivation and strategy use [11].

Despite the growing body of research on these variables, prior studies have predominantly examined these constructs in isolation or in dyadic pairs, yielding a fragmented evidence base rather than an integrated account of how they jointly influence SRL in context-specific EFL settings. However, despite repeated calls for system-level models, few studies have simultaneously modeled motivation, self-efficacy, grit, and achievement goals within a single structural equation modeling (SEM) framework; fewer still have empirically tested grit as a mediating mechanism rather than an additive predictor. This limitation is especially apparent in non-Western contexts such as Kuwait, where educational practices, cultural expectations, and opportunities for language use depart considerably from those typically reported in the Western-sample-dominated literature [12], [13]. Consequently, this gap limits both theoretical understanding (it is not known whether SRL operates as a coordinated system or as isolated inputs) and classroom practice (teachers lack evidence-based guidance on which psychological levers to prioritize in culturally and linguistically distinct EFL settings). As a result, there is a need for integrative approaches that capture the interplay among these psychological factors within authentic learning environments. Accordingly, the present study pursued three objectives: i) to estimate how strongly self-determined motivation, academic self-efficacy, and achievement goal orientation directly predict SRL; ii) to examine whether grit transmits the influence of self-determined motivation and academic self-efficacy to SRL; and iii) to gauge the overall contributions of both predictors to SRL in Kuwaiti EFL learners.

Contribution and novelty: this study makes three contributions: it i) specifies and empirically tests, for the first time in a Kuwaiti EFL context, an integrated SEM model connecting self-determined motivation, academic self-efficacy, achievement goal orientation, and grit with SRL inside a single analytic framework; ii) positions grit explicitly as a mediator - rather than a simple correlate - through which motivation and self-efficacy are translated into sustained self-regulation; and iii) validates the framework in a non-Western, Arabic-speaking EFL setting, thereby extending the cross-cultural generalizability of SRL theory.

Justification and importance: the study matters because contemporary EFL classrooms - increasingly digital, blended, and autonomy-dependent—require learners to regulate their own cognition, motivation, and persistence. Understanding how motivation, efficacy, goals, and grit interact, rather than operate in isolation, is essential for designing scalable interventions that can be deployed across proficiency levels and educational stages.

Theoretical and practical impact: the study advances SRL research by supplying system-level empirical evidence that confirms a multi-construct, reciprocally linked model and foregrounds grit as a transmission mechanism. Practically, the findings translate directly into classroom action: teachers can embed explicit goal-setting routines, deliver autonomy-supportive and mastery-focused feedback, and design grit-building activities (effortful-practice logs, setback-reframing protocols) within ordinary EFL lessons. Teacher-education programs can incorporate modules on autonomy-supportive instruction, and policy can allocate resources to self-regulated strategy instruction (SRSI) within national EFL curricula.

Statement of contribution: accordingly, the present study advances theory by empirically validating an integrated, mediation-based model of SRL in a non-Western EFL context, advances measurement by reporting construct-level psychometric evidence (loadings, average variance extracted (AVE), composite reliability (CR), and Fornell–Larcker discriminant validity) for each instrument in the Kuwaiti sample, and advances practice by deriving classroom-ready implications for autonomy-supportive, goal-structured, and grit-building EFL instruction.

2. THE COMPREHENSIVE THEORETICAL BASIS

Self-determination theory (SDT) [14] provides the motivational foundation of the present framework, portraying motivation as a continuum stretching from amotivation to intrinsic regulation. At its core, SDT holds that fulfilling three basic psychological needs - autonomy, competence, and relatedness- fosters internalization and high-quality (self-determined) motivation, thereby strengthening engagement and persistence [15], [16]. In learning contexts, self-determined motivation serves as a proximal engine of SRL, activating goal-directed behavior, strategic involvement, and sustained effort [17], [18]. Within the broader socio-educational tradition, Gardner's socio-educational model [19] further reinforces the centrality of motivation in second/foreign-language learning by distinguishing integrative from instrumental orientations and foregrounding learners' attitudes toward the target-language community and the learning situation-dimensions that complement SDT's focus on internalization and align with the autonomy-supportive processes examined here. In EFL settings, autonomy-supportive environments have repeatedly been associated with more adaptive strategy use and higher language proficiency [20], [21], suggesting that self-determined motivation operates as a key antecedent of effective SRL.

Complementing SDT, social cognitive theory (SCT) [22] positions academic self-efficacy as a central cognitive mechanism regulating behavior. Self-efficacy shapes learners' task selection, effort investment, persistence, and resilience in the face of difficulty [23], [24]. In EFL contexts, higher self-efficacy corresponds with fuller engagement in communicative tasks, more effective strategy use, and improved language achievement [25], [26]. Importantly, self-efficacy is not only an outcome of successful learning experiences but also a regulatory driver of SRL, as it enhances learners' capacity to monitor progress, adjust strategies, and manage anxiety [27]. Within the proposed framework, self-efficacy is conceptualized as a central regulatory node linking motivation to strategic action.

Extending beyond motivation and belief systems, grit introduces a temporal dimension to learning processes. Characterized as enduring perseverance and passion for long-range goals [28], [29], grit captures learners' capacity to maintain effort despite setbacks and plateaus [30]. In EFL learning, grit has been linked to continued engagement, strategic persistence, and higher levels of achievement [31], [32]. Crucially, recent evidence suggests that grit functions as a mediating mechanism, translating motivational and efficacy-related resources into sustained effort over time [8], [33]. Thus, within the present model, grit is positioned as a key mediator that channels motivation and self-efficacy into long-term SRL behaviors.

Achievement goal theory further refines the framework by specifying the directional focus of learners' motivation and cognition. Mastery goals emphasize learning, competence development, and intrinsic improvement, whereas performance goals prioritize demonstrating ability relative to others [34]. Empirical evidence consistently associates mastery orientation with deeper cognitive engagement, higher persistence, and more effective use of SRL strategies [35], [36], while performance orientation is often linked to surface learning and increased anxiety [37]. In EFL contexts, mastery-oriented learners demonstrate greater strategic engagement and language competence [38]. Within the integrated model, achievement goal orientation functions as a cognitive-motivational pathway through which self-efficacy and motivation influence SRL behaviors.

2.1. Synthesis: toward an integrated model of SRL

Taken together, these perspectives indicate that SRL is best conceived as the outcome of a dynamically interacting system of motivational, cognitive, and dispositional factors rather than isolated constructs. Self-determined motivation provides the underlying energy for engagement, self-efficacy regulates strategic action, achievement goal orientation directs cognitive focus, and grit sustains effort over time. Significantly, these constructs are theoretically and empirically interconnected. For instance, self-determined motivation enhances self-efficacy through successful task engagement, while self-efficacy promotes the adoption of mastery goals [14], [39]. In turn, grit reinforces this system by maintaining effort and stabilizing motivation across time, creating a positive feedback loop that supports sustained SRL [8]. Building on this synthesis, the present study conceptualizes grit as a mediating mechanism through which motivation and self-efficacy are translated into persistent, goal-directed learning behaviors. Accordingly, these variables are modeled as both direct and indirect predictors of SRL, consistent with contemporary SRL frameworks [5], [40].

Despite substantial empirical attention, literature remains conceptually fragmented, with most studies examining these constructs independently rather than as components of an integrated system. This limitation constrains understanding of their joint and mediated effects on SRL, particularly in EFL contexts. Moreover, the mediating role of grit - especially as a mechanism linking motivation and self-efficacy to SRL - remains underexplored within comprehensive analytical frameworks such as SEM. This gap is especially salient in non-Western contexts such as Kuwait, where instructional practice, cultural expectation, and access to authentic language use may mold these psychological processes differently [12], [41]. To address these

limitations, the present study builds and empirically evaluates an integrated model of the direct and indirect (mediated) routes through which self-determined motivation, academic self-efficacy, grit, and achievement goal orientation predict SRL in Kuwaiti EFL learners. This approach advances the field by moving beyond single-variable explanations toward a system-level understanding of EFL learning processes.

2.2. Hypotheses

Drawing on the proposed integrated conceptual framework, the following directional alternative hypotheses were formulated to probe the direct and indirect links connecting self-determined motivation, academic self-efficacy, grit, achievement goal orientation, and SRL. Alternative hypotheses (rather than null forms) are specified because the hypothesized relationships are grounded in a strong, converging body of prior theoretical and empirical work (SDT, SCT, achievement goal theory, grit research), which permits directional predictions. Testing directional alternatives also yields greater statistical power to detect theoretically meaningful effects via SEM [40], [42].

- H1: Self-determined motivation has a positive predictive effect on SRL.
- H2: Academic self-efficacy has a positive predictive effect on SRL.
- H3: Achievement goal orientation has a positive predictive effect on SRL.
- H4: The association between self-determined motivation and SRL is mediated by grit/resilience.
- H5: The association between academic self-efficacy and SRL is mediated by grit/resilience.
- H6: The total effect of self-determined motivation on SRL is significant.
- H7: The total effect of academic self-efficacy on SRL is significant.

In the conceptual model presented in Figure 1, achievement goal orientation is modeled as an antecedent that exerts direct effects on academic self-efficacy, self-determined motivation, and SRL rather than as a variable mediated by grit. Grit mediates only the motivation→SRL and self-efficacy→SRL pathways (H4 and H5), consistent with the hypothesis statements; the pathways shown in Figure 1 thus match exactly the structural pathways estimated in the SEM results. As Figure 1 illustrates, the hypothesized model treats self-determined motivation, academic self-efficacy, and achievement goal orientation as direct predictors of SRL, while grit conveys the indirect pathways from self-determined motivation and self-efficacy to SRL.

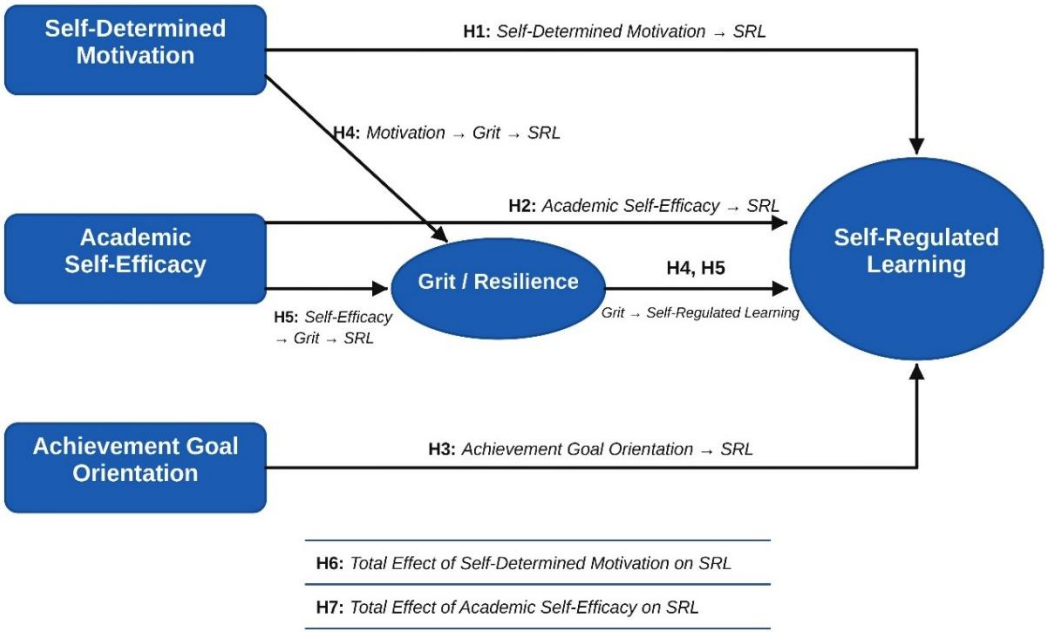


Figure 1. The conceptual model of the study

3. METHOD

3.1. Research design

This study employed a quantitative, correlational design to investigate how the key psychological constructs relate to one another without experimental manipulation, thereby capturing naturally arising associations in an authentic educational context [43]. A design of this kind is well suited to probing how

self-determined motivation, academic self-efficacy, grit, and achievement goal orientation jointly predict SRL [5], [40]. To test the proposed conceptual model, SEM was applied so that both direct and indirect relations among the study variables could be examined [44]. SEM is a robust multivariate procedure that permits several relations between latent constructs to be estimated at once while adjusting for measurement error [45]. The approach is especially fitting for theory-driven research because it gauges how well the hypothesized model reproduces the observed data and accommodates complex mediation pathways among psychological variables [44]. SEM therefore supplies a comprehensive analytical lens on how these psychological factors combine to shape SRL, yielding empirically grounded guidance for targeted pedagogical interventions in EFL contexts [46].

3.2. Participants

The sample consisted of 431 Kuwaiti EFL learners recruited from intermediate schools, secondary schools, and universities across six governorates in Kuwait. A stratified random sampling procedure was used so that key demographic groups were adequately represented and the overall representativeness of the sample was strengthened. Stratification was performed on two crossed dimensions: i) educational level (three strata: intermediate school, secondary school, and university) and ii) governorate (six strata: capital, Hawalli, Farwaniya, Ahmadi, Jahra, and Mubarak Al-Kabeer), yielding 18 crossed strata. The approximate target population across these strata, based on official ministry of education and higher education enrollment records for the academic year of data collection, was estimated at ~312,000 learners (intermediate: ~115,000; secondary: ~98,000; university: ~99,000). Within each stratum, participants were drawn at random from school/faculty enrollment lists to achieve proportional representation, and the final allocation per stratum is reported in Table 1. Participants differed in gender, age, and English proficiency, which allowed the relationships among the study variables to be examined more comprehensively across learner profiles. The inclusion criteria were designed to capture both educational and geographical diversity, with participants drawn from multiple educational stages to reflect different phases of language development. Furthermore, recruiting from several governorates captured a broader spread of socioeconomic and educational circumstances, reinforcing the external validity and generalizability of the findings. The complete demographic profile of the 431 participants is summarized in Table 1.

Table 1. Demographic profile of participants (N=431)

Variable	Category	n	%
Gender	Male	206	47.8
	Female	225	52.2
Age group (years)	13–15	102	23.7
	16–18	128	29.7
	19–22	151	35.0
	23 and above	50	11.6
Educational level	Intermediate school	110	25.5
	Secondary school	145	33.6
	University	176	40.8
Governorate	Capital	72	16.7
	Hawalli	78	18.1
	Farwaniya	81	18.8
	Ahmadi	74	17.2
	Jahra	63	14.6
	Mubarak Al-Kabeer	63	14.6
English proficiency	Beginner	121	28.1
	Intermediate	198	45.9
	Advanced	112	26.0

3.3. Instruments

All measures administered in this study were adaptations (not new constructions) of previously validated international instruments. The final questionnaire comprised 85 items across five scales: the SRL scale (40 items), the self-determination motivation scale (15 items), the academic self-efficacy scale (9 items), the L2-grit scale (9 items), and the achievement goal questionnaire–revised (AGQ-R) (12 items).

3.3.1. SRL scale

The SRL scale for learning EFL, developed by Tsuchiya [47], gauges the quality of a learner's self-regulation when studying English. The scale contains 40 items grouped into five factors reflecting the core psychological constructs of Zimmerman's cyclical SRL process: self-efficacy (7 items, "When I come across something difficult in learning English, I am able to find solutions"), planning (7 items, "I plan well enough

to overcome something difficult in learning English"), effort (9 items, "I work on any English assignment as hard as I can"), self-monitoring (8 items, "I study English while thinking whether my learning method is effective or not"), and evaluation/reflection (9 items, "I reflect on my studying English and think the ways I did was good or not"). Answers were captured on a five-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). In the present sample, reliability was good: self-efficacy α=.784, planning α=.772, effort α=.766, self-monitoring α=.795, evaluation/reflection α=.750, overall α=.818. Confirmatory factor analysis (CFA) supported acceptable fit: χ^2/df=2.460, goodness-of-fit index (GFI)=0.826, adjusted goodness of fit index (AGFI)=0.805, comparative fit index (CFI)=0.876, root mean square error of approximation (RMSEA)=0.058, standardized root mean square residual (SRMR)=0.053.

3.3.2. Self-determination motivation scale (SDMS)

Constructed by Chiang [48] on the basis of SDT for English learners with Chinese backgrounds, the scale includes 15 items spanning three factors: autonomy (6 items), competence (5 items), and relatedness (4 items). Items were answered on a five-point Likert scale. Reliability: autonomy α=.784, competence α=.809, relatedness α=.808, overall α=.840. CFA: χ^2/df=4.990, GFI=0.886, AGFI=0.842, CFI=0.885, RMSEA=0.096, RMR=0.058.

3.3.3. Academic self-efficacy scale (ASE)

Constructed by Hemade *et al*. [49], the scale contains 9 items ("I know how to take notes") scored on a seven-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Cronbach's α=.769. CFA pointed to adequate parsimonious fit: RMSEA=0.078 (90% CI: 0.062, 0.095).

3.3.4. L2-grit scale

Adapted by Teimouri *et al*. [41] from the original grit measure of Duckworth *et al*. [28], the L2-Grit scale contains 9 items covering two dimensions: perseverance of effort (6 items) and consistency of interest (3 items). Items were scored on a five-point Likert scale from 1 (not at all like me) to 5 (very much like me). Reliability values were: perseverance α=.717, consistency α=.742, overall α=.861. CFA yielded marginal fit: χ^2/df=16.312, GFI=0.829, AGFI=0.704, CFI=0.674, RMSEA=0.189. This marginal fit for the original two-factor structure is acknowledged as a limitation and is addressed among the limitations in the conclusion section.

3.3.5. AGQ-R

Constructed by Elliot and Murayama [50], the AGQ-R assesses four dimensions with 12 items: mastery-approach (3 items), mastery-avoidance (3 items), performance-approach (3 items), and performance-avoidance (3 items). Items were answered on a five-point Likert scale. Reliability: mastery-approach α=.848, mastery-avoidance α=.801, performance-approach α=.817, performance-avoidance α=.834, overall α=.817. CFA: χ^2/df=6.161, GFI=0.903, AGFI=0.842, CFI=0.880, RMSEA=0.110, RMR=0.079.

3.4. Instrument validation in the present sample

Because all five instruments were originally developed in English (or for non-Arabic populations), a forward-and-back translation protocol was applied. Two bilingual Arabic–English applied-linguistics experts independently produced an Arabic version, after which two additional experts blindly back-translated it. Discrepancies were resolved through a reconciliation meeting, producing a final Arabic version. A pilot study involving 45 EFL learners (taken from the same population frame but excluded from the main sample) assessed item clarity, cultural appropriateness, completion time, and preliminary reliability; every item-total correlation surpassed .30 and every Cronbach's α exceeded .70. In the main sample, convergent validity for all latent constructs was demonstrated through AVE>.50 and CR>.70. Discriminant validity was verified with the Fornell–Larcker criterion: each construct's AVE square root was greater than its correlations with every other construct. Standardized loadings for the retained items ran from .62 to .88, and no item fell under the recommended .50 threshold.

3.5. Data analysis

Descriptive statistics and Pearson correlation coefficients were computed with IBM SPSS statistics (version 28.0). CFA and SEM were performed in AMOS (version 26.0), a widely adopted covariance-based SEM (CB-SEM) package [51]. CB-SEM was chosen because it suits theory-driven research and can appraise construct validity, model fit, and complex relations among latent variables [52], [53].

Following Hu and Bentler [54], model fit was appraised with established indices: the χ^2/df ratio, the GFI, the CFI, the RMSEA, and the standardized root mean square residual (SRMR). A χ^2/df ratio under 3 together with a non-significant χ^2 (p>.05) signaled acceptable fit; in addition, GFI and CFI of ≥.90, RMSEA of ≤.08, and SRMR of ≤.10 were treated as marks of satisfactory model fit. Indirect effects were examined

via bootstrapping with 5,000 resamples, following Hayes [55], to derive bias-corrected confidence intervals and judge the significance of mediation. Regarding control variables, preliminary analyses examined the potential influence of gender, age group, educational level, and English proficiency on the key constructs. Because no demographic variable produced differences larger than |d|=.15 on the outcome variable (SRL) and none substantively altered the pattern of standardized path coefficients when included as covariates in a multi-group SEM sensitivity check, the final reported model is the parsimonious one without covariates; demographic robustness results are available upon request.

3.6. Procedures

Ethical approval was secured before data collection began, and every procedure adhered to established ethical standards. Before giving informed consent, participants received full information about the study's purpose and procedures. Eligible individuals were sent a formal invitation outlining the study's objectives and significance along with its ethical safeguards - assurances of confidentiality, anonymity, and voluntary participation. It was made explicit that taking part was wholly voluntary and that withdrawing at any point would carry no consequences for their academic standing. Data collection ran for three weeks through a secure online survey platform, so participants could complete the questionnaire whenever convenient. Reminders were sent periodically to raise response rates. Electronic informed consent preceded participation, and strict measures safeguarded the confidentiality and anonymity of the data. No personally identifying information was gathered, protecting participants' privacy. The study observed the ethical principles of the Declaration of Helsinki, protecting participants' rights, dignity, and well-being. Encryption and secure storage protocols on the survey platform preserved the integrity and security of all responses.

4. RESULTS AND DISCUSSION

Before analysis, careful data-quality checks confirmed the accuracy, completeness, and consistency of the records. Table 2 summarizes the descriptive statistics and reliability indices for all study variables. The distributional characteristics of variables were analyzed through skewness, kurtosis, and outlier identification. Outliers, characterized as values beyond 1.5 times the interquartile range, were minimal (<2%) and retained due to their negligible impact on outcomes. The majority of variables approximated normal distributions. All variables demonstrated acceptable distributional properties for SEM [56]. Achievement goal orientation (-0.421), SRL (-0.841), and self-determined motivation (-0.376) exhibited slight negative skewness, while grit/resilience showed slight positive skewness (0.345) and academic self-efficacy showed a minor negative deviation (–0.388). Kurtosis values varied from 0.096 (grit/resilience) to 2.476 (SRL), indicating adequate peakedness across the constructs. These checks confirmed that the dataset satisfied the requirements for the planned SEM analyses and supported the dependability of the findings.

Table 2. Descriptive statistics and reliability of the study variables

Variable	M	SD	Skewness	Kurtosis	Cronbach's α
1. SRL	150.59	25.00	-0.841	2.476	0.818
2. Academic self-efficacy	46.60	8.49	-0.388	0.699	0.769
3. Self-determined motivation	56.47	9.45	-0.376	0.849	0.840
4. Grit/resilience	28.61	5.69	0.345	0.096	0.861
5. Achievement goal orientation	46.03	8.24	-0.421	0.515	0.817

Note: all scales showed acceptable reliability, with Cronbach's alpha values above the recommended .70 threshold [52]; skewness and kurtosis fell within acceptable ranges.

4.1. CFA

A CFA in AMOS 26.0 served to validate the measurement model, with convergent and discriminant validity both examined, as shown in Table 3. Convergent validity concerns how strongly the indicators of a latent construct are interrelated [57], whereas discriminant validity concerns how clearly construct can be distinguished [58]. The results confirmed that the measurement model adequately displayed both properties.

4.2. Correlations among constructs

The correlations among the study constructs appear in Table 4. SRL related positively to academic self-efficacy (r=.501, p<.001) and to grit (r=.477, p<.001). Self-determined motivation showed positive correlations with academic self-efficacy (r=.495, p<.001) and with achievement goal orientation (r=.573, p<.001). Academic self-efficacy covaried positively with grit (r=.306, p<.001) and with achievement goal orientation (r=.371, p<.001), and grit was related to achievement goal orientation (r=.127, p<.01).

Table 3. Convergent and discriminant validity

Variable	AVE	CR	1	2	3	4	5
1. Self-determined motivation	0.58	0.89	0.76				
2. Academic self-efficacy	0.63	0.87	0.37**	0.79			
3. Grit	0.70	0.88	0.27**	0.31**	0.84		
4. Achievement goal orientation	0.65	0.85	0.40***	0.42***	0.29**	0.81	
5. SRL	0.71	0.90	0.45***	0.50***	0.33***	0.36***	0.84

Values on the diagonal are the square roots of AVE; values off the diagonal are correlation coefficients. **p<.01. ***p<.001.

Table 4. Correlations among constructs

Variable	1	2	3	4	5
1. SRL	—				
2. Academic self-efficacy	0.501**	—			
3. Self-determined motivation	0.370**	0.495**	—		
4. Grit/resilience	0.477**	0.306**	0.275**	—	
5. Achievement goal orientation	0.236**	0.371**	0.573**	0.127**	—

**p < .01.

4.3. SEM

The hypothesized framework was tested with SEM; the full structural model with standardized path coefficients appears in Figure 2. The model demonstrated excellent fit: $\chi^2(1)=1.206$, p=.272, CFI=1.000, TLI=.996, RMSEA=.022 (90% CI [0.000, 0.132]). These indices surpass the recommended benchmarks (CFI/TLI≥.95; RMSEA≤.06), indicating that the proposed model represents the observed relationships robustly. Consistent with the hypothesized model, self-determined motivation, academic self-efficacy, and achievement goal orientation predicted SRL directly, while grit mediated only the motivation→SRL and self-efficacy→SRL pathways. The structural results further showed that achievement goal orientation positively predicted academic self-efficacy (β=0.268) and self-determined motivation (β=0.444), consistent with its specification as an exogenous antecedent in the model.

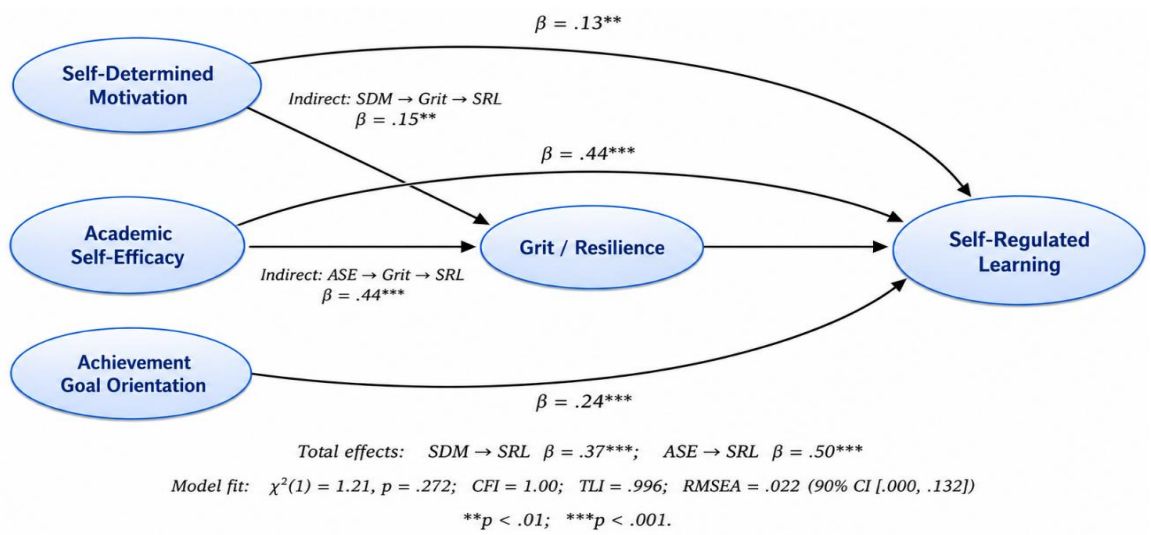


Figure 2. The structural equation model with standardized path coefficients

The standardized path coefficients, bootstrapped 95% confidence intervals, significance levels, and corresponding hypothesis-testing outcomes for all direct, indirect, and total effects in the structural model are summarized in Table 5. As shown in Table 5, every hypothesized pathway (H1–H7) was statistically supported, with the strongest direct effect observed for academic self-efficacy and significant partial mediation through grit for both the motivation→SRL and self-efficacy→SRL pathways.

These findings underline how much self-determined motivation, academic self-efficacy, achievement goal orientation, and grit contribute to fostering SRL. Total effects were also statistically significant. Self-determined motivation had a standardized total effect of β=0.370 (unstandardized bootstrap 95% CI [0.087, 0.193], p<.001), while academic self-efficacy had a standardized total effect of β=0.501

(unstandardized bootstrap 95% CI [0.122, 0.218], p<.001). The mediation analysis indicates that both academic self-efficacy and self-determined motivation exert direct effects on SRL that are partially mediated by grit, clarifying the mechanisms through which these psychological resources translate into self-regulatory behavior.

Table 5. Standardized path coefficients, confidence intervals, and hypothesis testing

Pathway	β	95% CI	p	Type	Result
Self-determined motivation→SRL	0.133	[0.021, 0.079]	.002	Direct	Supported
Academic self-efficacy→SRL	0.438	[0.110, 0.188]	<.001	Direct	Supported
Achievement goal orientation→SRL	0.236	[0.048, 0.108]	<.001	Direct	Supported
Self-determined motivation→Grit→SRL	0.148	[0.025, 0.153]	.006	Indirect	Supported
Academic self-efficacy→Grit→SRL	0.437	[0.070, 0.128]	<.001	Indirect	Supported
Self-determined motivation→SRL (total)	0.370	[0.087, 0.193]	<.001	Total	Supported
Academic self-efficacy→SRL (total)	0.501	[0.122, 0.218]	<.001	Total	Supported

Note: β=standardized coefficient. Bias-corrected 95% confidence intervals for the corresponding unstandardized estimates were derived via bootstrapping with 5,000 resamples; no interval contains zero, confirming that every pathway is statistically significant

4.4. Discussion

The present study formulated and tested an integrated model of SRL, examining the direct and mediated influence of self-determined motivation, academic self-efficacy, achievement goal orientation, and grit. The findings provide robust support for the proposed framework and align with emerging research that conceptualizes SRL as a multidimensional, system-level process [46], [59], [60]. Consistent with H1–H3, self-determined motivation, academic self-efficacy, and achievement goal orientation each contributed significantly and positively to SRL, and academic self-efficacy proved the strongest predictor. Self-efficacy's dominant role accords with Bandura's SCT [39], which holds that people's beliefs about their capabilities mold their motivation, effort, and persistence. Recent evidence confirms that efficacy beliefs function as a central regulatory mechanism influencing strategic engagement, persistence, and adaptive self-monitoring [23], [27]. The present findings extend this evidence, showing that self-efficacy stays the most influential predictor even when motivation, goal orientation, and grit are modeled simultaneously.

The positive effect of self-determined motivation is consistent with SDT [14], [61], which stresses how autonomy-supportive learning environments promote sustained engagement. Recent EFL studies indicate that learners with higher autonomous motivation show greater willingness to communicate, deeper cognitive engagement, and more consistent use of self-regulatory strategies [16], [20], [21]. These findings also resonate with the socio-educational tradition established by Gardner [19] and extended by Gardner and colleagues, whose foundational work on integrative and instrumental motivational orientations continues to inform contemporary understandings of why EFL learners initiate, sustain, and intensify language-learning effort. Within that tradition, motivation is conceived as a composite of effort, desire, and affect - constructs that overlap conceptually with the self-determined motivational processes modeled here and that have been repeatedly linked to strategic engagement and language achievement in diverse EFL settings. The current results reinforce this line of research by confirming that self-determined motivation directly contributes to SRL, albeit with a smaller effect than self-efficacy [62].

The significant part played by achievement goal orientation fits achievement goal theory [63], which proposes that learning behavior is structured by goal-directed cognition. Mastery-oriented goals have been consistently associated with deeper engagement, persistence, and strategy use [35], [38]. The present findings support this perspective by demonstrating that goal orientation significantly predicts SRL.

A central contribution of this study is its demonstration that grit significantly mediates the links running from self-determined motivation and academic self-efficacy to SRL. This accords with recent work framing grit as a process-oriented construct converting motivational and cognitive resources into sustained effort [8], [28], [31]. The partial mediation observed indicates that grit complements direct pathways, reinforcing the idea that effective SRL requires both immediate regulatory capacity and long-term perseverance. The findings provide strong support for a system-level conceptualization of SRL, in which motivational, cognitive, and dispositional factors operate as an interconnected network. Specifically, self-determined motivation energizes engagement, academic self-efficacy regulates strategic action, achievement goal orientation directs cognitive focus, and grit sustains effort over time.

The present study also contributes to research on SRL in non-Western and EFL contexts, where instructional practices, cultural expectations, and exposure to authentic language use may differ from Western settings [12], [41]. By validating the integrated model in a Kuwaiti EFL context, the study enhances the generalizability of SRL theory while offering context-sensitive insights. Kuwaiti EFL classrooms are

typically characterized by teacher-centered instruction, examination-driven pacing, and relatively limited exposure to English outside the classroom; within such conditions, psychological resources such as self-efficacy, autonomous motivation, and grit become particularly consequential because learners must compensate for reduced input through independent regulation. These contextual features also imply that interventions derived from Western SRL research cannot be transplanted uncritically and require cultural and pedagogical adaptation—specifically, integration with collectivist classroom norms, teacher-authority expectations, and Arabic-language scaffolding.

4.5. Practical implications for EFL teaching and teacher education

The findings yield concrete classroom and teacher-education strategies. First, autonomy-supportive feedback routines—offering learners structured choice over reading texts, writing topics, and task sequencing—operationalize self-determined motivation within existing curricula. Second, explicit goal-setting protocols (weekly SMART goals for vocabulary acquisition, writing targets tied to mastery rubrics) translate achievement goal theory into daily practice. Third, grit-building routines such as effortful-practice logs, setback-reframing reflections, and long-horizon project work (semester-length portfolios) sustain perseverance across the inevitable plateaus of language learning. Fourth, SRSI embedded in reading, listening, and writing lessons - modeled, guided, and gradually released - operationalizes the full SRL cycle of planning, monitoring, and reflection.

4.5.1. Teacher coaching tools

The following pragmatic tools can be adopted or adapted: i) an autonomy-support checklist for lesson planning (choice, rationale, acknowledging feelings); ii) a mastery-feedback rubric that distinguishes competence-supportive comments from ego-involving praise; iii) a weekly student-completed self-regulation log (goal→strategy→monitoring→reflection); and iv) a grit micro-routine—a short end-of-lesson reflection on the hardest task and the strategies used to persist. Teacher-education programs should include a dedicated module on autonomy-supportive instruction and formative-feedback design, with supervised microteaching cycles.

To render motivation, grit, and SRL operational for everyday EFL practice, three classroom-ready artifacts are provided. Table 6 presents an autonomy-support lesson-planning checklist that teachers can apply during planning to ensure choice, rationale, and acknowledgment of student perspectives. Table 7 supplies a mastery-feedback rubric that distinguishes competence-supportive comments from ego-involving praise. Table 8 supplies a weekly student self-regulation log scaffolding the complete SRL cycle —goal-setting, strategy use, monitoring, and reflection. A short grit micro-routine (a 3-minute end-of-lesson reflection on the hardest task encountered and the strategies used to persist) can be paired with the log to build perseverance over time.

Table 6. Autonomy-support lesson-planning checklist (for use during planning of every EFL lesson)

✓	Lesson-planning element	Implementation prompt
☐	Choice. Provide a meaningful choice (text, task type, partner, or sequence).	Where can the learner choose this lesson? Note the choice point in the lesson plan.
☐	Rationale. Give a genuine reason for the activity.	In one sentence, why does this task matter to the learner?
☐	Acknowledge feelings. Recognize that the task may be hard, dull, or anxiety-provoking.	Plan an explicit empathy line (“this might feel challenging; that’s normal”).
☐	Informational language. Avoid controlling pressure (“you must”, “you have to”).	Re-phrase any controlling instructions in non-controlling language.
☐	Mistake-tolerance. Frame errors as data, not failure.	Add a “what did this attempt teach us?” prompt in the activity.
☐	Voice. Invite learner perspectives on the task.	Reserve 2 minutes for student input on how the activity went.

Table 7. Mastery-feedback rubric: distinguishing competence-supportive feedback from ego-involving praise in EFL classrooms

Feedback dimension	Mastery-supportive (use)	Ego-involving (avoid)
Focus	Comment on the strategy or effort used	Compare a student to peers (“you scored better than your classmates”).
Specificity	Reference the concrete element of the work that improved.	Generic praise (“good job”, “well done”).
Forward-looking	Suggest one next step the student can take.	Verdict-style feedback (“excellent”/”poor”).
Error treatment	Treat errors as information (“this tells us the past-tense rule still needs review”).	Treat errors as deficits (“you got it wrong again”).
Locus of control	Highlight the student's agency (“you decided to revise the introduction”).	Highlight innate ability (“you're a natural at English”).
Timing	Deliver during the learning task or immediately after.	Deliver only at the final grading stage.

Table 8. Weekly student self-regulation log: a one-page artifact scaffolding planning, monitoring, adjustment, and reflection across the week

Phase	Reflection prompt	Student entry	Teacher check
Plan (goal)	What is my one specific English-learning goal for this week?	_____	☐
Plan (strategy)	Which two strategies will I use?	_____	☐
Monitor (mid-week)	On Wednesday, how is the goal progressing? What is working and what is not?	_____	☐
Adjust	Do I need to change my strategy? If yes, what is my revised plan?	_____	☐
Reflect (end of week)	Did I reach my goal? Which strategy helped most? What will I carry into next week?	_____	☐
Grit micro-prompt	What was the hardest English task this week, and how did I keep going?	_____	☐

4.5.2. Scalability and replication

The model and the associated instructional framework are readily scalable across other EFL contexts, particularly in the gulf cooperation council (GCC) region and comparable Arabic-speaking settings with shared instructional and cultural norms. Replication in GCC-wide, Maghreb, and broader Middle East and North Africa (MENA) EFL contexts is recommended, with cultural adaptation focused on: i) the framing of autonomy within collectivist classroom norms; ii) localization of goal-setting artifacts in Arabic alongside English; and iii) integration with existing national EFL curricula.

4.5.3. Role of artificial intelligence (AI)-assisted EFL tools

Emerging AI-assisted EFL technologies (intelligent tutoring systems, large-language-model-based writing and speaking feedback, adaptive vocabulary platforms) are likely to interact with the constructs modeled here. Adaptive, low-stakes feedback can provide the mastery experiences that build self-efficacy; personalized task sequencing can sustain autonomous motivation; and AI-based progress dashboards can scaffold goal-setting and self-monitoring. However, over-reliance on AI feedback without explicit SRL scaffolding risks undermining grit by reducing productive struggle. Future EFL instruction should therefore pair AI tools with deliberate self-regulation prompts rather than replace them [31], [64], [65].

5. CONCLUSION

This study examined an integrated model of SRL among Kuwaiti EFL learners, revealing that academic self-efficacy, self-determined motivation, and achievement goal orientation directly predict SRL, with self-efficacy as the strongest predictor. Grit emerged as a key mediator, translating motivation and efficacy into sustained effort. The findings support a system-level view wherein motivation energizes engagement, self-efficacy regulates strategic action, goal orientation directs focus, and grit sustains long-term persistence. Validated in a non-Western context, the results underscore the need for multidimensional instructional approaches targeting motivation, efficacy, goal-setting, and perseverance, and they offer a pragmatic framework for fostering self-regulation in contemporary, technology-enhanced EFL learning environments.

Theoretically, the study contributes a system-level, mediation-based account of SRL that links motivation, self-efficacy, achievement goals, and grit within a single SEM framework and extends its cross-cultural reach to a non-Western, Arabic-speaking EFL context. Educationally, the findings translate into concrete classroom practice through the autonomy-support, mastery-feedback, self-regulation, and grit micro-routine tools, which operationalize each construct for daily EFL teaching and teacher-education curricula. Together, these implications equip teachers, program designers, and policymakers with evidence-based levers for cultivating self-regulated EFL learners in contemporary, technology-enhanced classrooms. Because the psychological drivers modeled here are foundational to language learning worldwide, the framework offers a transferable evidence base for embedding SRL in foreign-language curricula across national systems.

Several limitations deserve acknowledgment. First, firm causal inference is precluded by the cross-sectional design; although the tested paths are theoretically directed and consistent with the SEM specification, these data cannot rule out bidirectional and reciprocal effects among motivation, self-efficacy, grit, and SRL. Future studies should employ longitudinal panel designs (three- or four-wave measurement) and, where feasible, randomized experimental or quasi-experimental interventions that manipulate specific instructional levers (autonomy support, mastery feedback, grit routines) to establish causal effects. Second, dependence on self-report measures brings potential common-method variance; triangulation across methods—behavioral trace data (log files, keystroke patterns, task-level persistence) and teacher ratings—is

recommended. Third, although the L2-Grit scale showed acceptable overall reliability, the CFA indicated marginal fit for its original two-factor structure, suggesting the need for continued refinement of grit measurement in EFL contexts. Fourth, findings are situated in a Kuwaiti EFL sample; external generalization requires replication in other GCC, MENA, Asian, and European EFL contexts using multi-group SEM to test measurement invariance.

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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
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R : **R**esources
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O : Writing - **O**riginal Draft
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Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

The authors state that there is no conflict of interest.

INFORMED CONSENT

Informed consent was obtained from all individuals included in this study.

ETHICAL APPROVAL

The research involving human participants complied with all relevant national regulations and institutional policies and was conducted in accordance with the principles of the Helsinki Declaration. Ethical approval was obtained from the authors' institutional review board prior to data collection.

DATA AVAILABILITY

The data that support the findings of this study are available from the corresponding author upon reasonable request. The data are not publicly available due to privacy and ethical restrictions related to participant confidentiality.

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