Learning Under Pressure: The Interplay Between Learning Strategies And Psychological Difficulties In High School Students

Mihaela Luminița SANDU
Lecturer, PhD, Ovidius University of Constanța (Romania)
Email: mihaela.sandu@365.univ-ovidius.ro

Mariana Floricica CĂLIN
Lecturer, PhD, Ovidius University of Constanța (Romania)
Email: mariana.calin@365.univ-ovidius.ro

Tănase TASENȚE
Lecturer, PhD, National University of Science and Technology Politehnica Bucharest Pitești University Center (Romania)
Email: tanase.tasente@365.univ-ovidius.ro

Maria PESCARU
Associate Professor, PhD, National University of Science and Technology Politehnica Bucharest, Pitești University Center (Romania)
Email: maria.pescaru@upb.ro

Abstract:

Adolescence is a critical period in which cognitive, motivational, and socio-emotional trajectories converge, shaping both academic outcomes and psychological well-being. This study investigates the relationship between learning strategies and psychological difficulties among high school students, with a focus on self-concept, test anxiety, and conduct-related problems. A sample of 569 adolescents (ages 14–19) completed the School Motivation and Learning Strategies Inventory (SMALSI) and the Adolescent Psychopathology Scale – Short Form (APS-SF). Correlational and regression analyses revealed that study strategies were negatively associated with conduct disorder, highlighting their protective role in reducing disruptive behavior. Conversely, low academic motivation was strongly linked to conduct problems, underscoring the risks of motivational deficits. Mediation analyses confirmed that test anxiety partially suppressed the positive effect of cognitive strategies on academic performance. Self-concept showed a weak but significant association with study strategies, while time management and organizational techniques formed a coherent cluster of self-regulated learning. Unexpectedly, study strategies positively predicted disordered eating, suggesting that intensive academic engagement may coincide with maladaptive coping mechanisms. These findings emphasize the need for integrative interventions that address cognitive, motivational, and emotional dimensions of learning. Educational practices fostering self-regulation, autonomy, and psychological resilience can optimize both academic success and adolescent well-being.

Keywords: *Learning strategies; Self-regulated learning; Test anxiety; Self-concept; Academic motivation; Conduct disorder; Disordered eating; High school students*

1. Introduction

The optimization of learning during adolescence has become a central concern for both educational psychology and developmental psychopathology. High school constitutes a unique developmental stage where cognitive, motivational, and socio-emotional trajectories converge, shaping not only immediate academic outcomes but also long-term educational and occupational success. In this period of heightened vulnerability and opportunity, students are faced with increasingly complex curricular demands while simultaneously navigating identity formation, peer relationships, and exposure to stressors that may challenge their psychological balance. Understanding how adolescents learn, and more specifically how their strategies for learning interact with psychological difficulties, represents a critical step in advancing evidence-based educational practice.

Learning strategies have long been recognized as pivotal tools in academic achievement. They involve deliberate methods employed by learners to enhance comprehension, retention, and application of information. From basic cognitive techniques such as rehearsal and note-taking to more complex metacognitive processes like planning, monitoring, and evaluation, these strategies enable students to regulate their own learning processes. Their importance is amplified at the high school level, where autonomy in learning becomes progressively more essential. However, research increasingly suggests that these strategies cannot be disentangled from the psychological context in which they are deployed. Anxiety, depression, oppositional behaviors, or a fragile self-concept can undermine the effectiveness of even the most sophisticated learning strategies, while positive emotional regulation and self-beliefs may amplify their impact.

The growing interest in this interaction reflects a broader paradigm shift: educational outcomes are no longer conceptualized solely as the product of cognitive skills, but as the result of dynamic exchanges between cognition, motivation, and mental health. Adolescents who suffer from psychological difficulties often present with reduced motivation, impaired concentration, and maladaptive coping mechanisms, all of which hinder the use of effective learning strategies. Conversely, students with a positive sense of self and strong impulse control tend to engage more actively in their education, benefiting fully from strategies of organization, reflection, and self-regulation. These observations suggest that psychological vulnerabilities and strengths may act as mediators or moderators in the relationship between learning strategies and academic performance.

Despite the conceptual importance of this framework, empirical investigations remain insufficiently integrated. Studies often address learning strategies or psychological difficulties in isolation, rarely examining their combined effects on learning outcomes in adolescence. This separation perpetuates a fragmented understanding and overlooks the potential mechanisms through which cognition and mental health jointly influence school success. Moreover, interventions designed to enhance learning in high school frequently emphasize cognitive

techniques without systematically addressing the psychological barriers that prevent their effective use. In practice, this leads to partial or inconsistent results: while some students benefit from strategic instruction, others fail to translate these methods into improved outcomes due to underlying emotional or behavioral challenges.

The empirical study presented in this article seeks to bridge this gap by adopting a correlational perspective. Rather than treating learning strategies and psychological difficulties as independent domains, it examines the extent to which these variables interact in predicting academic functioning among high school students. Specifically, the research considers the role of self-concept as a mediator and impulse control as a moderator, exploring how these psychological dimensions may condition the effectiveness of cognitive and metacognitive strategies. Such an approach acknowledges the complexity of adolescent learning, moving beyond simplistic cause–effect models to a more nuanced understanding of interaction effects.

The rationale for this perspective is twofold. Theoretically, it advances the integration of educational psychology and developmental psychopathology, two domains that have historically developed in parallel. While the former emphasizes self-regulated learning and cognitive development, the latter highlights the impact of emotional difficulties and behavioral problems. By connecting these traditions, the study contributes to a more comprehensive model of adolescent learning. Practically, the findings have the potential to inform interventions that are both pedagogically and psychologically responsive. If certain psychological variables are shown to mediate or moderate the impact of learning strategies, educators and psychologists can design targeted programs that address not only how students study but also how they cope with stress, regulate emotions, and construct a positive sense of self.

Furthermore, the focus on high school education provides added relevance. Unlike primary education, where learning is heavily scaffolded by teachers and parents, high school demands greater independence from students. At the same time, unlike higher education, high school coincides with developmental challenges that increase vulnerability to psychological distress. This dual pressure makes adolescence a decisive period for cultivating strategies that can protect against both academic failure and psychological dysfunction. Insights gained from empirical evidence at this stage may thus guide preventive measures that promote both educational achievement and mental health.

Understanding adolescents' learning strategies cannot be entirely separated from the social context of performance and from the mechanisms through which "prestige" is constructed, validated, and distributed within institutions. Analyses of prestige-building techniques in the public sphere, including highly hierarchical political contexts, show how formal and symbolic recognition can become instruments of pressure, conformity, and control, generating standards of success that are internalized by individuals (Betea & Cioacă, 2022). In educational settings, such mechanisms may contribute to transforming academic achievement into an identity-based obligation, with implications for self-evaluation, performance anxiety, and the ways in which students organize their learning efforts. Consequently,

cognitive and self-regulated learning strategies should also be understood as adaptive responses to a culture of evaluation and recognition, rather than solely as individual competencies.

The present research therefore aims to elucidate the correlational links between learning strategies and psychological difficulties in high school, grounding the investigation in robust theoretical assumptions and validated measurement tools. By employing standardized questionnaires and advanced statistical modeling, it seeks to uncover not only direct relationships but also the more complex mediated and moderated pathways through which these variables interact. In doing so, it responds to the need for empirical studies that reflect the multidimensional reality of adolescent learning.

Ultimately, the contribution of this study lies in demonstrating that optimizing learning in high school requires more than teaching students how to study effectively. It demands an integrative approach that considers their cognitive strategies in conjunction with their psychological profile, acknowledging that learning and mental health are mutually reinforcing processes. By highlighting the interaction between these domains, the study provides both a conceptual and applied foundation for developing interventions that are better tailored to the diverse needs of adolescents, thereby advancing the overarching goal of inclusive and effective education.

2. Literature review

The theoretical documentation for this research started from the premise that any analysis of the relationship between learning strategies and psychological difficulties in high school must be grounded in a solid scientific basis, anchored in the most relevant contributions in the field. For this purpose, a systematic bibliographic strategy was applied, using the Web of Science Core Collection as the main reference database. The choice of this platform was justified by its international recognition, the rigor of its indexing process, and the relevance of the works included for exploring complex links between educational and psychological constructs. Unlike other databases, Web of Science not only provides an extensive repository of peer-reviewed publications but also facilitates their integration into advanced bibliometric analyses, allowing the mapping of research directions and the identification of thematic convergences.

The search strategy was deliberately restrictive in order to achieve high thematic specificity. The query was limited to the title field (TI), focusing on articles that explicitly included the target terms. The chosen formula, TI=("learning strategies" AND "high school"), enabled the retrieval of works that directly addressed the application of learning strategies in secondary education. By restricting the search to explicit mentions in titles, the process minimized the inclusion of marginally related works and ensured a concentrated corpus for analysis.

Following the search, a total of eleven articles were identified as directly relevant to the topic of learning strategies in high school. The metadata of these articles were examined in relation to Web of Science Categories (WC) and extended

Subject Categories (SC), which provided a dual framework for classification. This allowed the positioning of the studies within their disciplinary domains and highlighted the intersections between education, psychology, and behavioral sciences. To gain a deeper understanding of how these works are conceptually related, bibliometric mapping was conducted using **VOSviewer**, focusing on keyword co-occurrence networks.

Figure 1. Thematic clusters based on keyword co-occurrence in literature (VOSviewer, Web of Science data).
Source: Own elaboration using VOSviewer

The resulting semantic map revealed several thematic clusters. At the center of the network, the keyword **"learning strategies"** formed the nucleus of the largest cluster, tightly connected to terms such as **"achievement"**, **"performance"**, **"self-efficacy"**, and **"academic outcomes".** This cluster reflects the mainstream research agenda, emphasizing the predictive value of learning strategies for school success. Beyond this core, additional clusters highlighted more specific areas of inquiry: one cluster was structured around metacognitive and digital strategies, capturing recent interest in the integration of technology into learning processes. This diversification also resonates with evidence that students who engage intensively in academic achievement may simultaneously experience heightened stress, which can foster maladaptive coping behaviors such as disordered eating; another focused on **methodological approaches** to assessing strategies, reflecting the need for validated instruments; while a further cluster explored the application of learning strategies in **foreign language acquisition**, a domain where cognitive and motivational aspects intersect intensely.

Together, these clusters delineate a research landscape that is both diversified and interconnected. On one hand, the centrality of achievement-oriented outcomes confirms the dominance of a performance-based paradigm in educational psychology. On the other hand, the peripheral clusters signal the diversification of approaches, pointing to newer directions such as digital learning, gamification, and domain-specific adaptations. This structure suggests that while the field has

established a solid core around achievement and self-efficacy, it is simultaneously expanding into emerging domains that address the realities of contemporary schooling.

Building on the bibliometric analysis, the literature review offers a more detailed synthesis of the empirical studies identified. A first strand of research underscores the importance of self-regulated learning (SRL), particularly cognitive and metacognitive strategies, in facilitating both academic performance and psychological well-being, which conceptualize effective learning as a dynamic process of goal setting, monitoring, and strategic adaptation. For instance, demonstrated that students with a richer vocabulary are more adept at using metacognitive strategies, which enhances their capacity for self-regulation and reduces the discomfort associated with misunderstanding tasks or complex content. Similarly, found positive correlations between mastery-oriented goals and the adoption of deep learning strategies such as elaboration and critical thinking, while avoidance strategies were linked to emotional difficulties and lower performance levels. These findings reinforce the idea that learning strategies are not neutral tools but are embedded within motivational and emotional contexts that can either enhance or undermine their effectiveness.

Building upon these foundations, further studies have highlighted the contextual variability in the effectiveness of learning strategies. emphasized that the success of a given strategy depends largely on the motivational profile of the learner. For highly motivated students, contextualized learning methods foster deeper engagement and better academic results, whereas for students with lower motivation, more structured and traditional approaches often prove more effective. This finding underscores the importance of aligning instructional strategies with the psychological readiness of learners rather than assuming universal applicability.

The role of the family and broader social environment has also been investigated. demonstrated that democratic and permissive parenting styles positively influence the adoption of organizational and self-regulatory learning strategies, while simultaneously buffering students from psychological risks such as anxiety and school-related stress. Their results confirm that learning strategies are not simply individual skills but are embedded in a socio-emotional ecology that either supports or hinders their development.

The literature also includes contributions specifically relevant to psychology as a subject of study in high school. Medina Coronado and Nagamine Miyashiro (2019) showed that autonomous learning strategies - such as preparing for assessment, collaborating with peers, and engaging actively with content - are strong predictors of performance in text comprehension. Their findings are particularly pertinent in psychology, a discipline that demands reflective and critical processing of information. Similarly, Tran et al. (2021) demonstrated that self-regulated learning strategies such as self-evaluation, self-reward, and goal-setting not only improved academic performance but also promoted emotional self-regulation, thereby reducing anxiety and stress in project-based educational contexts (Cassady and Johnson, 2002; Owens et al., 2012). These findings are echoed by Thiendathong and Sukying (2021),

who, focusing on vocabulary learning strategies, showed that students who strategically employ repetition, contextual analysis, and social engagement strengthen their autonomy, decrease dependency on external factors, and consolidate their sense of self-efficacy.

In addition to cognitive and digital strategies, motivational frameworks also play a decisive role. Trigueros Ramos and Navarro Gómez (2019) validated a model showing that when teachers support students' autonomy, basic psychological needs such as competence, relatedness, and novelty are satisfied. This generates self-determined motivation, which in turn encourages the use of metacognitive strategies and critical thinking, both of which directly predict academic performance. Conversely, when teachers exert psychological control, students experience frustration, externalized motivation, and ultimately lower academic achievement. This evidence strengthens the argument that learning strategies cannot be separated from the motivational climate established in the classroom.

The importance of classroom motivation and peer participation is further illustrated by Yajima and Arai (1996) in a Japanese context. Their study revealed that class structures emphasizing participation, recognition, cooperation, and task orientation significantly shape students' perceptions of competence, their use of self-regulated learning strategies, and their levels of performance anxiety. Active participation and task orientation were associated with better self-regulation and reduced anxiety, while an overemphasis on external recognition heightened stress and hindered learning (Boekaerts, 1999). Despite its early publication date, this study remains influential, underscoring the enduring relevance of motivational structures in shaping the interplay between learning strategies and psychological well-being.

Taken together, the studies reviewed converge on several critical insights. First, self-regulated learning strategies, particularly those involving metacognitive awareness and active cognitive engagement, consistently predict both academic performance and psychological resilience. Second, contextual factors - ranging from motivation and parenting styles to digital environments and teacher autonomy support - moderate the effectiveness of these strategies, highlighting the multi-layered nature of the learning process. Third, psychological difficulties such as anxiety, stress, and low self-efficacy are not merely outcomes of poor learning strategies but also reciprocal factors that inhibit their deployment, creating a feedback loop that can either reinforce success or perpetuate failure.

For the specific case of teaching psychology in high school, these insights acquire particular significance. As a subject that requires introspection, critical thinking, and value-based reflection, psychology demands more than rote memorization; it requires a balanced integration of cognitive strategies, emotional regulation, and self-directed motivation. The literature reviewed indicates that when students are encouraged to adopt self-regulated strategies within a supportive motivational climate, they not only improve their academic outcomes but also develop healthier emotional patterns and a stronger sense of responsibility toward their own learning.

This bibliometric and theoretical synthesis therefore provides a robust foundation for the present empirical investigation. By systematically mapping the thematic clusters of research and integrating empirical findings across diverse contexts, the groundwork has been laid for analyzing the correlation between learning strategies and psychological difficulties among high school students. The findings of prior studies suggest a strong rationale for expecting significant relationships between these constructs. The current study seeks to build on this foundation, employing a correlational design to explore how specific learning strategies interact with psychological barriers in shaping learning outcomes in psychology education at the secondary level.

3. Methodology

The present study was designed with the primary aim of investigating the relationship between high school students' learning strategies and the psychological difficulties they experience in the process of learning psychology as a school subject. Beyond exploring whether cognitive, metacognitive, and self-regulatory strategies are associated with academic performance and motivation, the research also considered the role of psychological variables such as test anxiety, school-related stress, and self-concept in mediating or moderating these associations. By employing a correlational approach, the study sought to provide an empirically grounded basis for differentiated pedagogical interventions tailored to the psychological profiles of students.

In order to guide the investigation, a set of research questions and objectives were formulated. The central objective was to explore the link between learning strategies and psychological difficulties in high school students, with the broader goal of identifying effective approaches for optimizing educational practice. More specifically, the study investigated whether significant relationships exist between learning strategies, as measured by the *School Motivation and Learning Strategies Inventory* (SMALSI), and psychological difficulties, as measured by the *Adolescent Psychopathology Scale – Short Form* (APS-SF). It further examined the extent to which organizational techniques, time management, and test-taking strategies could predict conduct problems, oppositional behavior, and school-related difficulties. Additionally, the role of academic motivation and test anxiety in shaping these relationships was assessed, together with the potential differences in student profiles depending on their level of self-concept. Finally, the study sought to determine whether the strategies identified through SMALSI could be translated into differentiated classroom interventions in the teaching of psychology.

The research design operationalized two categories of variables. The independent variables were represented by the ten scales of the SMALSI, covering study strategies, note-taking, reading comprehension, writing skills, test-taking strategies, organizational techniques, time management, low academic motivation, test anxiety, and concentration problems. The dependent variables were measured through four scales of the APS-SF, namely conduct disorder, oppositional defiant disorder, school problems, and self-concept. Based on the literature, several

hypotheses were advanced, predicting, for instance, negative correlations between study strategies and conduct-related problems, a positive association between academic motivation and the use of learning strategies, mediation effects of test anxiety and concentration difficulties, and the link between positive self-concept and more efficient learning behaviors.

The study was conducted on a sample of 569 high school students, aged between 14 and 19 years (M = 16.82), distributed across three grade levels (264 in grade 10, 100 in grade 11, and 205 in grade 12). The sample showed a slight predominance of female students (54.65%), while males accounted for 45.35%. In terms of ethnicity, the group was relatively homogeneous, with 92.1% identifying as Romanian, 5.8% as Turkish/Tatar, and 2.1% as Roma. The balanced distribution of participants across gender and grade levels enhances the representativeness of the sample, while its relative homogeneity in terms of ethnicity provides a controlled context for interpretation.

Table 1. Sociodemographic Characteristics of the Participants by Grade Level and Ethnicity

Variable	Category	Grade 10 (n, %)	Grade 11 (n, %)	Grade 12 (n, %)	Total (n, %)
Gender	Female	124 (46.97)	65 (65.00)	122 (59.51)	311 (54.65)
	Male	140 (53.03)	35 (35.00)	83 (40.49)	258 (45.35)
	Total	264 (100)	100 (100)	205 (100)	569 (100)
Ethnicity	Romanian	–	–	–	524 (92.10)
	Roma	–	–	–	12 (2.11)
	Turkish/Tatar	–	–	–	33 (5.80)
	Total	–	–	–	569 (100)

Note. N = 569. Values represent absolute frequencies (n) and percentages (%). Symbol "–" indicates lack of detailed distribution by grade level for ethnic categories.

Two standardized instruments were employed. The APS-SF is a validated tool designed to measure clinical symptoms and psychosocial problems in adolescents, comprising 12 clinical subscales and 2 validity subscales. For the purposes of this study, four scales were selected: conduct disorder, oppositional defiant disorder, school problems, and self-concept. Complementarily, the SMALSI was administered to assess ten constructs linked to learning strategies and school motivation, seven of which highlight strengths - study strategies, note-taking, reading, writing, test-taking, organizational skills, and time management - while three address weaknesses, namely low academic motivation, test anxiety, and concentration difficulties. The adolescent form (13–18 years), including 170 items, was used.

Data collection took place in classroom settings, during psychology lessons, under conditions ensuring confidentiality and voluntary participation. Informed consent was obtained both from students and school authorities prior to administration. The analysis plan combined descriptive and inferential statistics. Initial analyses provided an overview of the demographic and psychological profiles of the participants, followed by correlation analyses to test the associations between learning strategies and psychological difficulties. Predictive relationships were examined through multiple regression models, while mediation effects of test anxiety and concentration difficulties were explored using regression-based procedures, specifically the PROCESS macro (Model 4). All statistical analyses were conducted using SPSS version 27.0.

4. Results

The empirical results are presented in a structured manner, highlighting the statistical evidence that supports or contradicts the research hypotheses. Each set of analyses integrates tests of normality, correlation matrices, and regression outputs, providing a coherent interpretation of the relationships among the studied variables.

The first stage of the analysis examined whether the study variables followed a normal distribution. As shown in **Table 2**, only the variable *Study Strategies* approximated normality, with non-significant Kolmogorov–Smirnov ($p = .065$) and Shapiro–Wilk ($p = .058$) tests. In contrast, *Conduct Disorder*, *Oppositional Defiant Disorder*, and *School Problems* significantly deviated from normality, with $p < .001$ in both tests. Given these deviations, Spearman's rho was adopted as the most appropriate method for correlation analysis.

Table 2. Normality Tests

Variable	Kolmogorov–Smirnov Statistic[a]	df	Sig.	Shapiro–Wilk Statistic	df	Sig.
Study Strategies	.037	569	.065	.995	569	.058
Conduct Disorder	.168	569	.000	.872	569	.000
Oppositional Defiant Disorder	.091	569	.000	.972	569	.000
School Problems	.077	569	.000	.914	569	.000

Note. N = 569. Lilliefors Significance Correction applied.

The correlation matrix presented in **Table 3** demonstrates that the frequency of study strategies is weakly but significantly and negatively associated with conduct disorder ($\rho = –.112$, $p = .008$). This suggests that students who apply learning strategies more frequently report slightly fewer behavioral symptoms of conduct disorder. However, no significant relationship was observed between study strategies and oppositional defiant disorder ($\rho = –.005$, $p = .907$), nor between study strategies and school problems ($\rho = –.029$, $p = .484$). In contrast, the psychological variables themselves were strongly interrelated, with moderate to strong correlations: conduct

disorder with oppositional defiant disorder (ρ = .564, p < .001), conduct disorder with school problems (ρ = .549, p < .001), and oppositional defiant disorder with school problems (ρ = .691, p < .001). These findings point to a cluster of interconnected difficulties in the behavioral and academic domains.

Table 3. Descriptive Statistics and Spearman Correlations for Study Variables

Variable	n	M	SD	1	2	3	4
1. Study Strategies	569	16.78	6.55	–	–.112**	–.005	–.029
2. Conduct Disorder	569	3.41	3.33	–.112**	–	.564**	.549**
3. Oppositional Defiant Disorder	569	7.01	3.61	–.005	.564**	–	.691**
4. School Problems	569	–	–	–.029	.549**	.691**	–

Note. All correlations are Spearman's rho coefficients. **p < .01 (2-tailed). N = 569. M = mean; SD = standard deviation.

The second hypothesis concerned the role of academic motivation in shaping learning strategies and behavioral difficulties. Tests of normality reported in **Table 4** revealed that *Low Academic Motivation* deviated significantly from normality (p = .002), whereas *Study Strategies* approximated normality, and *Conduct Disorder* showed significant deviations. Consequently, non-parametric correlations were again employed.

Table 4. Normality Tests

Variable	Kolmogorov–Smirnova[a]			Shapiro–Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Low Academic Motivation	.050	569	.002	.991	569	.002
Study Strategies	.037	569	.065	.995	569	.058
Conduct Disorder	.168	569	.000	.872	569	.000

Note. [a]Lilliefors Significance Correction.

The correlation results in **Table 5** show a significant positive association between low academic motivation and conduct disorder (ρ = .361, p < .01), indicating that students with lower academic drive tend to present higher levels of disruptive behavior. In addition, study strategies were significantly and negatively correlated with conduct disorder (ρ = –.112, p < .01), suggesting that frequent use of learning strategies may buffer against behavioral difficulties. However, no significant relationship emerged between low academic motivation and study strategies (ρ = –.013, p = .763). Together, these results highlight a dual pattern: motivation deficits

are linked to behavioral problems, whereas study strategies function as protective factors.

Table 5. Descriptive Statistics and Spearman Correlations for Study Variables

Variable	n	M	SD	1	2	3
1. Low Academic Motivation	569	19.76	8.52	–	-.013	.361**
2. Study Strategies	569	25.87	8.82	-.013	–	-.112**
3. Conduct Disorder	569	3.41	3.33	.361**	-.112**	–

Note. Correlations are Spearman's rho coefficients. **$\mathbf{p}$ < .01 (2-tailed). N = 569. *M* = mean; *SD* = standard deviation.

The third hypothesis focused on the mediating role of test anxiety in the relationship between cognitive strategies and academic performance. As displayed in **Table 6**, the regression model explained academic performance significantly. Cognitive strategies were strong positive predictors (B = 0.737, SE = 0.011, β = .917, t = 67.565, p < .001), while test anxiety had a significant negative standardized effect (β = –.103, p < .001). Although the unstandardized coefficient for test anxiety was positive, the standardized coefficient clarified its inhibitory impact. These findings confirm that cognitive strategies strongly enhance performance, while test anxiety undermines it, partially mediating the overall relationship.

Table 6. Regression Results for Predicting Academic Performance

Predictor	B	SE	β	t	p
(Constant)	-0.473	1.137	–	-0.416	.678
Cognitive Strategies	0.737	0.011	.917	67.565	< .001
Test Anxiety	0.199	0.026	-.103	7.570	< .001

Note. Dependent variable: Academic Performance. *B* = unstandardized coefficient; *SE* = standard error; *β* = standardized coefficient. **$\mathbf{p}$** < .001 indicates a statistically significant effect. N = 569.

The fourth hypothesis addressed self-concept and its association with learning-related dimensions. Tests of normality (see **Table 7**) showed that self-concept significantly deviated from normality (p < .001), while study strategies, time management, and organizational techniques were approximately normally distributed. This justified a mixed analytic approach, combining non-parametric and parametric interpretations.

Table 7. Tests of Normality

Variable	Kolmogorov–Smirnova[a]			Shapiro–Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Self-concept	.093	568	.000	.978	568	.000
Study Strategies	.037	568	.065	.995	568	.053
Time Management	.057	568	.000	.996	568	.143
Organizational Skills	.050	568	.002	.996	568	.131

Note. [a]Lilliefors Significance Correction.

The correlations reported in **Table 8** indicate a weak but significant positive link between self-concept and study strategies (ρ = .089, p < .05), meaning that students with a more positive self-view tend to engage slightly more in structured learning. In contrast, self-concept was not significantly related to time management (ρ = .025, p = .563) or organizational techniques (ρ = .035, p = .441). However, strong interrelations were observed among study strategies, time management, and organizational skills (ρ ranging from .654 to .686, all p < .001), underlining their integrated function as dimensions of self-regulated learning. These findings suggest that while self-concept contributes only marginally to learning strategies, the structural coherence between organization and time management is central to effective academic functioning.

Table 8. Descriptive Statistics and Spearman Correlations for Study Variables

Variable	n	M	SD	1	2	3	4
1. Self-concept	568	6.63	3.37	–	.089*	.025	.035
2. Study Strategies	569	25.87	8.82	.089*	–	.654**	.680**
3. Time Management	569	23.92	7.66	.025	.654**	–	.686**
4. Organizational Skills	569	23.96	7.06	.035	.680**	.686**	–

Note. Correlations are Spearman's rho coefficients. *p < .05. **$\mathbf{p}$ < .01 (2-tailed). N = 568–569. M = mean; SD = standard deviation.

The fifth hypothesis examined whether study strategies significantly predict disordered eating behaviors and oppositional defiant tendencies. Tests of normality (see **Table 9**) confirmed that both outcome variables deviated significantly from a normal distribution (p < .001), requiring regression analyses adapted to non-parametric distributions.

Tabel 9. Tests of Normality

Variable	Kolmogorov–Smirnova[a]			Shapiro–Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Conduct Disorder	.168	569	.000	.872	569	.000
Oppositional Defiant Disorder	.091	569	.000	.972	569	.000

Note. [a]Lilliefors Significance Correction.

Regression results summarized in **Table 10** demonstrated that study strategies were significant positive predictors of disordered eating (B = 0.073, SE = 0.016, β = .187, t = 4.543, p < .001). This counterintuitive association suggests that while study strategies are typically considered protective, in this case, their higher frequency may coincide with maladaptive eating patterns, perhaps reflecting stress-driven academic engagement. In contrast, the regression predicting oppositional defiant behavior (see **Table 11**) was not significant (B = –.004, SE = 0.017, β = –.011, p = .797), indicating that study strategies do not account for variance in oppositional tendencies. These findings highlight the differentiated role of study strategies: beneficial in reducing conduct disorder and buffering academic stress, but not directly mitigating oppositional defiant behavior, and paradoxically linked to disordered eating in the sample studied.

Table 10. Regression Results for Predicting Disordered Eating

Predictor	B	SE	β	t	p
(Constant)	2.172	.437	—	4.972	< .001
Study Strategies	.073	.016	.187	4.543	< .001

Note. Dependent variable: Disordered Eating. B = unstandardized coefficient; SE = standard error; β = standardized coefficient. *p* < .001 indicates a statistically significant effect. N = 569.

Table 11. Regression Results for Predicting Oppositional Defiant Behavior

Predictor	B	SE	β	t	p
(Constant)	7.120	.470	—	15.143	< .001
Study Strategies	-.004	.017	-.011	-.257	.797

Note. Dependent variable: Oppositional Defiant Behavior. B = unstandardized coefficient; SE = standard error; β = standardized coefficient. The model is not statistically significant. N = 569.

5. Discussion

The present study contributes to the growing body of research on the interplay between learning strategies, motivational orientations, and psychological difficulties among adolescents in formal educational settings. The findings provide

evidence that the use of cognitive and metacognitive strategies is positively related to academic performance and negatively associated with conduct-related problems, supporting the assumption that structured learning behaviors can serve as protective factors against maladaptive outcomes. The significant negative correlation between study strategies and conduct disorder suggests that students who engage in systematic, self-regulated study practices are less likely to develop disruptive behaviors. This is consistent with previous research indicating that self-regulation in learning fosters both academic success and socio-emotional adjustment (Pintrich, 2000; Zimmerman, 2008).

At the same time, the strong positive association between low academic motivation and conduct disorder highlights the risk posed by motivational deficits. Students who lack academic drive appear more prone to oppositional and maladaptive behaviors, a finding that resonates with prior work emphasizing the role of intrinsic motivation in sustaining adaptive learning and reducing behavioral problems (Deci and Ryan, 2000; Schunk et al., 2014). Interestingly, no significant relationship was found between low academic motivation and the adoption of learning strategies, suggesting that motivational and cognitive dimensions may operate in relatively independent domains. This underscores the need for differentiated interventions: while cognitive training may improve the efficiency of study practices, targeted motivational programs are required to address students' affective and volitional engagement.

The regression model including both cognitive strategies and test anxiety provides further insight into the dual impact of cognitive and emotional processes on academic outcomes. As anticipated, cognitive strategies emerged as the strongest positive predictor of performance, while test anxiety significantly inhibited achievement. This finding confirms the partial mediation hypothesis and illustrates the disruptive role of anxiety in learning, in line with studies highlighting the detrimental effect of excessive emotional arousal on working memory and concentration (Cassady and Johnson, 2002; Owens et al., 2012). Therefore, psychological support interventions that combine cognitive training with anxiety-reduction techniques may be particularly effective in enhancing performance.

The results concerning self-concept reveal a nuanced picture. Although a positive self-concept was significantly correlated with the use of study strategies, no significant associations emerged with organizational skills or time management. This may reflect the fact that self-concept influences more general attitudes toward learning rather than specific organizational practices. However, the strong correlations observed among study strategies, time management, and organizational techniques confirm their interdependence as core dimensions of self-regulated learning (Boekaerts, 1999). This interdependence suggests that educational programs should integrate these components holistically rather than treating them as separate skills.

A noteworthy and somewhat counterintuitive result emerged from the analysis of disordered eating behaviors. Regression analyses indicated that study strategies positively predicted disordered eating, suggesting that students who are

more engaged in structured learning may also be more vulnerable to maladaptive eating patterns. This paradoxical relationship may be interpreted through the lens of stress: students who invest intensively in academic success might experience heightened pressure, which in turn may manifest in unhealthy coping behaviors such as disordered eating (Ackard et al., 2006). By contrast, study strategies did not predict oppositional defiant behavior, indicating that different mechanisms underpin these two types of psychological difficulties. Taken together, these findings point to the necessity of nuanced and differentiated approaches in educational psychology, addressing both the benefits and potential risks associated with intensive academic engagement.

The study is not without limitations. First, the cross-sectional design prevents causal inference, and future research should employ longitudinal or experimental methods to establish directionality. Second, the reliance on self-report measures may have introduced response biases, particularly given the sensitivity of some constructs such as conduct problems or disordered eating. Third, while the sample was sufficiently large and diverse in terms of grade levels, its ethnic composition was relatively homogeneous, which may limit the generalizability of findings to more culturally diverse populations. Despite these limitations, the study offers robust statistical evidence supporting the centrality of cognitive and motivational variables in adolescent learning, and opens pathways for targeted interventions that combine cognitive training, motivational support, and emotional regulation.

6. Conclusion

This study demonstrates that learning strategies, particularly cognitive and metacognitive ones, play a critical role in sustaining academic performance and reducing conduct-related difficulties among high school students. The findings highlight the protective function of structured study practices and underscore the importance of fostering self-regulated learning in secondary education. At the same time, the strong link between low academic motivation and conduct disorder points to the risks associated with motivational deficits, indicating the need for targeted interventions that separately address cognitive and motivational dimensions of learning.

The partial mediation observed between cognitive strategies, test anxiety, and academic performance reinforces the idea that emotional regulation is as important as cognitive training in optimizing educational outcomes. Moreover, the interdependence among study strategies, organizational skills, and time management confirms the necessity of holistic approaches to self-regulation. The unexpected association between study strategies and disordered eating suggests that high academic engagement may come with hidden costs, underscoring the need for balanced interventions that prevent maladaptive coping mechanisms.

In conclusion, effective educational practices in the teaching of psychology at the high school level should integrate cognitive, motivational, and emotional support. By promoting self-regulation, autonomy, and psychological well-being, such

approaches can contribute not only to higher academic achievement but also to healthier developmental trajectories for adolescents.

References:

1. Ackard, D. M., Neumark-Sztainer, D., Story, M., & Perry, C. (2006). Parent–child connectedness and behavioral and emotional health among adolescents. *American Journal of Preventive Medicine, 30*(1), 59–66. https://doi.org/10.1016/j.amepre.2005.09.013
2. Akhmad, I., Suharjo, S., Hariadi, H., Dewi, R., & Supriadi, A. (2022). The effects of learning strategies on senior high school students' motivation and learning outcomes of overhead passing in volleyball. *International Journal of Education in Mathematics, Science and Technology, 10*(2), 458–476. https://doi.org/10.46328/ijemst.2291
3. Betea, L., & Cioacă, V. O. (2022). Prestige Making Techniques. The case of Elena Ceauşescu. *Revista Universitară de Sociologie*, nr. 3/2022, pp. 254–266.
4. Boekaerts, M. (1999). Self-regulated learning: Where we are today. *International Journal of Educational Research, 31*(6), 445–457. https://doi.org/10.1016/S0883-0355(99)00014-2
5. Cassady, J. C., & Johnson, R. E. (2002). Cognitive test anxiety and academic performance. *Contemporary Educational Psychology, 27*(2), 270–295. https://doi.org/10.1006/ceps.2001.1094
6. Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01
7. Lisbôa, T. J., Versuti, F. M., & Mulle, R. L. D. (2024). Estratégias de aprendizagem autorreguladas baseadas em tecnologias digitais por estudantes do ensino médio. *ETD – Educação Temática Digital, 26*, e024030. https://doi.org/10.20396/etd.v26i00.8673054
8. Matos, L., Lens, W., & Vansteenkiste, M. (2007). Achievement goals, learning strategies and language achievement among Peruvian high school students. *Psychologica Belgica, 47*(1), 51–66. https://doi.org/10.5334/pb-47-1-51
9. Medina Coronado, D., & Nagamine Miyashiro, M. M. (2019). Estrategias de aprendizaje autónomo en la comprensión lectora de estudiantes de secundaria. *Propósitos y Representaciones, 7*(2). https://doi.org/10.20511/pyr2019.v7n2.276
10. Owens, M., Stevenson, J., Hadwin, J. A., & Norgate, R. (2012). Anxiety and depression in academic performance: An exploration of the mediating factors of worry and working memory. *School Psychology International, 33*(4), 433–449. https://doi.org/10.1177/0143034311427433
11. Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. In *Handbook of Self-Regulation* (pp. 451–502). Elsevier. https://doi.org/10.1016/B978-012109890-2/50043-3

12. Rabadi, R. I. (2018). The relationship between language learning strategies and vocabulary size among high school ELL students. *International Journal of English Linguistics, 9*(1), 120–131. https://doi.org/10.5539/ijel.v9n1p120
13. Ratinho, E., & Martins, C. (2023). The role of gamified learning strategies in students' motivation in high school and higher education: A systematic review. *Heliyon, 9*(8), e19033. https://doi.org/10.1016/j.heliyon.2023.e19033
14. Schunk, D. H., Meece, J. L., & Pintrich, P. R. (2014). *Motivation in education: Theory, research, and applications*. Pearson.
15. Suárez Valenzuela, S., & Suárez Riveiro, J. M. (2018). Las estrategias de aprendizaje y las metas académicas en función del género, los estilos parentales y el rendimiento en estudiantes de secundaria. *Revista Complutense de Educación, 30*(1), 167–184. https://doi.org/10.5209/RCED.56057
16. Thiendathong, P., & Sukying, A. (2021). Vocabulary learning strategies used by Thai high school students in science, language, and English programs. *Arab World English Journal, 12*(2), 306–317. https://doi.org/10.24093/awej/vol12no2.21
17. Tran, T. Q., Tran, T. N. P., & Bui Thi Xuan High School. (2021). Vietnamese EFL high school students' use of self-regulated language learning strategies for project-based learning. *International Journal of Instruction, 14*(1), 459–474. https://doi.org/10.29333/iji.2021.14127a
18. Trigueros Ramos, R., & Navarro Gómez, N. (2019). La influencia del docente sobre la motivación, las estrategias de aprendizaje, pensamiento crítico y rendimiento académico en educación física. *Psychology, Society & Education, 11*(1), 137–150. https://doi.org/10.25115/psye.v11i1.2230
19. Yajima, H., & Arai, K. (1996). The influence of motivational structure in a classroom of junior high school students on perceived ability, self-regulated learning strategies, and achievement anxiety. *The Japanese Journal of Educational Psychology, 44*(3), 332–339. https://doi.org/10.5926/jjep1953.44.3_332
20. Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal, 45*(1), 166–183. https://doi.org/10.3102/0002831207312909