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Impact of teaching styles and other constructs on students' performance in English

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ABSTRACT

Findings of this research offer valuable insights into enhancing language learning. It investigated how teaching styles and other factors affect students' English performance. It specifically examined the relationship between teaching styles and students' performance, how teachers' leadership behaviors moderate that relationship, and how students' motivation to learn English and their level of grit mediate that relationship. This is a descriptive research study, and the statistical tools used were frequency analysis, mean computation, correlation analysis, regression analysis, moderation analysis, and mediation analysis. Three hundred eighty-five students and twenty-two English teachers participated in this study, selected through purposive sampling. Results show that students are moderately proficient in English; they are more integratively motivated than instrumentally, and they exhibit moderate grit. Teachers frequently exhibit all teaching style dimensions and exhibit consideration leadership behavior more strongly. Only instrumental motivation did not correlate with students' performance in English. Overall, teaching style has a negligible impact on English performance, and leadership behavior does not meaningfully moderate its effect. Individual indirect effects were significant, but the total mediation effect across variables was not. These findings suggest that in English learning, teachers play a contributory role; however, students must also demonstrate motivation, passion, and perseverance to succeed.

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1. INTRODUCTION

Educational research studies have examined the educational process and identified areas for improvement. These studies focused on the various constructs that influence student performance across different subject areas. The factors hypothesized in research studies to influence the educational process include those related to students and their teachers, school administrators, the schools in which they study, and their immediate environment. In this study, only variables related to students and teachers were considered for evaluation. Their impact, specifically on students' overall performance in English (SPE-O) was also examined. SPE-O was measured through a test that evaluates five areas of English proficiency (vocabulary, correct grammar form, answering questions, combining sentences, and word sequencing).

This study focuses on two teacher-related constructs: teaching styles and teachers' leadership behaviors. One objective of this study is to examine how teaching styles influence students' performance in English. Another key aim is to examine how teachers' leadership behaviors moderate the effects of teaching

styles on students' performance in English. The leadership behavior exhibited by classroom teachers plays a significant role in students' academic success [1]. Similarly, teachers' teaching style can either motivate students to engage in learning or hinder their willingness to learn [2].

The assertion that the ultimate realization of education's aims and objectives hinges upon the functions of teachers is irrefutable [3]. The teachers are responsible for implementing school policies. They are the prime drivers of educational objectives. They are expected to ensure that the educational goals of their subjects and those of the school are met. This would require utilizing the most effective teaching styles and leadership behaviors to help students achieve better academic performance. The teaching styles inventory for higher education (TSIHE) [4] was utilized to assess teaching style, while the leadership behavior description questionnaire (LBDQ) [5] was employed to measure leadership behavior.

Since the student respondents are university students, the TSIHE is the most suitable instrument for this study, as it was explicitly designed to evaluate teaching styles at the tertiary level and has well-established validity. The TSIHE model is both pedagogically and psychologically well-grounded [4]. A study exploring its structural validity concluded that it demonstrates appropriate psychometric properties and is useful for both research and practical purposes.

For Korean students, learning a foreign language requires a significant commitment of time and effort. The pressure for them to succeed in their academic endeavors is so intense that they consider failure unacceptable. In Korean society, the fear of academic failure and the weight of societal expectations are so intense that students suffer from anxiety and stress. That is how competitive their education system is [6]. What adds pressure to young South Koreans is that proficiency in English has become a fundamental requirement in their educational system. A substantial body of literature indicates that learning English as a second language (ESL) is a significant yet challenging endeavor for Korean learners [7]. Therefore, they must be motivated to learn the language.

Motivation is a key component in the learning process. It plays a central role even in learning English. In his socio-educational model of second language acquisition (SLA), Gardner conceptualized motivation as a complex set of factors, including effort, the desire to achieve the goal of learning the language, and a positive attitude toward learning the language [8]. He divided motivation to learn English into two categories: instrumental and integrative. Instrumental motivation refers to the drive to learn the language for practical utility. In contrast, integrative motivation reflects the desire to integrate into the target language community and culture [9].

In addition to motivation, students must also demonstrate perseverance and a genuine interest in learning the language. When combined, interest and perseverance form a psychological construct known as grit, a term popularized by Angela Duckworth. Grit is a trait characterized by an individual's passion and perseverance. In this study, this construct refers to students' ability to remain motivated and focused in their pursuits despite setbacks and challenges. Perseverance is crucial to learning. Without it, students may fail to enhance their skills and cease self-improvement [10]. The non-cognitive attribute of grit matters in different ways at different times. Grit empowers students to persevere in pursuing their goals, even when facing difficulties. It has gained recognition as a key factor in sustained academic achievement [11].

In addition to the two previously mentioned objectives, this study aims to investigate students' motivation to learn English and grit, and to determine their impact on English performance. Specifically, the study examines the extent to which motivation to learn English and grit mediate the relationship between teaching styles and students' performance in English. The evaluation of students' performance in English, as well as the influence of teaching style, leadership behavior, motivation to learn English, and grit, is grounded in the following theories: self-determination theory (SDT) and achievement goal theory (AGT). SDT focuses on the underlying reasons for motivated behavior. At the same time, AGT examines how individuals' goals impact their motivation and behavior. SDT asserts that people have three innate psychological needs: autonomy (the sense of volitional freedom), relatedness (the experience of mutual connection), and competence (the sense of personal effectiveness). In contrast, AGT posits that motivation and achievement-related behaviors are shaped by an individual's goal orientation [12].

Both theories provide valuable frameworks for understanding how teaching style and teachers' leadership behavior indirectly influence students' motivation and grit and directly affect their academic performance. This study hypothesized that students would be more motivated to perform well if teaching styles and leadership behaviors supported autonomy, competence, and relatedness, thereby leading them to place greater importance on intrinsic rather than extrinsic goals. The novelty of this study lies in its integrated examination of teaching styles, teachers' leadership behavior, motivation to learn English, and grit as predictors of students' performance in English. While previous research has often investigated these constructs separately, this study analyzes them within a single analytical framework. It further contributes to the literature by examining the moderating role of teachers' leadership behavior and the mediating roles of motivation and grit in the context of South Korean university EFL learners.

The general problem of this study is: how do teaching style and other constructs affect the performance of students in English? Specifically, this study aimed to answer the following questions, categorized into corresponding clusters: i) teaching style (what is the teaching style of teachers as measured in terms of teacher-student interaction (TS-TSI), decision-making negotiation (TS-DMN), teaching structuring (TS-TS), and behavioral control (TS-BC)?: is there a significant relationship between teaching style and students' performance in English?); ii) leadership behavior (what leadership behaviors do teachers exhibit in terms of initiating structure and consideration?; is there a significant relationship between teachers' leadership behavior and students' performance in English?); iii) motivation and grit (what is the level of students' motivation to learn English in terms of instrumental and integrative motivation? what is the students' level of grit? are motivation to learn English and grit significantly related to students' performance in English?); and iv) interaction effects (to what extent do teachers' leadership behaviors moderate the relationship between teaching styles and students' performance in English?; to what extent do students' motivation to learn English and grit mediate the relationship between teaching styles and students' performance in English?).

In this study, the following hypotheses were tested: H1) overall teaching style (TS-O) is significantly correlated with SPE-O; H2) teachers' leadership behavior—initiating structure (LB-IS) and consideration (LB-C)—is significantly correlated with SPE-O; H3) students' motivation to learn English—instrumental motivation and integrative motivation—and grit are significantly correlated with SPE-O; H4) teachers' leadership behavior significantly moderates the relationship between TS-O and SPE-O; and H5) students' motivation to learn English and grit significantly mediate the relationship between TS-O and SPE-O.

Examining the effects of teachers' teaching styles and leadership behaviors, combined with students' motivation to learn English and grit, on students' performance in English provides a fresh perspective on which combination of factors effectively influences language learning. Undertaking this investigation is important because the findings provide valuable insight into enhancing language learning.

2. METHOD

This study used the descriptive survey research technique. Its main objective was to evaluate the impact of teaching styles and other factors on students' English performance. The evaluation further explored how teachers' leadership behaviors moderate the relationship between teaching styles and students' English performance, and how students' motivation to learn English and their level of grit mediate this relationship.

2.1. Participants

The participants in this study were students in a South Korean university and their English teachers. The students were enrolled in various courses and required to take mandatory English classes. Purposive sampling was used to select respondents. Two classes from each of the twenty-two foreign English teachers were assigned to participate in the survey. The survey was conducted online through Google Forms. The teachers, who were informed that their students would evaluate them on teaching styles and leadership behaviors, were asked to share the survey link with their students during a class session. They were asked to tell their students that participation in the survey was voluntary. The questionnaire included a page explicitly stating that participation in the survey was voluntary. As a result, out of the more than 600 students, only approximately 450 participated. However, after removing incomplete and duplicate responses, 385 remained.

2.2. Data collection

The instrument designed for data gathering consisted of the following parts: Part I (profile of respondents), Part II-A (teaching styles), Part II-B (teacher leadership behavior), Part II-C (motivation for learning English), Part II-D (grit), and Part III (English grammar proficiency test). The questionnaire items in Part II (and corresponding subparts) and Part III were all adopted from previously validated and tested questionnaires used in studies parallel to the current one. Part II-A was taken from the TSIHE developed by Abello *et al*. [4]. The TSIHE is a pre-validated teaching-style inventory for higher education. The teaching style construct consists of two dimensions (social and classroom management). It is subdivided into four subscales: TS-TSI, TS-DMN, TS-TS, and TS-BC.

Part II-B was based on the LBDQ, developed by Ohio State University [5]. Teacher leadership behavior is categorized into two dimensions: consideration (LB-C) and initiating structure (LB-IS). Part II-C was taken from the original attitude/motivation test battery (AMTB) designed by Gardner [8]; Part II-D was taken from Duckworth's short grit scale (Grit-S) [13]; and Part III was adapted from the English-proficiency instrument previously used by Ligaya *et al*. [14].

All questionnaire items in Part II used a 5-point Likert scale. Respondents indicated the extent to which they agreed with each statement using the following options: 1-strongly disagree, 2-disagree,

3-neutral, 4-agree, and 5-strongly agree. The use of the 5-point scale is consistent with the format of the original instruments from which the items were adopted. It aligns with common practice in studies measuring attitudes, behavioral tendencies, motivation, and self-reported abilities.

2.3. Data analysis

This study examined the relationships among the following constructs*:* students' performance in English, teaching styles, teachers' leadership behavior, motivation for learning English, and grit. Students' performance in English was measured through a test that evaluates five areas of English proficiency (vocabulary, correct grammar form, answering questions, combining sentences, and word sequencing). Teaching styles are categorized into TS-TSI, TS-DMN, TS-TS, and TS-BC; leadership behavior of teachers into initiating structure and consideration; and motivation to learn English into instrumental and integrative. The data analyses included the computation of SPE-O, TS-O, overall leadership behavior (LB-O), and overall motivation to learn English (M-O). The mean scores of the subcategories of the said constructs were averaged to get the overall weighted mean.

The primary objective of this study was to examine the impact of teaching style on students' English performance and to identify the moderating effects of leadership behavior and the mediating effects of motivation to learn English and grit on this relationship. Data gathered through the questionnaires were treated using frequency counts and means. The student-respondents evaluated their teachers' teaching styles and leadership behaviors and assessed their motivation and grit levels. Their performance in English was evaluated through a twenty-five-item English proficiency test. A statistical analysis of the test results for students in the five previously identified areas of English proficiency was conducted to assess their performance in the language.

The total scores on the English proficiency tests, the results of their evaluations of their teacher's teaching style and leadership behaviors, and the assessments of their motivation and grit levels were used in the correlation, regression, moderation, and mediation analyses. The total mean scores of the students' performance in English, teaching styles, teachers' leadership behavior, and students' levels of motivation and grit were analyzed and interpreted using an assigned descriptive interpretation matrix. The Likert scales used in the matrix were adapted from similar studies that included the same constructs as this study.

Correlation analyses were performed to examine relationships between students' performance in English and the following variables: teaching style, leadership behavior, and students' motivation and grit. Regression analyses were conducted to test the significance of the associations among the constructs. Moderation analyses were conducted to determine the extent to which leadership behaviors moderate the relationship between teaching styles and students' performance in English. Mediation analyses were conducted to examine whether motivation and grit mediate the relationship between the variables in question.

All statistical analyses in the study were performed using the Statistical Package for the Social Sciences (SPSS). The mediation analysis was performed using the PROCESS macro (version 4.2 beta) in SPSS, as introduced by Hayes [15]. All items used to measure the identified constructs were tested for reliability. The Cronbach's alpha coefficient ranged from 0.70 to 0.81. There was no common method bias, as the value was less than 50%. The instruments were also previously used in similar studies.

2.4. Limitations of the study

One limitation of this study is the exclusion of variables related to school, family, and other aspects of students' lives. This limits the generalizability of the research. Factors not included in the investigation may provide additional insights into the factors that affect students' performance in English. Another significant limitation of this study is its reliance on self-reported data from students, who may overreport or underreport their behaviors and experiences. Such potential for bias could affect the accuracy of the data gathered and the analyses performed. This study provided insights into students' performance in English, examining how their motivation, level of grit, and teachers' leadership behavior and teaching styles affect their performance. However, several confounding variables were not controlled for, potentially influencing the findings. They include prior exposure to English, years of English study, courses enrolled in, and socioeconomic status. These variables, when taken into account, may significantly affect students' performance in the language. These factors may also help explain several findings in the present study, including the weak predictive power of the models and the unexpected inverse relationship between grit and English performance. Without controlling for students' prior language experience, proficiency levels, and stress-related variables, it is difficult to determine whether the observed relationships reflect true causal mechanisms or contextual learning conditions.

3. RESULTS AND DISCUSSION

3.1. Students' performance in English

Table 1 shows that vocabulary and answering questions had the highest mean scores (3.07), placing students in the proficient range in these areas. This suggests that participants demonstrate relatively stronger receptive vocabulary and comprehension skills. In contrast, performance was weaker in sentence combination and word sequencing, indicating uneven development across language skills. Overall, students' English performance was categorized as moderately proficient, suggesting that while strengths were evident in some areas, gaps remain in productive grammar-related tasks. The relatively high standard deviation further indicates variability among learners' proficiency levels. These results help identify areas of strength and weakness and may guide instructional strategies to improve students' language proficiency.

Table 1. Standard deviation and mean scores of students' performance in English

Areas of English proficiency	Standard deviation	Mean	Interpretation
Vocabulary	1.125	3.07	Proficient
Correct grammar form	1.198	2.18	Moderately proficient
Answering questions	1.567	3.07	Proficient
Combining sentences	1.190	1.45	Less proficient
Word sequencing	1.236	1.83	Moderately proficient
SPE-O	3.406	2.32	Moderately proficient

3.2. Teaching styles of teachers

A total of 385 students evaluated the teaching styles of their 22 English teachers. The mean scores in Table 2 showed that the four dimensions of teaching style are very similar, ranging from 4.32 to 4.45. This suggests that teachers consistently demonstrated all dimensions of teaching style as perceived by their students, with only minimal variation among them. A study examining the impact of teachers' instructional roles on student engagement found a correlation between students' cognitive and behavioral engagement and the instructional practices teachers employed. The engagement of the study participants was moderately to strongly correlated with the four domains of teaching style [16]. These findings suggest that teachers' instructional approaches may influence how actively students participate in classroom learning activities.

Table 2. Standard deviation and mean scores of teachers' teaching style

Categories of teaching styles	Standard deviation	Mean	Interpretation
TS-TSI	0.75	4.32	Exhibits style frequently
TS-DMN	0.76	4.35	Exhibits style frequently
TS-TS	0.63	4.45	Exhibits style frequently
TS-BC	0.68	4.41	Exhibits style frequently
TS-O		4.38	Exhibits style frequently

3.3. Leadership behaviors of teachers

The mean scores in Table 3 showed that student respondents perceived their foreign English teachers as slightly stronger in the consideration dimension (mean=4.06) than in initiating structure (mean=3.97). This suggests that teachers tend to demonstrate a more relationship-centered than task-oriented leadership approach.

Table 3. Standard deviation and mean scores of teachers' leadership behavior

Dimension of leadership behavior	Standard deviation	Mean	Interpretation
Initiating structure	0.65	3.97	High (manifested most of the time)
Consideration	0.63	4.06	High (manifested most of the time)
LB-O		4.02	High (manifested most of the time)

When combined, the overall mean for leadership behavior is 4.02. This indicated that both dimensions were manifested frequently in classroom practice. Consideration behavior focuses on relationships and is characterized by friendship, mutual trust, respect, and warmth between the leader and group members [17]. In classroom settings, these relational qualities may create a supportive environment that encourages students to participate actively, seek guidance, and persist when learning becomes difficult.

3.4. Motivation of students in learning English

Table 4 showed that students' motivation to learn English is high overall (mean=4.06), with integrative motivation (mean=4.27) slightly higher than instrumental motivation (mean=3.84). This suggests that students are motivated by both practical academic goals and a desire to engage with the language and its speakers. This pattern is consistent with research involving Korean EFL learners, in which greater integrative motivation was associated with higher English achievement [18]. Other research suggests that integrative orientation can encourage greater interaction with target-language speakers, potentially supporting language development [19]. This pattern indicates that both practical and social motivations may simultaneously shape learners' engagement with the language.

Table 4. Standard deviation and mean scores of students' motivation to learn English

Categories of motivation to learn English	Standard deviation	Mean	Interpretation
Instrumental	0.62	3.84	High
Integrative	0.75	4.27	High
M-O		4.06	High

3.5. Students' level of grit

The mean score of 3.01, as shown in Table 5, indicates that, on average, the student respondents exhibited a moderate level of grit. At 0.76, the standard deviation reflects a relatively moderate spread in responses, suggesting that some students may score significantly higher or lower and indicating a diverse range of grit levels among them. The mean being close to the midpoint indicates that while some students exhibit strong perseverance and passion in pursuing their goals, others may not display these traits as strongly.

Table 5. Standard deviation and mean scores of students' level of grit

Standard deviation	Mean	Interpretation
.76	3.01	Gritty

Motivation plays a significant role in initiating efforts to succeed, but passion and perseverance are needed to ensure that those efforts do not falter when difficulties occur. Language learning is a tedious and lengthy process. In the context of second language acquisition, motivation and grit have been identified as important psychological factors, with studies showing that second-language (L2) grit is positively correlated with learners' motivation and academic achievement [20]. In one study, the grit score of another group of South Korean university students was 4.16 [21], and in another, students had a mean score of 3.89 [22]. Both were notably higher than the mean score of the respondent students in the current study. Although cross-study comparisons should be interpreted cautiously, the lower score in the present sample suggests that learner characteristics and educational contexts may shape how consistently students sustain effort in language learning.

3.6. Relationships between variables

This study hypothesized that students' English performance, teaching styles, teacher leadership behavior, motivation to learn English, students' grit, and students' demographic profile are interrelated. Correlation and regression analyses were conducted to test this hypothesis and assess the strength and direction of relationships among the dependent variable (students' performance in English), their demographic profiles, and the other variables in the study. The regression analysis was specifically designed to determine whether teaching styles significantly predicted students' performance in English.

3.6.1. Correlation analysis

Table 6 presents the relationships among students' English performance, teaching style, leadership behavior, motivation to learn English, and grit. Most correlations were statistically significant but small in magnitude, denoting weak associations among the variables. Table 6 also shows that correlations between students' English performance, teaching styles and its four components were statistically significant. The relationships were positive but weak, reflecting only slight associations between performance and the four dimensions of teaching style. When the computed mean scores across the four dimensions were combined to form the TS-O, the resulting correlation was likewise significant. This positive but weak relationship indicates that TS-O was only modestly associated with students' performance in English.

Table 6. Correlation matrix: students' performance in English and teaching styles, leadership behavior, motivation to learn English, and grit

Variable	SPE-O	Variable	SPE-O	Variable	SPE-O	Variable	SPE-O
SPE-O	1.000	SPE-O	1.000	SPE-O	1.000	SPE-O	1.000
TS-TSI	0.135**	LB-IS	0.117*	M-Inst	-0.069	Grit	-0.106*
TS-DMN	0.185**	LB-C	0.107*	M-Intg	0.207**		
TS-TST	0.168**	LB-O	0.114*	M-O	0.098		
TS-BC	0.162**						
TS-O	0.175**						

Note: M-Inst is instrumental motivation and M-Intg is integrative motivation. *Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed).

A study examining the impact of the university instructional environment, characterized by teaching style and classroom motivational climate, on several student factors, including academic performance, reported that teaching style was the only variable that positively and significantly predicted academic performance [23]. Another study evaluating the impact of teaching styles on student academic performance confirmed that teaching style significantly affects students' academic performance. Additionally, in the context of teacher–student interaction, a study investigating English teachers' teaching styles reported that the facilitator teaching style, which emphasizes TS-TSI, had the strongest influence on students' engagement in learning [24]. These findings align with a case study on lecture teaching styles and student engagement in large classes, which concluded that the delegator teaching style can significantly predict students' learning involvement [25].

As the correlation values show, there was also a weak positive correlation between students' language performance and LB-O, as well as its two dimensions: initiating structure and consideration. These results denote that, when combined, the two dimensions of leadership behavior were associated with students' language performance, although the relationship remained weak. Teachers' leadership behavior plays a crucial role in fostering a classroom environment that promotes students' active participation and achievement. These findings are supported by a study that examined the impact of initiating structure and consideration dimensions of teacher leadership behavior on learner autonomy and academic success in Turkish EFL settings [26]. Teachers' leadership behaviors help students succeed and have been linked to student achievement and academic performance [27].

Table 6 also shows that instrumental motivation was not statistically significantly related to students' English language performance. Conversely, integrative motivation showed a positive but weak correlation with students' performance. When combined, these types of motivation did not bear a statistically significant relationship with students' performance in the language. These findings contrast with the results of a study investigating the influence of instrumental and integrative motivations on English outcomes, which reported that students learning English were motivated both instrumentally and integratively. Participants were found to desire broader social contact with target-language speakers and to use English to achieve specific academic and work-related goals [28].

The correlation analysis also shows a negative relationship between grit and students' English performance. The inverse relationship suggests that the greater the students' grit, the more their English performance regresses. This inverse relationship suggests that higher levels of grit are associated with lower English performance among the respondents. There are instances in which high levels of grit reflect maladaptive perseverance, wherein students push themselves excessively under controlled motivation, leading to stress, anxiety, and potential academic burnout.

The impact of unmeasured contextual factors may also be reflected in this unexpected negative association. How persistence translates into performance may vary with prior exposure to English, proficiency level, and total language-learning experience. A transient inverse relationship in cross-sectional analysis could result from students with greater grit persevering despite initially lower proficiency or weaker language foundations. Furthermore, academic stress and burnout, which are prevalent in demanding learning environments, may diminish the benefits of persistence by leading to effort that does not immediately yield quantifiable success.

As articulated in SDT, this kind of perseverance may indicate controlled motivation, in which students persist out of fear of failure or under pressure from others. This type of maladaptive grit may hinder learning efficacy, particularly in high-pressure academic settings such as foreign-language instruction in South Korea. However, stress, burnout, and controlled forms of motivation were not directly measured in the present study; therefore, this explanation should be interpreted as theoretically informed rather than empirically verified within the current data.

Although several correlations were statistically significant, their magnitudes were generally small ($r<0.20$), denoting weak relationships with limited practical significance. A study investigating grit and language mindset as predictors of foreign language achievement examined their relationships and their roles in predicting L2 achievement. The study concluded that only the growth language mindset was a weak

positive predictor of L2 achievement, whereas grit was not [29]. The findings of the present study, which showed that M-O was not correlated with students' performance in English and that grit was negatively related, contrast with the results of another study that reported a positive correlation between motivation, grit, and English language performance [30].

A study examining the trait and state of grit among Korean students and how these may be influenced by peer, teacher, and parental variables concluded that the relationship between teachers and students has a positive impact on students, particularly with respect to consistency of interest and perseverance of effort [31]. This highlights the importance of the teachers' supportive role in fostering grit. Both teaching styles and teachers' leadership behavior appear closely associated with teacher-student rapport and students' grit development. Educators must continue to identify which elements of teaching style and which dimensions of teachers' leadership behavior are most effective in improving students' performance in English. Such efforts should also examine whether supportive teacher–student relationships influence English performance indirectly by strengthening students' motivation, engagement, and capacity to persevere.

In the present study, however, the generally weak relationships suggest that supportive teaching and leadership practices may influence English performance indirectly by shaping students' engagement, motivation, and persistence rather than by producing immediate gains in test scores. This may also explain why grit did not emerge as a strong positive predictor, since perseverance is more likely to support achievement when guided by effective learning strategies and reinforced by a responsive teacher–student relationship.

The negative association between grit and English performance should not be interpreted as contradicting grit theory. Rather, it may reflect the distinction in recent literature between adaptive (harmonious) perseverance and maladaptive (obsessive) persistence. In high-pressure academic environments, sustained effort driven by external expectations or controlled motivation may lead students to persist in ineffective strategies, resulting in effort that does not immediately translate into improved performance. From this perspective, the present finding may indicate that perseverance alone is not universally beneficial, but that its effectiveness depends on the motivational context in which it operates. While several correlations reached statistical significance, their magnitudes were small ($r<0.20$), indicating limited practical or educational impact and suggesting that other unmeasured factors likely play a larger role.

3.6.2. Regression analysis

The regression analysis examined the relationship between teaching style (and its four dimensions) and students' performance in English. Both simple linear and multiple regression analyses were performed. The statistics in Table 7 pertain to the simple linear regression model in which TS-DMN was the predictor. The intercept represents the predicted value of overall students' English performance when TS-DMN is set to zero. The model showed a weak positive relationship ($R=0.185$) and accounted for only 3.4% of the variance in students' English performance ($R^2=0.034$).

Table 7. Summary of simple linear regression analysis

Intercept (constant)	Coefficient (for TS-DMN)	p-value (for TS-DMN)	R	R^2	Adjusted R^2	F-statistic	Significance of F
6.163 (p=0.000)	0.829	0.000	.185	0.034	0.032	13.579	0.000

Note: dependent variable: SPE-O. Independent variables: TS-TSI, TS-DMN, TS-TS, and TS-BC.

The TS-DMN model was statistically significant ($F=13.579$, $p<0.001$), but its explanatory power was small. The adjusted R^2 of 0.032 similarly indicates that most of the variation in students' English performance was associated with factors outside this model. The unstandardized coefficient ($B=0.829$, $p<0.001$) indicates that each one-unit increase in TS-DMN was associated with a 0.829-unit increase in predicted English-performance score.

Thus, statistical significance should not be interpreted as evidence of a strong educational effect. The small R^2 indicates that TS-DMN made only a modest contribution to students' English performance, and the result should be interpreted cautiously. This suggests that most of the variation in English performance may be attributable to other learner-related, instructional, and contextual factors not included in the model.

Table 8 shows that all four teaching-style dimensions were significant positive predictors in their respective simple linear regression models. However, when the dimensions were entered together in the multiple regression model, only TS-DMN remained statistically significant ($\beta=0.185$, $p<0.001$). TS-TSI changed from a significant positive coefficient in the linear model ($\beta=0.135$, $p=0.008$) to a non-significant negative coefficient in the multiple model ($\beta=-0.105$, $p=0.300$). TS-TS and TS-BC likewise became non-significant after the other dimensions were controlled.

Table 8. Comparison of the results of linear and multiple regression analyses

Variables	Multiple regression			Linear regression		
	(β)	t	Sig.	(β)	t	Sig.
TS-TSI	-.105	-.1038	.300	.135	2.667	.008
TS-DMN	.185	3.685	.000	.185	3.685	.000
TS-TS	.046	.510	.610	.168	3.332	.001
TS-BC	.043	.525	.600	.162	3.215	.001

The fact that TS-DMN's beta value remained unchanged in both linear and multiple regression further confirms that it was the most statistically significant predictor with limited explanatory power in both models. Its influence remained stable even when other dimensions of teaching style were incorporated into the model. These findings highlight the importance of training teachers to hone their TS-DMN skills. The significance of TS-DMN may also be viewed in the context of teacher-student rapport, as it can help teachers build positive relationships with students. By involving students in classroom decisions, teachers may strengthen learners' sense of agency and engagement, which could help explain the observed association with English performance.

3.7. Moderating effects of leadership behavior of teachers

This study also hypothesized that teachers' leadership behaviors significantly moderate the relationship between teaching styles and their dimensions, as well as students' performance in English. Moderation analyses were conducted for both dimensions of leadership, initiating structure and consideration, as well as for the two dimensions combined. Table 9 presents the coefficient, standard error (SE), p-value, 95% confidence interval (CI), and model-fit statistics for each of the initiating structure, consideration, and LB-O models. Across all models, neither the main effects of leadership behavior nor the interaction terms were statistically significant. These findings indicate that leadership behavior did not significantly moderate the relationship between teaching style and students' performance in English.

Table 9. Moderation effects of LB-IS on TS-O and SPE-O

Variable	Coefficient	SE	p-value	95% CI	Model fit
A. TS-O x LB-IS					
Constant	3.060	7.088	0.066	[-0.877, 26.99]	
TS-O	-0.760	1.643	0.644	[-3.991, 2.470]	
LB-IS	-2.031	1.985	0.307	[-5.935, 1.873]	R^2=0.033
Interaction	0.458	0.441	0.300	[-0.409, 1.326]	P=0.005
B. TS-O x LB-C					
Constant	14.950	6.992	0.033	[1.202, 28.698]	
TS-O	-1.152	1.702	0.499	[-4.498, 2.195]	
LB-C	-2.539	1.866	0.174	[-6.208, 1.129]	R2=0.035
Interaction	0.563	0.432	0.194	[-0.287, 1.413]	P=0.003
C. TS-O x LB-O					
Constant	14.542	7.175	0.043	[0.434, 28.650]	
TS-O	-1.065	1.695	0.530	[-4.399, 2.268]	
LB-O	-2.447	1.971	0.215	[-6.323, 1.428]	R2=0.034
Interaction	0.544	0.445	0.222	[-0.330, 1.418]	P=0.004

In the initiating structure model, the interaction term was not significant ($p>0.05$), and the model explained approximately 3.3% of the variance in students' performance in English (R^2=0.033). Similarly, in the consideration model, the interaction term was not significant, with an R^2 of 0.035. When both leadership dimensions were combined, the interaction effect remained non-significant, and the model explained 3.4% of the variance (R^2=0.034). Although statistically tested, the consistently low R^2 values across models indicate limited explanatory contribution of leadership behavior as a moderating variable. Conceptually, these findings suggest that leadership practices in this context may function more as background classroom conditions rather than as interactive mechanisms that alter the strength of the relationship between teaching style and students' performance. The absence of significant moderation effects also indicates that, within the present sample, leadership dimensions did not meaningfully amplify or attenuate instructional influences on English performance. This suggests that other learner-level and contextual factors may play a more substantial role in determining when teaching styles translate into improved English performance.

3.8. Mediating effects of motivation to learn English and grit

This study also hypothesized that motivation to learn English and grit significantly mediate the relationship between teaching style and students' performance in English. A mediation analysis was conducted to determine the extent to which the mediating variables mediate the relationship between the independent and dependent variables. Table 10 summarizes the bootstrap estimates of the total, direct, and indirect effects of the TS-O on students' English performance, as determined by the mediation analysis.

Table 10. Total, direct, and indirect effects of TS-Os on the performance of students in English

Variable/effect	Coefficient	p	Remarks
Total effect	0.9050	0.0006	No 0 (significant)
Direct effect	0.7320	0.0382	No 0 (significant)
Indirect effect (total)	0.1730	CI: LL=-0.3511, CI: UL=0.6647)	With 0 (not significant)
Instrumental motivation	-0.4544	0.0024	No 0 (significant)
Integrative motivation	0.6964	0.0022	No 0 (significant)
Grit	-0.0690	0.1366	With 0 (not significant)
C1 (instrumental minus integrative)	-0.0877	CI: LL=-0.1508, CI: UL=-0.0274)	No 0 (significant)
C2 (instrumental minus grit)	-0.0133	CI: LL=-0.0384, CI: UL=0.0050)	With 0 (not significant)
C3 (integrative minus grit)	0.1344	CI: LL=0.0501, CI: UL=0.2196)	No 0 (significant)

3.8.1. Total, direct, and indirect effects of teaching style on students' performance in English

The total effect of teaching style on students' performance in English was positive and statistically significant, although the magnitude of the association was weak. The direct effect of teaching style on students' performance in English is also positive and statistically significant, indicating that teaching style has a direct effect on the dependent variable even after controlling for the mediators. However, the total indirect effect was not statistically significant, as the bootstrap CI included zero. This finding indicates that, when considered collectively, motivation to learn English and grit do not significantly mediate the relationship between teaching style and students' performance in English.

The presence of a significant direct effect alongside a non-significant total indirect effect suggests that the relationship between the two constructs is primarily direct rather than mediated. The non-significant total indirect effect may be attributed to the opposing directions of the individual mediators. Instrumental motivation exerted a negative indirect influence, whereas integrative motivation exerted a positive indirect influence, thereby offsetting each other when combined.

3.8.2. Individual indirect effects of mediators on the performance of students in English

The coefficient for instrumental motivation showed that this mediator significantly mediated the relationship between the combined dimensions of teaching style and students' performance in English, although the effect was negative. In contrast, integrative motivation had a positive coefficient and likewise significantly mediated the relationship between the two variables. The indirect effect was positive. The coefficient for grit was not statistically significant, indicating that it did not function as a significant mediator in this model. This may suggest that, in this sample, students with higher grit persisted despite difficulties, which could relate to lower performance, while additional variables such as stress and burnout were not measured. The negative association between grit and students' performance in English suggests that perseverance may not always function adaptively in academic contexts.

3.8.3. Contrasting indirect effects of mediators on the performance of students in English

The contrast between the indirect effects through instrumental and integrative motivation was statistically significant (C1=-0.0877, 95% CI [-0.1508, -0.0274]), as the CI excluded zero. In contrast, the difference between the indirect effects through instrumental motivation and grit was not statistically significant (C2=-0.0133, 95% CI [-0.0384, 0.0050]) because the CI included zero.

The contrast between the indirect effects through integrative motivation and grit was statistically significant (C3=0.1344, 95% CI [0.0501, 0.2196]), with integrative motivation showing the stronger positive effect. This suggests that integrative motivation was a more effective mediator than grit in the relationship between TS-O and students' performance in English. This finding aligns with research reporting positive relationships among motivation, grit, and English-language performance [30]. The regression results likewise indicated that grit was a weaker predictor of performance than motivation.

A study was conducted to investigate the association between grit and language assessment. To examine the mechanisms of grit facets (i.e., interest and perseverance) across time and subgroups, a multiple-group path analysis was employed. The results have shown that while both interest and perseverance predicted grades in Swedish and Mathematics, interest alone predicted grades in English.

Perseverance did not [32]. In other studies, grit was found to mediate the relationship between social support and learners' academic achievement, and that certain levels of grit facets (passion and perseverance) may lead to stress, thereby negatively impacting performance [33]–[35]. More studies on grit and its impact on language learning are needed to conclusively establish its role in language acquisition. Figure 1 illustrates the parallel mediation model, which shows how teaching styles directly influence students' English performance through three mediators: instrumental motivation, integrative motivation, and grit. The path coefficients (a1, a2, a3, b1, b2, b3, and c) indicate the strength and direction of the relationship. Overall, although several relationships were statistically significant, most effect sizes were small, and the models demonstrated limited explanatory power; thus, the findings should be interpreted cautiously.

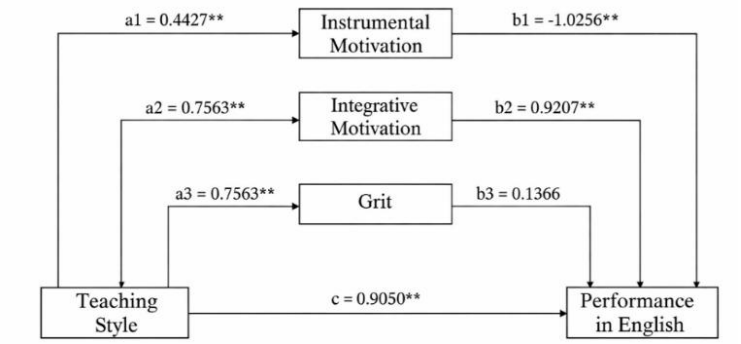

Figure 1. Diagram of the parallel mediation model with path coefficients

3.9. Summary of the findings and decisions on the hypotheses

Given the small effect sizes observed in the analyses, the implications of these findings should be interpreted with caution, as they indicate modest tendencies rather than strong causal effects. These results suggest that the relationships identified in this study represent limited predictive associations rather than dominant determinants of students' performance in English. Additional variables and contextual factors not included in the model may therefore play a more substantial role in explaining variations in students' language performance.

The results showed that the student respondents were moderately proficient in English, were more integratively motivated than instrumentally motivated to learn the language, and exhibited a moderate level of grit. Additionally, foreign English teachers were perceived by their students as demonstrating specific teaching styles. They were also found to manifest the consideration dimension of leadership behavior more strongly than the initiating structure dimension, indicating a more student-centered than task-oriented approach.

The correlation and regression analyses revealed that TS-O and its four dimensions were significantly related to students' performance in English, although the strength of these relationships was generally weak. Leadership behavior, in terms of initiating structure and consideration, also showed statistically significant but weak associations with students' English performance. Students' performance in English was significantly related to integrative motivation and grit, but not to instrumental motivation. Therefore, H1, which states that TS-O is significantly correlated with students' performance in English, is accepted, while the specific association involving instrumental motivation is not supported.

The moderation analyses showed that neither initiating structure nor consideration leadership behavior, nor LB-O, significantly moderated the relationship between teaching style and students' performance in English. Hence, H4, which posits that teachers' leadership behavior significantly moderates the relationship between teaching style and students' performance in English, is rejected.

The mediation analysis demonstrated that instrumental and integrative motivation each served as significant mediators in the relationship between teaching style and students' performance in English, whereas grit did not significantly mediate this relationship on its own. However, when considered collectively, instrumental and integrative motivation showed significant individual indirect effects, whereas the total mediation effect across variables was not statistically significant. This shows that while some mediators operate individually, the opposing directions of their specific indirect effects likely attenuated the overall indirect effect at the model level, resulting in a non-significant total mediation effect.

Accordingly, H5, which proposes that students' motivation to learn English and grit mediate the relationship between teaching style and students' performance in English, is partially supported, as

instrumental and integrative motivation showed significant indirect effects, whereas grit did not, and the total indirect effect was not statistically significant. Regarding the direct relationships between leadership behavior and students' performance in English, the findings indicate statistically significant but weak correlations. However, given the limited explanatory power of the models and the absence of moderating effects, H2, which posits that teachers' leadership behavior is significantly correlated with students' performance in English, is accepted, while its role as a moderating variable is not supported, as indicated in H4. Furthermore, H3, which posits that students' motivation to learn English and grit are significantly correlated with students' English performance, is partially supported. Integrative motivation demonstrated a significant positive association with performance, whereas instrumental and M-O did not reach statistical significance. Grit exhibited a statistically significant but weak inverse relationship with English performance.

These findings offer several implications for educational practice and policy. Firstly, the impact of TS-DMN indicates that teachers should adopt more interactive, student-centered approaches that give learners involvement in learning activities. Educational leaders can make this happen through training and instructional structures that enable students to collaborate and become independent. Secondly, the more substantial effect of integrative motivation suggests that schools must implement policies to promote cultural exposure and authentic language use beyond the classroom. Finally, the negative relationship between grit and performance in English underscores the importance of curricular programs and policies that address student well-being and stress management to prevent academic burnout.

The results of this study can be analyzed in depth using SDT and AGT. The enhanced significance of integrative motivation aligns with SDT's focus on intrinsic motivation, autonomy, and relatedness, as students driven to integrate with the target-language community may exhibit greater volitional engagement in language acquisition. Conversely, the minimal or negligible effects of instrumental motivation and grit suggest that externally motivated objectives and resilience may be insufficient to sustain language performance in high-pressure academic environments. Moreover, the absence of significant moderating effects of teachers' leadership behavior contradicts AGT expectations that leadership structures influence achievement outcomes, suggesting that, in this context, students' motivational orientations may have a more direct impact on performance than teachers' task- or relationship-oriented leadership behaviors. These findings represent statistically detectable but educationally modest effects, suggesting that teaching-related factors contribute to performance but do not strongly determine outcomes. This indicates that while instructional practices may influence students' language learning, their impact may be limited when considered alongside other contextual and learner-related variables. Therefore, students' English performance may be shaped by a broader combination of instructional, psychological, and environmental factors.

3.10. Recommendations

EFL/ESL teachers must devise a way to identify the areas in which their students excel and those in which they need improvement. In areas where students need improvement, they can apply targeted language instruction by giving exercises and tasks that specifically address those areas. The results of the study show that, among the elements of teaching styles, only TS-DMN remains significant in both linear and multiple regression analyses. This suggests that it consistently affects students' performance in English. In light of these findings, teachers should encourage their students to engage in decision-making processes within the classroom. They need to promote a more interactive and collaborative learning environment.

The finding that integrative motivation has a greater effect than instrumental motivation should prompt educators to devise strategies that foster students' integrative motivation. They need to showcase the cultural and global benefits of learning English. Specifically, they can design activities that increase students' exposure to English-speaking cultures or that promote community integration. The inverse relationship between grit and students' English performance suggests that certain levels of passion and perseverance may lead to stress, thereby negatively affecting performance. Educators should consider integrating stress-management strategies into language-learning programs. The students must be taught to set realistic goals for themselves. For future research, longitudinal designs should be considered to track changes in students' English proficiency over time. This study employed a cross-sectional design, in which data were collected at a single point in time. It did not take into account how, or if, the impact of teaching styles, leadership behavior, and students' motivation and grit on students' performance in English may evolve over a longer period.

4. CONCLUSION

The study's results emphasize the crucial role of teachers in helping students improve their English proficiency. TS-DMN emerged as the classroom process most consistently associated with students' English performance. This suggests that opportunities for shared participation, learner voice, and collaborative instructional decisions may support engagement more effectively than broad teaching style profiles alone.

Even with modest effect sizes, the findings point to the potential value of interactive classroom practices that position students as active participants in their own learning.

Integrative motivation appears to be the most consistent motivational pathway linked to English performance in this study. This highlights the importance of fostering learners' desire to connect with the language, its speakers, and its cultural context rather than relying solely on instrumental or externally driven incentives. Instructional approaches that encourage meaningful engagement with English may therefore support more sustainable language development.

The modest explanatory power of the models, together with the unexpected negative association between grit and students' performance in English, underscores the importance of student well-being in language learning. Persistence and effort may not always translate into achievement when learners operate under high levels of academic pressure or controlled motivation. Stress, burnout, and uneven prior language experience may shape how instructional practices and motivational factors influence outcomes. These findings suggest that supporting students' psychological well-being and managing classroom pressure may be as important as refining teaching strategies. Language learning success may therefore depend not only on what teachers do, but also on the conditions under which students learn.

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C : **C**onceptualization
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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 no conflict of interest.

DATA AVAILABILITY

All information related to this study can be requested from the corresponding author, [MADL], except that covered by the confidentiality and privacy agreements with the participants.

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