

Causal Modeling of Specific Learning Difficulties Based on Self-Control with the Mediating Role of Disobedience among Sixth-Grade Students in Urmia

Bahareh. Abbasinasab¹, Amir. Panahali^{2*}, Alireza. Agdamibaher¹, Masoumeh. Azemoudeh¹

¹ Department of Psychology, Ta.C., Islamic Azad University, Tabriz, Iran

² Assistant Professor, Department of Psychology and Counseling, Faculty of Humanities, Ta.C., Islamic Azad University, Tabriz, Iran

* Corresponding author email address: Panahali@iau.ac.ir

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ABSTRACT

The present study aimed to model the causal relationships of specific learning difficulties based on self-control with the mediating role of disobedience among sixth-grade students in Urmia. In terms of its objective, this research was applied, and in terms of its nature and methodology, it employed a descriptive-correlational design based on structural equation modeling. The statistical population consisted of all sixth-grade elementary school students in Urmia during the 2024–2025 academic year. A sample of 250 students was selected through purposive sampling. The research data were collected using the Colorado Learning Difficulties Questionnaire developed by Willcutt et al. (CLDQ), the 13-item Brief Self-Control Scale developed by Tangney et al., and the Golmakani Children's Disobedience Questionnaire, Parent and Teacher Forms. The research hypotheses were tested through bootstrapping using SmartPLS, and supplementary analyses were performed using SPSS version 26. The results indicated that self-control had a direct effect on specific learning difficulties among sixth-grade students in Urmia. The findings also demonstrated that disobedience mediated the relationship between self-control and learning difficulties. Overall, the proposed causal model of specific learning difficulties based on self-control with the mediating role of disobedience among sixth-grade students in Urmia demonstrated an acceptable fit.

Keywords: specific learning difficulties, self-control, disobedience

1. Introduction

Specific learning difficulties constitute a major group of neurodevelopmental and educational problems that interfere with the acquisition and effective use of fundamental academic skills, particularly reading, written expression, spelling, and mathematics. These difficulties cannot be adequately explained merely by insufficient instruction, low motivation, sensory impairment, or limited intellectual ability; rather, they emerge through complex interactions among cognitive, executive, emotional, behavioral, familial, and educational factors. Students with specific learning difficulties may display persistent discrepancies between their general learning capacities and their actual academic performance, and these discrepancies often become more visible as curricular demands increase. Practical educational guidelines have therefore emphasized the necessity of identifying the distinctive learning needs of students with reading, writing, and spelling problems and adapting instruction to their cognitive and academic profiles (Jalil-Abkenar & Ashouri, 2013). Early identification is particularly important because unrecognized learning difficulties may gradually affect students' academic self-concept, classroom participation, relationships with teachers and peers, and willingness to engage in challenging learning activities. Pediatric and school-based screening approaches have similarly highlighted the need for systematic recognition of specific learning disorders before repeated academic failure becomes associated with broader emotional and behavioral consequences (Rusciollelli & Sobotka, 2025).

The manifestations of specific learning difficulties are not limited to low scores in a particular academic domain. Students may experience problems with sustaining attention, organizing information, inhibiting irrelevant responses, monitoring errors, shifting between tasks, initiating academic activities, and persisting until assignments are completed. These processes are closely related to executive functioning, which provides the cognitive and behavioral regulation required for successful learning. Recent evidence has indicated that attention-focused interventions may improve important aspects of performance among individuals with specific learning disorders, although the extent to which acquired skills transfer to untrained academic situations remains an important consideration (Nejati et al., 2026). Research on children and adolescents with attention-deficit/hyperactivity disorder has also demonstrated the relevance of executive functioning and learning-related problems to academic adjustment,

indicating that improvements in executive processes may be associated with better management of learning demands (Wilens et al., 2026). Although attention-deficit/hyperactivity disorder and specific learning difficulties are diagnostically distinct, their frequent overlap in executive, attentional, and behavioral regulation problems suggests that learning performance should be examined within a multidimensional framework rather than exclusively through the assessment of academic skills.

Academic difficulties may also interact with anxiety, self-conscious emotions, perfectionistic concerns, and inhibitory-control deficits. Students who repeatedly encounter failure may become excessively concerned about making mistakes, experience embarrassment in comparison with classmates, or avoid tasks that expose their weaknesses. In young people with specific learning disorders, anxiety has been associated with inhibitory control, perfectionism, and self-conscious emotional experiences, suggesting that cognitive control and emotional adjustment are closely interconnected (Lievore et al., 2025). When students are unable to inhibit impulsive reactions or regulate distress during demanding tasks, their responses may take the form of avoidance, refusal, irritability, argumentativeness, or disengagement. Consequently, observable classroom behavior may represent not only deliberate noncompliance but also an external expression of cognitive overload, fear of failure, frustration, or inadequate self-regulation. This perspective is particularly relevant during the final years of elementary education, when students are expected to demonstrate greater independence, complete more complex assignments, regulate their study behavior, and prepare for the transition to secondary education.

Self-control is one of the central psychological capacities involved in the regulation of learning and behavior. It refers to the ability to inhibit immediate impulses, delay gratification, regulate emotional and behavioral responses, maintain goal-directed action, and resist distractions that interfere with long-term objectives. In the academic context, self-control enables students to remain attentive, follow classroom rules, organize learning activities, tolerate temporary frustration, and continue working despite difficulty or limited immediate reward. Self-control is therefore not simply a personality characteristic; it is a regulatory resource that shapes how individuals respond to competing demands and manage conflict between immediate preferences and longer-term goals. Research conducted in daily occupational settings has shown that self-control is relevant to the management of routine demands

and the prevention of conflict between different areas of functioning, illustrating the broader significance of regulatory capacity across contexts (Clinton et al., 2022). In school settings, this regulatory capacity may be even more consequential because students are continuously required to inhibit distractions, control emotional reactions, comply with instructions, and allocate effort to tasks whose benefits may not be immediately apparent.

The relationship between self-control and learning difficulties can be explained through several mechanisms. Students with stronger self-control are more likely to use effective study strategies, monitor their comprehension, correct errors, postpone recreational activities, and seek assistance when necessary. By contrast, students with limited self-control may begin tasks impulsively, abandon them prematurely, react intensely to mistakes, or avoid activities requiring sustained cognitive effort. Empirical comparisons have shown that students with specific learning disabilities differ from typically developing students in self-control and bully-victim behavior, indicating that learning problems may coexist with broader difficulties in behavioral regulation and social adjustment (Ezzati & Ghasem, 2021). Moreover, interventions designed to strengthen self-regulated learning have been associated with improvements in self-efficacy and life satisfaction among students with mathematics disorder, suggesting that regulatory skills may influence both educational functioning and psychological well-being (Abolghasemi et al., 2014). These findings support the proposition that self-control may be directly associated with the severity of specific learning difficulties and may also operate indirectly through behavioral processes that affect classroom engagement.

Specific learning difficulties have additionally been associated with impulsivity and aggression. Students who struggle to regulate their impulses may respond to academic frustration with disruptive behavior, verbal conflict, or rejection of instructional demands. Evidence that neurocognitive interventions can affect impulsivity and aggression among students with specific learning disabilities further demonstrates the connection between cognitive regulation and behavioral adjustment (Gholamzadeh Nikjou et al., 2022). Motor and perceptual limitations may also contribute to frustration in students with written-expression difficulties, particularly when handwriting tasks require sustained fine-motor control, visual-motor integration, and careful planning. Perceptual-motor training has therefore been investigated as a means of improving fine and gross motor functioning and handwriting performance among

children with written-expression disorder (Rezaei, 2016). Taken together, these findings indicate that specific learning difficulties cannot be reduced to isolated deficiencies in reading, writing, or mathematics. They are embedded in a wider network of self-regulatory, executive, motor, emotional, and behavioral processes that may either facilitate adaptation or intensify academic impairment.

Disobedience is another behavioral construct that may be particularly important in explaining the adjustment of students with learning difficulties. Defiant behavior commonly includes persistent refusal to comply with reasonable instructions, argumentativeness, irritability, resistance to authority, deliberate opposition, and difficulty accepting limits. However, youth disobedience is a conceptually complex phenomenon that should not always be interpreted as simple misconduct, because resistance may emerge from developmental needs, perceived injustice, autonomy-seeking, emotional distress, or repeated experiences of failure (Mattheis, 2020). Within educational settings, disobedience can nevertheless interfere substantially with learning when it becomes persistent and is expressed through refusal to complete assignments, conflict with teachers, noncompliance with classroom routines, or rejection of corrective feedback. Students who anticipate failure may oppose an academic demand to protect themselves from embarrassment, while those with poor inhibitory control may react to frustration before considering the consequences of their behavior. Thus, disobedience may function as an intermediary behavioral pathway through which low self-control contributes to reduced engagement and greater learning problems.

Comparative findings have shown that students with learning disabilities may exhibit higher levels of attention-deficit/hyperactivity symptoms, oppositional behavior, and conduct problems than their typically developing peers (Yousefi et al., 2013). This pattern suggests that academic and behavioral difficulties can reinforce one another. Learning problems may increase frustration and conflict, while oppositional behavior may reduce instructional time, weaken cooperation with teachers, and restrict opportunities for corrective practice. A predictive model of written learning problems has likewise incorporated executive functions, oppositionality, and parent-child communication, emphasizing that oppositional behavior may be meaningfully connected to academic difficulties within a network of cognitive and relational variables (Hamedgolparvar, 2023). From a reciprocal perspective, limited self-control may increase the likelihood of defiant

responses, and repeated disobedience may subsequently intensify learning difficulties by disrupting task persistence, feedback acceptance, classroom participation, and parental or teacher support. Examining disobedience as a mediator therefore provides a more detailed explanation than considering only a direct association between self-control and learning outcomes.

Family relationships and parenting practices are also central to understanding both self-regulation and defiant behavior. Parents of children with learning disorders frequently confront persistent concerns regarding homework, school performance, emotional reactions, and behavioral resistance. A systematic review of interventions for parents of children with learning disorders has emphasized the value of parent-focused strategies in improving family coping, parental competence, and children's adjustment (Guerra et al., 2025). Parenting approaches characterized by emotional responsiveness, consistent boundaries, constructive communication, and psychological flexibility may help children regulate frustration and persist in learning tasks. Affection-based parenting interventions have been examined for their effects on parenting styles, parent-child relationships, and psychological flexibility among mothers of children with learning disabilities, underscoring the relevance of relational processes to children's educational and behavioral functioning (Alizadeh, 2020). When family interactions are dominated by criticism, coercion, or repeated conflict over academic tasks, children's resistance may increase; conversely, supportive and structured parenting may promote self-control and reduce oppositional responses.

The psychological well-being of parents may also influence the behavioral environment surrounding a child. Mindfulness-based parenting training has been shown to be relevant to the mental health of mothers of children with oppositional defiant disorder, indicating that interventions aimed at parental awareness and emotional regulation may support more adaptive responses to children's challenging behavior (Mehri, 2024). Compassion-based interventions have similarly been used to strengthen control over negative thinking, emotional self-control, and reduce self-criticism among mothers of children with disabilities (Zolrahim et al., 2024). Although these studies focus on parents rather than directly on students' learning performance, they indicate that children's behavioral regulation develops within a relational system. A parent who is better able to regulate distress may respond more consistently to academic refusal, distinguish inability from unwillingness, and avoid escalating conflict.

Consequently, the effects of students' self-control and disobedience should be interpreted within the broader context of family emotional regulation and parental support.

Educational conditions provide another important context for learning and behavioral adjustment. The quality of educational services, students' mental health, and academic achievement are interrelated, particularly in the upper grades of elementary school, where academic expectations become increasingly demanding (Salamati, 2020). Students with learning difficulties require accessible instruction, timely assessment, individualized feedback, and supportive teacher-student relationships. Without these resources, learning problems may be misinterpreted as laziness, carelessness, or deliberate noncompliance. At a broader institutional level, research on organizational responsibility has emphasized that stakeholder health and well-being are influenced by organizational practices and support structures (Macassa et al., 2021). Although this principle has been discussed in organizational and workplace contexts, it is also relevant to educational systems, which bear responsibility for creating conditions that protect students' psychological well-being and facilitate participation. Schools that recognize learning diversity and respond constructively to behavioral difficulties may interrupt the cycle connecting academic failure, reduced self-control, disobedience, and further educational disengagement.

Despite increasing attention to the cognitive and emotional correlates of specific learning difficulties, several gaps remain. A substantial proportion of the literature has focused on direct interventions for academic skills, executive functions, attention, parenting, or emotional problems, while fewer studies have simultaneously examined individual regulatory capacity and oppositional behavior within one explanatory model. Existing evidence suggests that self-control is associated with learning and social behavior, that oppositionality is more common among some students with learning disabilities, and that executive and relational factors contribute to written and general learning problems. However, the mechanism through which self-control may influence specific learning difficulties through disobedience requires further empirical examination. This issue is particularly important among sixth-grade students, who face heightened academic demands and an educational transition that requires increased independence, sustained attention, behavioral compliance, and effective emotion regulation.

Investigating these relationships in Urmia may provide contextually relevant evidence for psychologists, school

counselors, teachers, parents, and educational planners. A structural model can clarify whether self-control has only a direct relationship with learning difficulties or whether part of this association is transmitted through defiant behavior. Such evidence could support multidimensional assessment procedures in which learning problems are evaluated alongside self-regulation and behavioral adjustment. It may also guide interventions that combine academic support with self-control training, parent education, classroom behavior management, and strategies for reducing oppositional responses. Rather than treating learning difficulties and disobedience as unrelated problems, an integrated model recognizes that students' academic behavior is shaped by the continuous interaction of cognitive demands, emotional reactions, regulatory capacity, and social responses.

Accordingly, the present study aimed to model the causal relationships of specific learning difficulties based on self-control with the mediating role of disobedience among sixth-grade students in Urmia.

2. Methods and Materials

2.1. Study Design and Participants

In terms of its objective, the present study was applied, and in terms of its nature and methodology, it employed a descriptive-correlational design based on structural equation modeling. The statistical population consisted of all sixth-grade elementary school students in Urmia during the 2024–2025 academic year. Based on Kline's (2010) recommendations, the sample size was set at 250 participants, who were selected through purposive sampling. The following questionnaires were used to collect the research data:

2.2. Measures

The Colorado Learning Difficulties Questionnaire (CLDQ) was developed by Willcutt et al. (2011). It conceptualizes learning difficulties as comprising five principal factors: reading, mathematics, social cognition, social anxiety, and spatial functioning. The questionnaire consists of 20 items and is completed by students' parents. Each item is rated on a five-point Likert scale ranging from 1, indicating "never," to 5, indicating "always." The reliability of the questionnaire and its components was examined by its developers using internal consistency and test-retest methods, producing acceptable coefficients. The discriminant and construct validity of the questionnaire were

also reported to be satisfactory (Willcutt et al., 2011). In the study by Hajloo and Rezaei Sharif (2011), the reliability of the Colorado Learning Difficulties Questionnaire was evaluated using internal consistency and test-retest methods. The internal consistency of the total questionnaire and its subscales was confirmed by calculating Cronbach's alpha coefficients. Cronbach's alpha ranges from 0 to 1, and a coefficient of 0.70 is generally considered an acceptable criterion. The small standard errors of measurement obtained for the overall questionnaire and its subcomponents also indicated that the standard deviation of the distribution of error scores was low, thereby demonstrating high reliability. The criterion for evaluating standard error of measurement values was determined according to the number of items in the total questionnaire and its subscales. Because Cronbach's alpha coefficients for the CLDQ and all its components exceeded 0.70, the internal consistency of the overall questionnaire and its subscales was confirmed.

The Tangney Brief Self-Control Scale consists of 13 items and is designed to assess individuals' ability to regulate and control their behavior. Responses are provided on a five-point Likert scale. The total score ranges from 13 to 65. Higher scores indicate greater self-control, whereas lower scores indicate poorer self-control. The validity and reliability of this questionnaire were examined and confirmed in the study by Mousavi Moghadam et al. (2015). Tangney et al. (2004) confirmed the validity of the scale by examining its correlations with measures of academic achievement, adjustment, positive interpersonal relationships, and interpersonal skills. Its reliability was also examined in two statistical samples, producing Cronbach's alpha coefficients of 0.83 and 0.85.

The Golmakani Children's Disobedience Questionnaire consists of 15 items and is designed to assess the extent of defiant behavior among children. Responses are rated on a five-point Likert scale, with a specific score assigned to each response option. Higher total scores indicate a greater likelihood of stubbornness and defiant behavior. The content validity of the questionnaire was confirmed by university faculty members, and Cronbach's alpha coefficients exceeding 0.70 were obtained in Golmakani's studies.

2.3. Data Analysis

The collected data were first analyzed using descriptive statistics. Inferential analyses were subsequently conducted through structural equation modeling using SPSS and SmartPLS.

3. Findings and Results

As presented in Table 1, the mean score for children's specific learning difficulties was 41.25, which was lower than the theoretical midpoint. This finding indicates that the

level of specific learning difficulties among sixth-grade students in Urmia was below average. The mean self-control score was 34.56, which was relatively close to the theoretical midpoint, whereas the mean disobedience score was below the theoretical midpoint.

Table 1

Descriptive Statistics for the Research Variables

Variable	Mean	Standard Deviation	Skewness	Maximum	Minimum	Range	Theoretical Midpoint
Specific learning difficulties	41.25	9.98	0.65	68	20	38	44
Self-control	34.56	7.33	0.60	54	19	35	36.5
Disobedience	36.54	12.18	0.73	70	17	53	43.5

The Kolmogorov–Smirnov test was used to examine the normality of the distribution of the research variables. The results presented in Table 2 indicate that the significance levels for most variables, except for the conflict subscale, were below 0.05, demonstrating that the data distributions were nonnormal. Given the sensitivity of covariance-based

methods, such as LISREL and AMOS, to the assumption of normality, SmartPLS was used to perform structural equation modeling. SmartPLS is based on the partial least squares approach and employs resampling techniques, such as bootstrapping, without requiring the assumption of a normal data distribution.

Table 2

Results of the Kolmogorov–Smirnov Test

Statistic	Learning Difficulties	Disobedience	Self-Control
Kolmogorov–Smirnov statistic	1.183	1.951	1.709
Significance level	0.025	0.001	0.006

Cronbach's alpha, rho_A, composite reliability, and average variance extracted were used to evaluate the measurement model in partial least squares structural equation modeling. As presented in Table 3, all reliability and validity indices were at acceptable levels. Cronbach's alpha, rho_A, and composite reliability values exceeded 0.70

for all variables, and the average variance extracted values exceeded 0.50. These findings demonstrate adequate internal consistency, measurement stability, and convergent validity for the research constructs and confirm the appropriateness of the measures for subsequent analyses.

Table 3

Measurement Model Reliability and Convergent Validity Indices

Variable	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted
Self-control	0.703	0.858	0.788	0.561
Learning difficulties	0.733	0.764	0.796	0.671
Disobedience	0.891	0.901	0.908	0.581

Discriminant validity was evaluated using the Fornell–Larcker criterion (Fornell & Larcker, 1981). According to the results presented in Table 4, the square roots of the average variance extracted values, represented by the

diagonal elements of the matrix, were greater than the corresponding correlations between each construct and the other constructs.

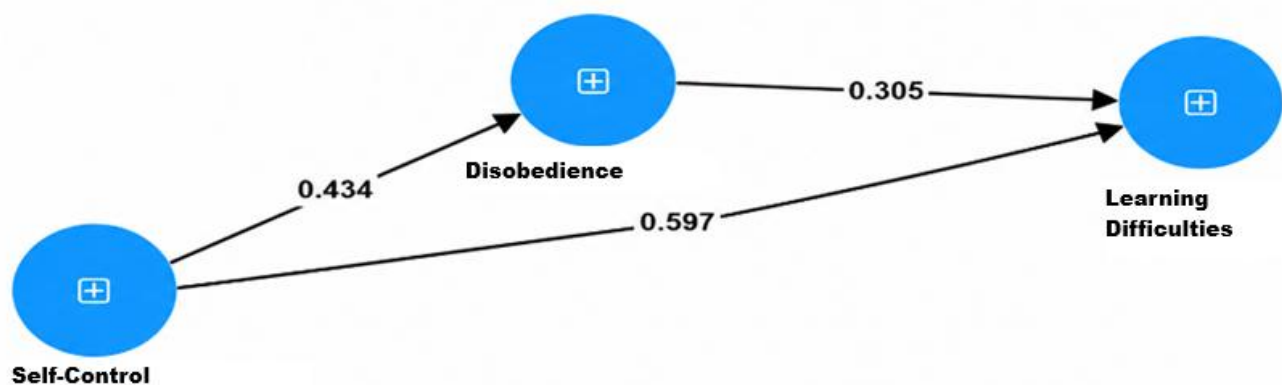
Table 4

Discriminant Validity Matrix Based on the Fornell–Larcker Criterion

Variable	Self-Control	Learning Difficulties	Disobedience
Self-control	0.590		
Learning difficulties	0.402	0.420	
Disobedience	0.411	0.157	0.633

Figure 1

Standardized path coefficients of the conceptual research model and research hypotheses



The coefficient of determination and adjusted coefficient of determination were calculated to assess the explanatory power of the model, as presented in Table 5. The results indicate that the independent variables explained

approximately 41% of the variance in the dependent variable, namely specific learning difficulties. This value demonstrates that the proposed research model had adequate explanatory power and validity.

Table 5

Coefficient of Determination and Adjusted Coefficient of Determination

Dependent Variable	R ²	Adjusted R ²
Learning difficulties	0.419	0.412

The goodness-of-fit index was calculated as the square root of the product of the mean communality value and the mean coefficient of determination.

Because the obtained GOF value was greater than 0.36, the model demonstrated a strong overall fit. Therefore, the model was considered valid.

The above diagram presents the standardized path coefficients of the conceptual research model.

In this model, specific learning difficulties constituted the criterion variable, self-control constituted the predictor variable, and disobedience constituted the mediating variable.

The evaluation of the model indicated that the causal relationships of specific learning difficulties based on self-control with the mediating role of disobedience

demonstrated satisfactory fit and validity. The results of the reliability analyses, including Cronbach's alpha and composite reliability coefficients exceeding 0.70, and the convergent validity analysis, including average variance extracted values exceeding 0.50, confirmed that the measurement instruments possessed the required stability and internal consistency. In addition, the positive cross-validated communality values and Q² values exceeding 0.10 indicated that the model possessed adequate predictive accuracy. The overall goodness-of-fit index of 0.656 further demonstrated a strong correspondence between the proposed model and the observed data. Ultimately, the principal research hypothesis was supported. These findings emphasize the importance of multidimensional interventions that simultaneously address individual factors, such as self-

control, and behavioral factors, such as disobedience, to reduce learning difficulties among students.

Table 6

Summary of the Indirect Path Coefficient

Independent Variable	Mediating Variable	Dependent Variable	Indirect Effect	Standard Error	t Value	Result
Self-control	Disobedience	Learning difficulties	0.132	0.035	3.708	Supported

The results of the Sobel test indicated that disobedience played a statistically significant mediating role in the relationship between self-control and specific learning difficulties. The indirect effect coefficient was 0.132, and the corresponding t value was 3.708. Because the t value exceeded 1.96 and the standard error was 0.035, the indirect effect was statistically significant at the 95% confidence level. Accordingly, a portion of the effect of self-control on specific learning difficulties was transmitted through the mediating variable of disobedience.

4. Discussion

The present study examined a structural model of specific learning difficulties based on self-control, with disobedience considered as a mediating variable among sixth-grade students in Urmia. The findings indicated that self-control had a significant direct effect on specific learning difficulties. In addition, disobedience significantly mediated the relationship between self-control and specific learning difficulties, with an indirect effect coefficient of 0.132 and a t value of 3.708. The independent variables collectively explained approximately 41% of the variance in specific learning difficulties, indicating that the proposed model possessed acceptable explanatory power. The reliability, convergent validity, discriminant validity, predictive relevance, and overall goodness-of-fit indices also supported the adequacy of the measurement and structural models. These results suggest that students' academic difficulties cannot be understood solely in terms of deficiencies in reading, writing, or mathematics; rather, they are associated with broader self-regulatory and behavioral processes that influence how students respond to academic demands, frustration, instructional feedback, and classroom expectations.

The significant direct relationship between self-control and specific learning difficulties indicates that students' capacity to regulate impulses, sustain effort, delay immediate gratification, manage emotional reactions, and remain focused on long-term academic goals is closely

related to their learning performance. Academic tasks in the sixth grade require students to organize information, follow multistep instructions, monitor their errors, complete assignments independently, and continue working despite temporary difficulty. Students with limited self-control may be more vulnerable to distraction, impulsive responding, incomplete task performance, and premature withdrawal from challenging activities. These behavioral patterns may reduce opportunities for practice and corrective learning, thereby increasing the severity or persistence of learning difficulties. The finding is consistent with research showing that students with specific learning disabilities differ from typically developing students in self-control and related social-behavioral characteristics (Ezzati & Ghasem, 2021). It also supports the broader view that self-control is a regulatory resource that enables individuals to manage competing demands and maintain goal-directed behavior across daily activities (Clinton et al., 2022).

The relationship between self-control and learning difficulties can also be explained through executive functioning. Self-control depends partly on inhibitory control, working memory, attentional regulation, planning, and cognitive flexibility. These executive processes are essential for suppressing irrelevant responses, holding instructional information in mind, shifting between problem-solving strategies, and monitoring performance. Recent evidence concerning attention training in specific learning disorders has emphasized that attentional and executive processes are important intervention targets, although the transfer of trained abilities to broader academic performance must be carefully examined (Nejati et al., 2026). Similarly, research on executive functioning and learning problems among children and adolescents with attention-deficit/hyperactivity disorder demonstrates that improvements in regulatory and executive processes may be relevant to better academic functioning (Wilens et al., 2026). Although the participants in the present study were not selected on the basis of attention-deficit/hyperactivity disorder, the convergence of findings indicates that weak

self-regulation may represent a transdiagnostic mechanism through which students experience difficulty maintaining effective learning behavior.

The present findings are also consistent with evidence linking inhibitory control to the emotional experiences of young people with specific learning disorders. Students who repeatedly encounter academic failure may develop anxiety, perfectionistic concerns, shame, or heightened sensitivity to evaluation. When inhibitory control is weak, these emotional experiences may interfere more strongly with task persistence and adaptive coping. Research has shown meaningful relationships among anxiety, inhibitory control, perfectionism, and self-conscious emotions in young people with specific learning disorders (Lievore et al., 2025). From this perspective, students with low self-control may not only become distracted more easily but may also have greater difficulty regulating anxiety and frustration during demanding academic activities. Consequently, they may avoid tasks, rush through assignments, refuse corrective feedback, or disengage when errors occur. Such reactions can intensify existing learning problems and prevent students from benefiting fully from instruction.

The finding concerning the mediating role of disobedience provides a more detailed explanation of how self-control may be associated with specific learning difficulties. The significant indirect effect suggests that part of the relationship between self-control and learning difficulties operates through students' oppositional or noncompliant behavior. Students with weak self-control may react impulsively to limits, academic pressure, correction, or perceived failure. These reactions may be expressed as argumentativeness, refusal to follow instructions, resistance to completing assignments, irritability, or deliberate disengagement. Persistent disobedience can then interfere with classroom participation, reduce instructional exposure, weaken teacher-student cooperation, and limit opportunities for guided practice. Therefore, low self-control may contribute to learning difficulties not only through cognitive inefficiency but also by increasing behaviors that obstruct the learning process.

This interpretation is aligned with evidence indicating that oppositional behavior and conduct problems are more prevalent among students with learning disabilities than among typically developing students (Yousefi et al., 2013). It is also consistent with predictive research in which written learning problems were examined in relation to executive functions, oppositionality, and parent-child communication (Hamedgolparvar, 2023). These findings support the view

that oppositionality is not merely a secondary behavioral problem occurring independently of academic performance. Instead, it may be embedded in a reciprocal cycle in which academic difficulty produces frustration and resistance, while resistance reduces engagement and further worsens learning performance. The mediating role observed in the present study suggests that disobedience may be one of the behavioral mechanisms linking inadequate self-regulation to persistent educational problems.

Disobedience should nevertheless be interpreted carefully. Not every act of resistance reflects a stable behavioral disorder or intentional misconduct. Youth disobedience may sometimes express autonomy-seeking, a reaction to perceived unfairness, emotional distress, or an attempt to avoid situations associated with humiliation and failure (Mattheis, 2020). For students with specific learning difficulties, refusal to read aloud, write on the board, complete a mathematics exercise, or accept teacher correction may function as a defensive response intended to protect self-esteem. When such behavior is interpreted only as laziness or deliberate opposition, teachers and parents may respond with criticism or punishment, which can intensify emotional arousal and resistance. The present results therefore suggest that defiant behavior should be assessed in relation to the student's self-control, academic history, emotional experiences, and perceived competence.

The direct and indirect findings are also supported by research on impulsivity and aggression in students with specific learning disabilities. Impulsivity involves difficulty delaying responses, considering consequences, and inhibiting behavior that is inappropriate to the situation. Aggressive or oppositional reactions may emerge when students experience repeated frustration but lack sufficient regulatory capacity to manage it adaptively. Evidence that transcranial direct current stimulation influenced impulsivity and aggression among students with specific learning disabilities suggests that behavioral dysregulation may be connected to underlying neurocognitive processes (Gholamzadeh Nikjou et al., 2022). The current findings extend this perspective by indicating that disobedience may transmit part of the effect of self-control on learning difficulties. Accordingly, interventions that address only academic skills may be insufficient when students also display substantial difficulties with impulse control, emotional regulation, and compliance.

The results further correspond with studies demonstrating that the strengthening of self-regulatory capacities may improve outcomes among students with learning disorders.

Self-regulated learning training has been associated with increased self-efficacy and life satisfaction among students with mathematics disorder (Abolghasemi et al., 2014). Self-regulated learners are more likely to set goals, select suitable strategies, monitor progress, evaluate errors, and persist when tasks become difficult. These skills can reduce dependence on immediate external reinforcement and help students tolerate the delayed rewards associated with academic achievement. The present finding concerning self-control indicates that the behavioral dimension of self-regulation is particularly important. A student may possess an appropriate learning strategy but still fail to use it consistently when unable to control impulses, tolerate frustration, or resist avoidance. Thus, interventions should combine metacognitive learning strategies with behavioral and emotional self-control training.

The multidimensional nature of specific learning difficulties is further illustrated by evidence concerning perceptual-motor functioning. Children with written-expression difficulties may experience fine-motor, gross-motor, visual-motor, and handwriting problems that make schoolwork more effortful and frustrating. Perceptual-motor training has been investigated as a means of improving motor performance and handwriting skills in children with written-expression disorder (Rezaei, 2016). When academic tasks require disproportionate effort, students with limited self-control may be particularly likely to abandon the task or respond defiantly. Therefore, the significant paths in the present model should not be interpreted as implying that learning difficulties originate exclusively from poor self-control or disobedience. Rather, self-control and disobedience appear to influence how students manage underlying cognitive, linguistic, attentional, or motor vulnerabilities and how effectively they benefit from educational support.

The explanatory role of family processes should also be considered. Students' self-control and defiant behavior develop within ongoing interactions with parents and other caregivers. Parents of children with learning disorders often experience stress related to homework, school communication, behavioral conflicts, and concerns about their child's future. A systematic review of interventions for parents of children with learning disorders has demonstrated the importance of parent-focused strategies for strengthening coping, improving family interactions, and supporting children's adjustment (Guerra et al., 2025). Affection-based parenting training has likewise been examined in relation to parenting styles, parent-child

relationships, and psychological flexibility among mothers of children with learning disabilities (Alizadeh, 2020). Supportive parenting characterized by warmth, predictable expectations, and consistent consequences may help children internalize behavioral control, whereas coercive interactions may reinforce refusal and argumentativeness.

Parental mental health and emotional regulation may further affect children's responses to academic demands. Mindfulness-based parenting training has been found to improve aspects of mental health among mothers of children with oppositional defiant disorder (Mehri, 2024). Compassion-oriented interventions have also been associated with improved control over negative thinking and emotional self-control and reduced self-criticism among mothers of children with disabilities (Zolrahim et al., 2024). These findings help explain why disobedience may become a stable mediator between individual self-control and learning problems. When a child reacts impulsively to an academic demand, parental distress may lead to criticism, threats, or escalating arguments. Repeated coercive exchanges can strengthen avoidance and oppositional behavior, whereas emotionally regulated parenting may interrupt this cycle by maintaining structure without increasing conflict.

The quality of the school environment may similarly strengthen or weaken the pathways identified in the model. Educational service quality, mental health, and academic achievement have been shown to be related among elementary school students (Salamati, 2020). Students with learning difficulties require timely screening, appropriate accommodations, differentiated teaching, and constructive feedback. Screening within primary care and educational systems is important because delayed identification may allow academic difficulties to become associated with behavioral and emotional problems (Rusciolelli & Sobotka, 2025). Practical teaching approaches for reading, writing, and spelling disorders also emphasize explicit instruction, structured practice, and adaptation to individual learning needs (Jalil-Abkenar & Ashouri, 2013). When students receive instruction that is mismatched to their needs, repeated failure may reduce motivation and increase disobedience. In contrast, appropriate support may decrease the level of frustration that triggers oppositional responses.

The broader principle that institutions influence the health and well-being of their internal stakeholders can also be applied to educational settings. Organizational policies, support systems, and social responsibility have been associated with stakeholder health and well-being (Macassa

et al., 2021). Schools are responsible not only for academic instruction but also for providing psychologically safe environments in which students with learning differences are not stigmatized or punished for difficulties beyond their immediate control. A supportive school climate may facilitate self-control by reducing unnecessary stress and may decrease disobedience by improving students' sense of competence, fairness, and belonging. The relatively substantial proportion of explained variance in the present study indicates that self-control and disobedience are important, but the remaining unexplained variance also points to the likely influence of instructional quality, family functioning, executive abilities, emotional distress, motivation, peer relationships, and socioeconomic conditions.

5. Conclusion

Overall, the findings support an integrated conceptualization of specific learning difficulties. Self-control appears to be directly related to students' ability to engage effectively in learning, while disobedience constitutes a significant behavioral pathway through which weak self-control may contribute to greater academic difficulty. This interpretation is consistent with research emphasizing attentional control, executive functioning, self-regulated learning, emotional adjustment, oppositional behavior, parenting, and educational support as interrelated dimensions of student functioning. The findings therefore reinforce the need to move beyond a narrow remediation model focused exclusively on academic deficits. Effective assessment and intervention should simultaneously consider the student's academic skills, executive and self-regulatory capacities, emotional responses, behavioral patterns, and family and school contexts.

One limitation of the present study was its cross-sectional and correlational design, which restricts definitive causal interpretation despite the use of structural equation modeling. The study was conducted only among sixth-grade students in Urmia, and the use of purposive sampling may limit the generalizability of the findings to students in other grades, cities, cultural contexts, or educational systems. The data were obtained primarily through questionnaire measures, which may have been influenced by response bias, parental perceptions, social desirability, or differences between behavior at home and at school. Potentially relevant variables such as intelligence, socioeconomic status, comorbid attention-deficit/hyperactivity symptoms, anxiety,

parenting style, teacher behavior, and severity or type of learning difficulty were not included in the model. In addition, the use of a general learning-difficulties measure did not permit separate examination of reading, writing, and mathematics difficulties.

Future studies should employ longitudinal designs to determine the temporal sequence among self-control, disobedience, and specific learning difficulties and to examine whether changes in self-control predict subsequent changes in behavior and academic performance. Researchers should replicate the model in larger, randomly selected, and more diverse samples and compare the structural paths across sex, grade level, socioeconomic status, and different types of learning difficulty. Future models could incorporate executive functions, anxiety, academic self-efficacy, parenting practices, teacher-student relationships, and classroom climate as additional mediators or moderators. Multi-informant assessment involving students, parents, teachers, and direct behavioral observations would provide a more comprehensive understanding of disobedience and self-control. Experimental studies should also evaluate whether interventions targeting self-control and oppositional behavior produce measurable improvements in reading, writing, mathematics, and general academic engagement.

In practice, school psychologists and counselors should assess self-control and defiant behavior whenever students are referred for persistent learning difficulties. Intervention programs should integrate academic remediation with training in impulse control, emotional regulation, frustration tolerance, goal setting, task persistence, and adaptive help-seeking. Teachers should interpret refusal or noncompliance within the context of the student's learning profile and avoid punitive responses that may intensify avoidance and conflict. Parent-training programs should promote consistent expectations, emotionally supportive communication, and structured responses to homework-related resistance. Collaboration among teachers, parents, counselors, and learning-disability specialists is necessary to develop individualized plans that address both academic and behavioral needs. Early screening and coordinated multidimensional interventions may prevent the reciprocal escalation of learning failure, poor self-control, and disobedience and may improve students' educational adjustment and psychological well-being.

Authors' Contributions

Authors equally contributed to this article.

Declaration

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

Transparency Statement

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

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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