

**The relationship between self-regulation strategies and academic achievement
and self-efficacy of students with autism spectrum disorder**

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ABSTRACT

This study examined the relationship between self-regulation strategies and academic achievement among learners with Autism-Spectrum Disorder (ASD) in selected schools in the district of Las Vegas, Nevada, USA, during the school year 2024–2025. It also investigated the influence of self-efficacy on the use and perceived effectiveness of self-regulation strategies as a basis for an action plan. Purposive sampling was employed in the selection of 30 teacher-respondents and the 30 parents of the students with ASD who answered the questionnaire for self-efficacy for learning intended for the students. Descriptive-correlational research design was employed using teacher survey responses and learners' academic records. Data were analyzed using frequency, percentage, mean, Pearson Product–Moment Correlation, and simple linear regression. Results showed that learners with ASD often utilized self-regulation strategies and demonstrated varying levels of academic achievement. The relationship between self-regulation strategies and academic achievement was moderately positive but not statistically significant. However, self-efficacy was found to be a strong and significant predictor of self-regulation strategy used. Based on these findings, an action plan was developed focusing on strengthening self-efficacy, reinforcing self-regulation strategies, enhancing teacher capacity, and promoting home–school collaboration. The study highlights the importance of self-efficacy in supporting effective self-regulated learning among students with ASD.

Keywords: Special education, self-regulation strategies, self-efficacy for students, autism-spectrum disorder, descriptive-correlational design, Las Vegas, Nevada, USA.

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INTRODUCTION

Students with Autism Spectrum Disorder (ASD) often face challenges that extend beyond academics, including difficulties with emotional regulation, executive functioning, and social interaction, and within self-contained classrooms these challenges can significantly impede academic progress. Self-regulation, understood as the ability to manage one's emotions, behaviors, and thoughts in pursuit of long-term goals, has increasingly been recognized as a key component in fostering academic success, particularly for learners with ASD who often

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struggle to maintain focus, manage transitions, and cope with frustration. Research indicates that students who employ self-regulation strategies tend to perform better both academically and socially, yet limited research has explored how these strategies directly influence academic performance in self-contained classrooms where individualized support is provided. Understanding this relationship can inform teaching practices and intervention development, ultimately improving outcomes for learners with ASD.

Beyond self-regulation itself, additional psychological and environmental factors shape academic achievement among students with ASD. Self-regulation is grounded in executive function, which encompasses working memory, cognitive flexibility, and inhibitory control, while self-efficacy, or the conviction that one can succeed, may further boost motivation and perseverance. At the same time, the ecological systems surrounding the learner, including family, school, and community, influence how self-regulation strategies are developed and applied. Deficiencies in self-regulation, such as difficulty managing frustration, controlling impulses, or sustaining attention, can therefore hamper academic progress for autistic students. Although self-regulation has been extensively studied within general education populations, comparatively little is known about how these strategies function among students with autism, particularly within the school district of Las Vegas, Nevada.

In practice, this researcher has implemented a range of evidence-based self-regulation and self-efficacy strategies designed to provide both structure and motivation for students working toward behavioral and academic goals. These include token boards, first-then boards, and daily and weekly reinforcement systems. Through daily reinforcement, students earn tokens for demonstrating positive behavior, completing tasks, or following directions, and upon earning five tokens receive a small tangible reward such as chocolates, chips, gummies, Skittles, Goldfish, or crackers. The first-then board reinforces visual structure and clarity of expectations by depicting the sequence of tasks and rewards in a "first work, then reward" format. Weekly reinforcement operates through a system in which students accumulate "jewels" from Monday to Thursday, and those who earn twelve jewels by week's end are permitted to spin a reward wheel and select an item from a classroom treasure box, reinforcing consistency, effort, and delayed gratification. Complementing these strategies, this researcher has also drawn on Applied Behavior Analysis (ABA), a systematic and data-driven approach that seeks to increase desired behaviors while reducing interfering ones. ABA aims to build a framework for student success in which learners recognize desired behaviors, receive positive reinforcement for meeting expectations, and gradually transition from external regulation to self-regulation through structured repetition and reinforcement, with particular emphasis on identifying the function of behavior and using direct instruction, modeling, and practice of replacement behaviors until behavioral competency is achieved.

Given these classroom realities, understanding how self-efficacy and self-regulation strategies affect the learning outcomes of students with ASD becomes essential. Although both constructs are widely acknowledged as central to academic performance, localized research examining how they interact among learners with ASD in regular classroom environments remains scarce. Teachers in Las Vegas, Nevada are frequently left without clear guidance on how to support these students effectively, as schools in the area often lack interventions that deliberately integrate these psychological concepts into daily instruction. This study seeks to address that gap by examining how self-regulation and self-efficacy strategies contribute to the academic achievement of learners with ASD, with the aim of providing actionable guidance for teachers who currently lack such frameworks. By analyzing the relationship between academic performance, self-regulation strategies, and self-efficacy, the study aims to generate practical insights capable of informing evidence-based practices, ultimately serving as a foundation for comprehensive intervention plans that enhance academic performance, emotional resilience, and classroom inclusion. In doing so, it aspires to foster a positive,

supportive, and motivating learning environment grounded in consistency, reinforcement, and individualized pathways toward self-regulated learning and success.

This study is grounded in several interrelated theories, namely Self-Regulation Theory (1980) by Bandura, Zimmerman, and Baumeister, Executive Function Theory by Baddeley, Posner, and Broadbent (1970), Bandura's Social Cognitive Theory (1986), and Bronfenbrenner's Ecological Systems Theory (1977), which together provide a multidimensional lens for examining how internal strategies and external supports interact to shape academic outcomes. Self-Regulation Theory posits that individuals capable of monitoring and controlling their emotions, behaviors, and cognition are more likely to succeed academically, a proposition especially relevant for students with autism, for whom self-regulation often poses a persistent challenge and thus becomes a critical variable in educational outcomes. Bandura's concept of self-efficacy, Zimmerman's model of self-regulated learning, and Baumeister's work on self-control collectively underscore the significance of internal processes that direct learning and adaptation. Because these self-regulation skills are frequently undeveloped or require targeted support among students on the autism spectrum, who commonly struggle with executive functioning and emotional regulation, self-regulation functions not merely as a theoretical construct but as a practical lens through which teachers can design interventions, adapt instruction, and cultivate environments that encourage resilience and self-reliance. By employing strategies that strengthen self-monitoring, goal-setting, and emotional awareness, teachers can help students with autism better manage academic expectations and achieve meaningful educational outcomes (de la Fuente, 2022).

Closely related to Self-Regulation Theory is Executive Function Theory, which identifies working memory, inhibitory control, and cognitive flexibility as foundational to self-regulation. Students with autism often exhibit deficits in these areas, which can compromise their capacity to apply self-regulation strategies effectively. Recent research indicates that these executive functions are not only crucial for self-regulation but are also strongly associated with the repetitive and restricted behaviors characteristic of autism (Zheng et al., 2024), and such deficiencies can substantially hinder a student's ability to regulate emotions, adapt to classroom demands, and engage in goal-directed learning. Executive functions have further been shown to mediate the relationship between brain connectivity patterns and behavioral outcomes in children with autism, suggesting that strengthening these functions could improve educational performance (André & Maintenant, 2024), while educators and caregivers alike consistently report challenges in executive functioning among autistic children and adolescents across both home and school settings, reinforcing the need for targeted interventions that support cognitive flexibility and self-monitoring (Gentil-Gutiérrez et al., 2022).

Building on this cognitive foundation, Bandura's Social Cognitive Theory emphasizes how behavioral, environmental, and personal factors interact dynamically to shape learning and development, with self-efficacy and observational learning serving as central mechanisms (Bandura, 1986). These mechanisms are particularly relevant for autistic students, who often benefit from structured settings and clear modeling of desired actions, and recent studies suggest that witnessing peers or adults perform tasks successfully can enhance autistic students' motivation and self-belief (Whitham et al., 2021). Structured feedback and reinforcement further support self-regulation abilities that are frequently compromised in autism due to challenges in executive functioning and social cognition (Wood et al., 2020), and by applying Social Cognitive Theory through modeling, guided practice, and positive reinforcement, teachers can help students with autism develop greater autonomy and academic resilience.

Complementing these individually oriented theories, Bronfenbrenner's Ecological Systems Theory (1977) situates the child's development within multiple layers of

environmental influence, from immediate settings such as family and school to broader societal contexts, offering a comprehensive framework for understanding how these systems shape self-regulation and academic success among autistic individuals. Recent research suggests that inclusive classroom approaches and supportive microsystems, such as nurturing families, can substantially improve learning outcomes and resilience in children with autism (Rahman, 2025), while mesosystem interactions, such as collaboration between parents and educators, have been shown to strengthen the consistency of behavioral standards and emotional support across contexts (Predescu et al., 2020). By integrating interventions across these interrelated systems, teachers and practitioners can address both the external environmental factors and the internal cognitive challenges associated with self-regulation, and when combined with behavioral and cognitive theories, Bronfenbrenner's ecological model offers a multifaceted perspective on how environmental scaffolding and individual strategies interact to shape learning outcomes for neurodiverse students.

These theoretical foundations are reinforced by a series of federal and state legal frameworks that uphold the rights of learners with disabilities and promote inclusive, developmentally appropriate education, thereby ensuring access to individualized interventions, fostering executive functioning and self-regulation, and recognizing the role of environmental systems in learning. The Individuals with Disabilities Education Act (IDEA) of 2004 mandates that children with disabilities receive a Free Appropriate Public Education tailored to their unique needs through an Individualized Education Program, supporting structured interventions that enhance executive functioning and self-regulation while acknowledging the importance of family and school systems (Individuals with Disabilities Education Act, 2004). Section 504 of the Rehabilitation Act of 1973 similarly prohibits discrimination based on disability in any federally funded program, including public education, thereby guaranteeing that students with autism receive accommodations suited to their particular learning needs. These accommodations, including behavioral supports, assistive devices, and adapted instruction, directly reinforce key elements of Social Cognitive Theory such as self-efficacy and observational learning (Whitham et al., 2021), while offering structured settings in which students can observe modeled behaviors and receive consistent feedback that supports self-regulation and adaptive functioning. Families of autistic students often rely on Section 504 plans to obtain necessary resources, particularly when students do not meet IDEA's eligibility requirements for special education yet still encounter significant learning obstacles (Lindsay et al., 2025), and the law's emphasis on equitable access aligns closely with Ecological Systems Theory by recognizing the substantial impact that supportive microsystems, such as inclusive classrooms and attentive teachers, can have on developmental outcomes.

The Americans with Disabilities Act (ADA) of 1990 further guarantees equal access to public services, including education, for individuals with disabilities, reinforcing the ecological perspective by emphasizing the role of accessible environments and community support systems in learning (Americans with Disabilities Act, 1990). For students with autism, the ADA plays a crucial role in ensuring access to reasonable accommodations such as assistive technology, behavioral supports, and inclusive classrooms that promote equity and inclusion (U.S. Department of Justice, 2025), and by requiring accessible physical and social environments, the ADA underscores the value of supportive microsystems and mesosystems in fostering self-regulation and academic success. Nevertheless, recent advocacy suggests that individuals with severe autism continue to encounter structural obstacles that limit their ability to fully benefit from these protections (Kancir, 2025), highlighting the need for continued efforts to close gaps in implementation and inclusion.

The Every Student Succeeds Act (ESSA) of 2015 marks a significant shift in federal education policy by prioritizing accountability, equity, and evidence-based interventions,

thereby offering a framework that promotes individualized learning strategies for students with autism and other challenges and directly supporting the development of executive functioning and self-regulation. The Department of Education highlights ESSA's provisions for inclusive practices, including differentiated teaching and multi-tiered systems of support, which reinforce Executive Function Theory by strengthening working memory, inhibitory control, and cognitive flexibility through organized, responsive instruction, while ESSA's emphasis on social-emotional learning and student support services further reinforces Social Cognitive Theory's focus on self-efficacy and modeled behavior (RAND, 2023). At the state level, Nevada Revised Statutes (NRS) Chapter 388 provides a comprehensive legislative framework for special education services, addressing eligibility, behavioral supports, and the implementation of Individualized Education Programs. NRS §388.449 specifically governs the evaluation and re-evaluation of students with autism spectrum disorder, requiring that assessments comply with IDEA and that evaluators receive adequate training and technical support to ensure accuracy and effectiveness, thereby reaffirming how institutional systems such as schools and state education agencies shape developmental outcomes through coordinated support and cooperation, consistent with Ecological Systems Theory. This statute also aligns with Executive Function Theory, as its mandated behavioral interventions and individualized planning directly target cognitive processes such as working memory, inhibitory control, and flexibility, which are often impaired among students with autism, thereby ensuring that educational environments are both legally compliant and developmentally responsive.

Finally, the Nevada Department of Education's State Plan for Special Education serves as a strategic roadmap for ensuring equitable access, inclusive practices, and behavioral support for students with disabilities across the state. Grounded in IDEA, the plan sets goals for strengthening family engagement, adopting evidence-based interventions suited to diverse learners, and improving instructional quality, while emphasizing tailored supports, including behavioral interventions, differentiated instruction, and collaborative IEP development, that promote self-regulation and adaptive functioning among students with autism (Nevada Department of Education, 2023). These strategies align closely with Social Cognitive Theory, particularly Bandura's emphasis on self-efficacy and observational learning, as the State Plan encourages regulated environments where students can observe modeled conduct and receive consistent feedback that supports social learning and emotional regulation. Its emphasis on inclusive education further upholds the ecological perspective by acknowledging the influence of communities, families, and school systems on developmental outcomes (State Regs Today, 2024).

Taken together, these overlapping theoretical perspectives and legal mandates provide a strong foundation for investigating how self-regulation strategies influence the academic performance of students with autism. By highlighting the interaction between internal cognitive processes, such as executive function and self-efficacy, and external systemic supports, including family, school, and legal protections, this framework offers a comprehensive basis for designing interventions, evaluating outcomes, and advancing inclusive excellence in education for neurodiverse learners.

Statement of the problem

This study investigated the relationship between self-regulation strategies and academic achievement among students with ASD. It also examined how self-efficacy influences the use of self-regulation strategies among learners with ASD in selected schools of the district of Las Vegas, Nevada, USA for the school year 2024–2025 as basis for an action plan.

Specifically, it sought to answer the following research questions:

1. What is the demographic profile of the respondents in terms of teacher age and gender, civil status, highest educational attainment, number of years in teaching, number of years in teaching SPED, relevant trainings and seminars attended, and learners with autism age and gender?
2. To what extent do students with ASD utilize self-regulation strategies?
3. What is the level of academic achievement among students with autism?
4. Is there a significant relationship between self-regulation strategies and academic achievement?
5. To what degree does a student's self-efficacy influence their use and perceived effectiveness of self-regulation strategies?
6. Based on the findings of the study, what action plan can be formulated?

METHODOLOGY

This study utilized a descriptive-correlational research design, which is suitable for analyzing the kind and degree of associations between variables without changing them. Correlational research, as promoted by Fred N. Kerlinger (1986), is appropriate for investigating relationships between naturally occurring events, particularly when the objective is to comprehend patterns rather than prove causation. In this regard, the study aimed to ascertain the association between academic success and self-regulation techniques in autistic individuals, as well as the ways in which executive function and self-efficacy impact this association. A thorough depiction of the kinds of self-regulation techniques frequently employed and the degree of academic success among autistic students is made possible by the descriptive element of the design, while statistical examination of the relationships between these variables is made possible by the correlational component, which offers information on their nature and degree of association. Because ethical and practical limitations frequently prohibit experimental manipulation, this method is especially well suited for educational contexts, and it allowed the study to produce evidence-based results that guide the creation of an action plan for assisting autistic children in a few Las Vegas, Nevada, schools during the 2024–2025 academic year and inform inclusive policies. Bella Williams, a more recent supporter of the descriptive-correlational research approach, highlights its use in contemporary psychological and educational studies. Descriptive correlational research is crucial for comprehending interactions between variables in real world contexts without changing them, as she emphasizes in her 2025 roadmap. This method is particularly helpful in studies involving naturally occurring behaviors and educational outcomes because it enables researchers to investigate the relationships between changes in one variable and another. Williams (2025) emphasizes that this methodology works especially well when researchers want to find trends and connections, such as the one between academic success and self-regulation techniques, without suggesting a cause-and-effect relationship, and her work demonstrates a modern comprehension of the ways in which descriptive-correlational techniques can assist inclusive educational practices and guide data-driven decisions.

The flow of the study followed the Input-Process-Output (IPO) paradigm, which offers a clear framework for comprehending how the research was carried out and how its results were obtained, and it includes key variables that are pertinent to the study. The input consists of the academic achievement levels of students with autism, the self-regulation techniques they use, and the moderating factors of self-efficacy and executive function. During the 2024–2025 academic year, these inputs were collected from a subset of the Las Vegas district's schools using verified tools, surveys, and academic records. The process started with the submission of a transmittal letter to concerned school authorities to ask permission to conduct the study in

some identified schools in the district of Las Vegas, Nevada. Once permission was acquired, preparation of the survey questionnaire was done and orientation of prospective respondents followed. Distribution of the questionnaire then followed, through Google Form or through hard copy depending on the comfort of the respondents. The respondents were given enough time to answer the questionnaire in order to obtain the needed data, and retrieval of these followed. Data gathered were collated, tabulated, analyzed, and interpreted. Data were treated using statistical techniques including multiple regression analysis, descriptive statistics, and Pearson correlation to examine the correlations between these variables. This stage also entailed interpreting the data in light of legislative requirements such as Section 504, the ADA, ESSA, and Nevada's educational laws, as well as academic frameworks such as the Ecological Systems Theory, Executive Function Theory, Social Cognitive Theory, and Self-Regulation Theory. The output of the study is a collection of empirically supported conclusions that elucidate the type and degree of the association between academic success and self-regulation in autistic students, around which an action plan aimed at strengthening inclusive educational practices, creating focused interventions, and raising academic achievement for neurodiverse learners was built.

This study was conducted in some identified schools in the district of Las Vegas, Nevada, USA. Lynch Elementary School (Intermediate) is renowned for creating a caring and inclusive learning environment where students of all abilities are supported and accepted. Through co-teaching and individualized instruction, the school incorporates inclusive education, enabling students with ASD to engage in meaningful participation in general education classes, and teachers frequently employ visual schedules, regular routines, and sensory aids to help students with ASD cope with transitions and lessen anxiety, while peer buddy networks and social storytelling are also used to encourage social connection and emotional control. Bailey Middle School places a strong emphasis on equity and inclusion through culturally sensitive instruction and a strong dedication to the welfare of its students, and it uses Applied Behavior Analysis (ABA) techniques and Positive Behavior Interventions and Supports (PBIS) to direct behavior and learning for students with ASD, while self-regulation is promoted through emotion check-ins, mindfulness exercises, and quiet areas for sensory breaks, and teachers are trained to improve comprehension through the use of precise, tangible language and visual aids. Katz Elementary School (Intermediate) values neurodiversity and encourages inclusive education by adjusting its curriculum to each student's particular need, offering sensory accommodations for students with ASD, including quiet areas, noise-canceling headphones, and fidget toys, with expression facilitated by the use of communication aids such as visual cues and augmentative technology, and students gain self-awareness and interpersonal skills through social-emotional learning programs and structured peer interaction activities. Cashman Middle School incorporates inclusive education into its creative curriculum and offers a STEAM magnet program, with specialized staff support and individualized education plans (IEPs) benefiting students with ASD, and the school promotes emotional regulation through goal-setting exercises, behavior tracking tools, and arts-based activities, while also fostering understanding and empathy among colleagues to create a collaborative and accepting environment. Staton Elementary School is dedicated to inclusive practices to ensure that every student feels appreciated and supported, employing differentiated instruction and flexible grouping to meet the varied learning requirements of its students, with teachers integrating self-regulation tools such as timers, emotion charts, and sensory breaks into everyday activities, and occupational and speech therapy services offered for students with ASD, with the support network for these students further reinforced through collaborative teaching and family involvement. Jack Lund Schofield Middle School abides by district-wide

inclusive education policies that give top priority to access and equity, typically using behavior contracts, goal-setting techniques, and regular routines to accommodate students with ASD, while incorporating social-emotional learning (SEL) initiatives into the curriculum to assist students in developing self-regulation abilities, and teachers collaborate closely with families and experts to guarantee that interventions are successful and individualized. Together, these educational institutions demonstrate a wider dedication to inclusive education in Las Vegas, where students with ASD receive social and emotional help in addition to academic support.

The respondents of the study were 30 teachers and 30 students primarily in Grades 6–8 who have received a formal diagnosis of ASD and are enrolled in self-contained special education classrooms in selected public schools in the Las Vegas district, with parents acting as proxy in rating the ASD learners for self-learning efficacy. Purposive sampling was utilized in the selection of the respondents, a non-probability strategy that enables the researcher to deliberately choose individuals who fit particular requirements pertinent to the study's goals. Because this study focuses on students with a formal diagnosis of ASD who are enrolled in specific public schools in the Las Vegas district for the 2024–2025 academic year, purposive sampling is suitable, and to guarantee that they receive documented educational accommodations, these individuals must have Section 504 plans or Individualized Education Programs (IEPs) in place.

This descriptive-correlational design used both standardized and researcher-developed instruments to collect data. The first part of the instrument covers the demographic profile of the respondents. For the teachers, this includes age, gender, civil status, highest educational attainment, number of years in teaching, number of years in teaching SPED, and relevant trainings and seminars attended, while for the students, age and gender were considered. The second part is the Self-control Questionnaire (SRQ), consisting of 10-item indicators, which measures behavioral, emotional, and cognitive control, or a modified version designed for learners with ASD, used in the study to evaluate self-regulatory techniques. The instrument is adapted from validated tools such as the Self-Regulation Questionnaire (SRQ) and the 5-Point Scales: Strategies for Self-Regulation by Buron & Curtis (2003), ensuring reliability and eliminating the need for pilot testing. To guarantee objective and quantifiable data, official school records, including report cards, standardized test scores, and performance evaluations, were used to measure academic attainment, and the teachers rated the students with ASD as to self-regulation strategies. The third part is the General Self-Efficacy Scale (GSES), or the Self-Efficacy for Learning Form (SELF) by Schwarzer & Jerusalem (1995), another 10-item indicator which was modified to measure self-efficacy in order to account for the unique learning environment of autistic pupils. To guarantee clarity and appropriateness, all instruments went through pilot testing after being examined for cultural and contextual relevance to the Las Vegas school district. Utilizing these resources enabled a thorough examination of the factors and helped the study achieve its objective of creating an evidence-based action plan. Teachers or parents completed a proxy version of the survey based on observed behaviors and known attitudes toward learning when children were unable to self-report because of communication difficulties, and this part was answered by the parents of the ASD learners.

This study employed three stages in the gathering of data. The pre-data gathering stage included all of the preparatory work required to guarantee the study's ethical and seamless execution. To conduct research involving students with autism, formal consent was first obtained from the appropriate authorities, such as the administration of the school district and institutional review boards. Parents or guardians received consent papers, and when necessary, student participants' approval was sought. To guarantee clarity, dependability, and contextual relevance, the researcher also pilot tested the tools, including the Self-Efficacy Scale, BRIEF-2, and Self-Regulation Questionnaire, and coordination with school staff was established to

plan data collection and find qualified participants based on inclusion criteria. The data gathering stage was the phase during which the actual data gathering was done in a few chosen Las Vegas district schools. Depending on the instrument and the student's age or communication skills, the researcher gave standardized questionnaires and rating scales to parents, teachers, and/or students. Data on academic performance was gathered from official school documents, such as report cards and results from standardized tests. The researcher made sure that data collection was done in a non-disruptive, courteous, and private way, and that accommodations were made for learners with ASD as needed, with every response methodically and safely captured for analysis. In the post-data gathering stage, the researcher clustered and coded the data for statistical analysis after it had been collected. Regression analysis, correlation analysis, and descriptive statistics were used to assess the study's hypotheses and examine how variables relate to one another. The results were interpreted in the context of the previously described legal requirements and theoretical frameworks. Participating schools and stakeholders received a summary of the findings, and an action plan was formulated using the knowledge gathered, with the researcher, after the collation of data, ensuring that all data was safely preserved and that all confidentiality and data protection ethical norms were maintained at all times.

This study was conducted with a strong commitment to ethical standards, ensuring that all procedures respected participants' rights and dignity. Prior to data collection, informed consent was secured, and individuals were made aware of their right to confidentiality and anonymity. The research followed institutional protocols and complied with applicable data protection laws. Measures were taken to minimize any potential harm, and the overall approach prioritized the safety and autonomy of those involved.

Several statistical tools were utilized in the treatment of the data gathered. Frequency and percentage were used for outlining the many self-regulation techniques that autistic pupils frequently employ, with the goal of compiling the frequency and number of participants for each technique, which made it easier to determine which tactics are most and least frequently used. Mean and standard deviation were utilized for assessing the academic performance of autistic students, with the goal of calculating the sample's average academic performance and gauging the range of values, thus providing a broad profile of accomplishment levels. The Pearson Product-Moment Correlation Coefficient was used for evaluating the connection between academic success and self-regulation techniques, ascertaining the direction and magnitude of the two variables' linear relationship, wherein a strong positive connection would imply that improved academic achievement is linked to increased self-regulation. Simple Linear Regression was used to assess how self-efficacy affects the application and efficacy of self-regulation techniques, with the goal of finding out how shifts in self-efficacy forecast shifts in self-regulation behavior, making it easier to measure how motivating beliefs affect regulatory actions.

For both the questionnaire on Self-Regulation Strategies and the questionnaire on Self-Efficacy for Learning, a 5-point Likert scale was used to rate each survey item, and the corresponding mean score ranges served as a guide for interpreting the data, following the scoring range and scoring procedure established for the Self-Regulation Strategy instrument and the scoring range and scoring procedure established for the Self-Efficacy for Student instrument.

RESULTS AND DISCUSSION

This chapter presents, analyzes, and interprets the data gathered from 30 teacher-respondents and 30 students with Autism Spectrum Disorder (ASD) in relation to the stated research problems and hypotheses of the study. The study employed a descriptive-correlational research design, with teacher-respondents purposively selected based on their direct involvement in assessing learners with ASD, and data were gathered through a structured teacher-rating questionnaire employing a five-point Likert scale, covering the demographic profile of respondents, the extent of self-regulation strategies utilized by students with ASD, the level of academic achievement of these learners, and the influence of self-efficacy on self-regulation strategy use. Statistical tools appropriate to the nature of the variables were employed, including frequency counts, percentages, weighted means, standard deviations, Pearson Product-Moment Correlation, and simple linear regression, with all inferential analyses evaluated at the 0.05 level of significance. The discussion that follows is grounded strictly in the data gathered through this instrument and is interpreted in direct relation to the objectives of the study, which sought to describe the demographic profile of the teacher-respondents and student-respondents, determine the extent of self-regulation strategy utilization among learners with ASD, determine their level of academic achievement, examine the relationship between self-regulation strategies and academic achievement, and examine the influence of self-efficacy on self-regulation strategy use.

Demographic profile of the teacher-respondents

With regard to age and gender, the results show that the teacher-respondent population was predominantly female, comprising 26 teachers or 86.67% of the sample, while male teachers accounted for only 4 or 13.33%. In terms of age, the majority of respondents, 23 teachers or 76.67% of the total, belonged to the 50 years and above age bracket, of whom 21 were female (70.00%) and 2 were male (6.67%); the 40 to 49 age group consisted of 4 teachers or 13.33% of the sample, comprising 2 male (6.67%) and 2 female (6.67%) teachers; and the 30 to 39 age group consisted of 3 teachers or 10.00%, all of whom were female. No respondents fell within the 20 to 29 age range. This female-dominated and largely mature teaching population is consistent with broader workforce patterns, as approximately three-quarters of public school teachers in the United States are women, with women likewise constituting the majority of the special education workforce (National Center for Education Statistics [NCES], 2021; Pew Research Center, 2024). The predominance of respondents aged 50 and above suggests that many teachers possess extensive classroom experience that can support stable and reliable observations of students' classroom behaviors, including routines, transitions, and coping responses, although recent literature cautions that teacher self-efficacy in supporting students with ASD is shaped not only by years of experience but also by contextual and systemic factors such as access to training, availability of resources, and administrative support (Baek, 2024; Petersson-Bloom et al., 2025).

With regard to civil status, the majority of teacher-respondents, 29 teachers or 96.67% of the sample, were married, while only 1 respondent or 3.33% was classified as widow or widower; no respondents reported being single or separated. This predominance of married respondents is consistent with the age profile of the sample and suggests a relatively stable teaching workforce, which research links to higher levels of job commitment and professional persistence in demanding professions such as teaching (OECD, 2020), although contemporary literature emphasizes that professional support, access to resources, and administrative backing remain more critical determinants of teacher effectiveness and self-efficacy than personal demographic factors alone (Petersson-Bloom et al., 2025).

With regard to educational background, the results reveal that 12 teachers or 40.00% of the sample have units in a doctorate degree, 11 teachers or 36.67% have completed a doctorate degree, and 7 teachers or 23.33% hold a master's degree, indicating that more than three-fourths of the respondents either hold or are pursuing doctoral qualifications. This high level of educational attainment suggests a strong foundation in educational theory, research, and evidence-based practices, consistent with research indicating that higher levels of teacher education are associated with greater pedagogical knowledge, stronger instructional decision-making, and increased confidence in implementing complex teaching strategies (Darling-Hammond et al., 2020), as well as with studies linking graduate-level training to higher teacher self-efficacy, particularly in managing challenging behaviors and promoting student independence (Klassen & Durksen, 2021).

With regard to years in teaching, an overwhelming majority of respondents, 28 teachers or 93.33%, reported 15 years and above of teaching experience, while 2 teachers or 6.67% reported 10 to 14 years of experience, with no respondents reporting fewer than 10 years. Similarly, with regard to years of teaching in Special Education specifically, 26 teachers or 86.67% reported 15 years and above of experience in the field, while 4 teachers or 13.33% reported 10 to 14 years, again with no respondents reporting fewer than 10 years. These findings indicate a highly experienced and specialized teaching workforce, which research associates with stronger instructional confidence, more efficient classroom organization, and improved behavior management skills relevant to supporting students with ASD (Kraft & Lyon, 2020; Billingsley et al., 2021), although contemporary research cautions that years of experience alone do not automatically translate into effective practice, underscoring the continued importance of professional development in areas such as executive functioning and behavioral regulation (Florian & Camedda, 2020).

With regard to relevant trainings and seminars attended, 29 teachers or 96.67% reported attending 90 hours and above of professional training, while only 1 teacher or 3.33% reported attendance within the 60 to 69-hour range, with no respondents reporting fewer than 60 hours. This substantial training exposure suggests strong engagement in professional learning related to behavior management and inclusive education practices, consistent with literature emphasizing that sustained professional learning is essential for improving instructional quality in special and inclusive education contexts (Desimone & Pak, 2020) and that such learning enhances teacher self-efficacy, which in turn influences instructional persistence and responsiveness to student needs (Lauermann & König, 2021).

Demographic profile of the students with ASD

Among the students with ASD, after excluding four entries with non-valid age values, the age and gender distribution of the remaining 26 learners revealed that the majority belonged to the 13 to 15 age range, comprising 13 learners or 50.00% of the valid sample, of whom 12 were male (46.15%) and 1 was female (3.85%); the 10 to 12 age range comprised 10 learners or 38.46%, of whom 9 were male (34.62%) and 1 was female (3.85%); and the 7 to 9 age range comprised the smallest proportion at 3 learners or 11.54%, of whom 2 were male (7.69%) and 1 was female (3.85%). Overall, male learners predominated, accounting for 23 or 88.46% of the valid sample, while female learners accounted for only 3 or 11.54%. This male predominance reflects well-documented epidemiological trends in which ASD is more frequently diagnosed in males than females, a pattern attributed to both biological factors and diagnostic practices (Maenner et al., 2020; Zeidan et al., 2022). The concentration of learners within the 10 to 15 age range situates the study within a developmental period marked by

increasing academic demands and greater expectations for executive functioning, emotional regulation, and independent learning, factors that may magnify regulation-related challenges among learners with ASD and underscore the importance of structured supports during this stage (Blair & Raver, 2020; Faja & Dawson, 2022).

Extent of utilization of self-regulation strategies among learners with ASD

The results reveal that learners with ASD often utilize self-regulation strategies overall, as reflected in a composite weighted mean of 3.78 (SD = 1.03), verbally interpreted as Often on the scale where 4.21 to 5.00 signifies Always, 3.41 to 4.20 signifies Often, 2.61 to 3.40 signifies Sometimes, 1.81 to 2.60 signifies Rarely, and 1.00 to 1.80 signifies Never. Among the ten indicators assessed, following visual schedules or routines independently obtained the highest weighted mean of 4.20 (SD = 0.92, Often, Rank 1), followed by demonstrating awareness of classroom expectations at 4.00 (SD = 1.08, Often, Rank 2) and recovering from frustration and resuming task engagement at 3.93 (SD = 0.87, Often, Rank 3). These were followed by using calming strategies such as deep breathing or sensory tools at 3.87 (SD = 0.90, Often, Rank 4), asking for help when overwhelmed or confused at 3.83 (SD = 1.09, Often, Rank 5), transitioning between activities without significant disruption at 3.80 (SD = 1.06, Often, Rank 6), monitoring own behavior and adjusting when prompted at 3.63 (SD = 0.93, Often, Rank 7.5), completing tasks with minimal redirection at 3.63 (SD = 1.19, Often, Rank 7.5), using positive self-talk or coping phrases at 3.50 (SD = 1.04, Often, Rank 9), and setting personal goals or responding to goal-setting activities obtaining the lowest weighted mean of 3.43 (SD = 1.07, Often, Rank 10). These findings indicate that learners with ASD are able to utilize self-regulation strategies at a functional level when classroom environments provide structure, consistency, and appropriate supports, as the strong utilization of routine-based and externally cued strategies such as following visual schedules, recognizing classroom expectations, and recovering from frustration suggests that externally supported regulatory systems are particularly effective in promoting adaptive classroom behavior. This is consistent with syntheses identifying visual supports as core evidence-based practices that promote independence, predictability, and behavioral regulation among learners with ASD (Hume et al., 2021), as well as with research indicating that explicit teaching and reinforcement of classroom expectations support improved regulation and re-engagement following behavioral or emotional disruption (Mazefsky & White, 2021). In contrast, the comparatively lower ratings for self-directed strategies such as goal-setting (WM = 3.43) and positive self-talk (WM = 3.50), though still within the Often range, suggest that higher-order, internally driven self-regulation skills are less consistently demonstrated than routine-based or teacher-supported strategies, a pattern consistent with literature indicating that such skills are closely tied to executive functioning and metacognitive development, which often require direct instruction and systematic scaffolding for learners with ASD (Kenworthy et al., 2020). Overall, these results reinforce the importance of combining structured environmental supports with explicit instruction in self-regulatory skills to promote academic engagement and learner independence (Steinbrenner et al., 2020).

Level of academic achievement among learners with ASD

To ensure a uniform academic achievement scale, percentage grades were converted to GPA-equivalent values using a categorical equivalency scheme in which 90 to 100 corresponds to 4.00, 85 to 89 corresponds to 3.50, 80 to 84 corresponds to 3.00, 75 to 79 corresponds to 2.50, and scores below 75 correspond to less than 2.50, while entries marked as W, Working Below Grade Level, and I Don't Know were excluded as non-numeric indicators, yielding 23

valid numeric academic entries for analysis out of the total 30 students, with 7 entries excluded (3 marked W, 3 marked Working Below Grade Level, and 1 marked I Don't Know). The results show that 16 learners, or 53.33% of the total sample, attained a Very High academic performance level corresponding to GPA-equivalent values of 3.50 to 4.00; 5 learners, or 16.67%, were classified under the High performance level with GPA-equivalent values of 3.00 to 3.49; no learners were classified within the Average performance range of 2.50 to 2.99; and 2 learners, or 6.67%, fell within the Low performance level with GPA-equivalent values below 2.50, while 7 entries, or 23.33%, were excluded as invalid. Overall, the findings reveal that 70.00% of the learners in the study achieved High to Very High academic performance levels, indicating that a substantial proportion of learners with ASD are able to meet or exceed academic expectations when appropriate instructional supports and accommodations are provided, while the variation in GPA levels highlights the heterogeneity of learners with ASD and the corresponding need for individualized academic and behavioral interventions. This pattern aligns with contemporary research indicating that many learners with ASD are capable of achieving average to high academic performance when instructional contexts are structured, predictable, and responsive to individual needs (Trembath et al., 2020), and with studies emphasizing that executive functioning and self-regulation play a central role in shaping academic outcomes, as difficulties in attention control, cognitive flexibility, and emotional regulation are associated with lower academic engagement, while stronger self-regulation skills are linked to improved task persistence and achievement (Craig et al., 2021). At the same time, the presence of learners performing below grade level despite structured instruction and accommodations reflects persistent challenges in adaptive functioning, emotional regulation, and executive control for this subgroup, highlighting the continued need for targeted interventions addressing both behavioral regulation and learning-related confidence (Rosello et al., 2020).

Relationship between self-regulation strategies and academic achievement

To determine the relationship between self-regulation strategies and academic achievement among learners with ASD, the Pearson Product-Moment Correlation Coefficient was computed using learners' composite self-regulation scores and their academic achievement based on the cleaned GPA-equivalent scale, yielding a total of 23 valid paired cases after excluding non-numeric academic indicators. The analysis revealed a moderate positive relationship between self-regulation strategies and academic achievement, $r = 0.3853$, $t(df = 21) = 1.9133$, $p = 0.0694$, evaluated at an alpha level of 0.05. Since the obtained p-value of 0.0694 is greater than the 0.05 alpha level, the null hypothesis stating that there is no significant relationship between self-regulation strategies and academic achievement among learners with ASD was not rejected, yielding a decision of fail to reject H_0 and an interpretation of a moderate positive, not significant relationship. This finding indicates that although learners who demonstrated higher levels of self-regulation tended to exhibit higher academic performance, the strength of this association was not sufficient to significantly predict academic achievement at the conventional level of significance, suggesting that academic outcomes among learners with ASD are likely shaped by a combination of factors beyond self-regulation alone, including instructional adaptations, assessment modifications, executive functioning demands, and individualized educational supports. This result aligns with the findings of Hume et al. (2021), who emphasized that evidence-based self-regulation interventions primarily improve task engagement, emotional regulation, and adaptive classroom behaviors, which indirectly support learning but do not always translate into immediate gains in academic achievement, and with

Steinbrenner et al. (2020), who reported that self-regulation-related practices consistently enhance behavioral and functional outcomes even as their direct impact on academic performance varies according to instructional context, assessment practices, and individual learner characteristics. The finding further suggests that self-regulation strategies function as a foundational, supportive mechanism that facilitates learning readiness and persistence rather than serving as a sole determinant of academic success, reinforcing the need for instructional approaches that integrate self-regulation supports with individualized teaching strategies, appropriate assessment practices, and consistent environmental accommodations (Olivier et al., 2020).

Influence of self-efficacy on the use and perceived effectiveness of self-regulation strategies

With respect to self-efficacy, the results show an overall composite mean of 3.68 (SD = 1.05), verbally interpreted as Often or Agree, indicating a moderate to high level of self-efficacy among the student-respondents. Among the individual indicators, believing they can ask for help when needed obtained the highest mean at 3.93 (SD = 1.23), followed by believing they can improve with practice at 3.87 (SD = 1.11) and showing motivation to complete academic tasks independently at 3.77 (SD = 1.10); this was followed by believing they can complete difficult school tasks at 3.70 (SD = 1.12), trying again after making a mistake at 3.70 (SD = 0.95), and using strategies to stay focused on learning tasks at 3.70 (SD = 0.95); followed by feeling capable of managing school responsibilities at 3.63 (SD = 0.89), believing they can succeed when tasks are challenging at 3.60 (SD = 0.97), setting goals for schoolwork at 3.47 (SD = 1.04), and showing confidence when starting new assignments obtaining the lowest mean at 3.40 (SD = 1.10). To examine the influence of self-efficacy on self-regulation strategy use, a simple linear regression analysis was conducted using self-efficacy as the predictor and the composite self-regulation strategy score as the dependent variable, with a sample size of $n = 30$. The regression model, expressed as Self-Regulation equals $a + b(\text{Self-Efficacy})$, yielded a constant (a) of 0.6663, representing the baseline self-regulation level when self-efficacy equals 0, and a regression coefficient (b) of 0.8478 for self-efficacy, representing the expected increase in self-regulation strategy use for every 1-unit increase in self-efficacy. The model summary revealed a very strong positive relationship between self-efficacy and self-regulation strategy use, Pearson $r = 0.9185$, $R^2 = 0.8437$, $F(1, 28) = 151.0953$, $p = 8.43 \times 10^{-13}$, with the t -value for the coefficient b at $t(28) = 12.2921$, $p = 8.43 \times 10^{-13}$. Since the obtained p -value of 8.43×10^{-13} is far below the 0.05 alpha level, the regression coefficient is statistically significant, indicating that self-efficacy significantly predicts self-regulation strategy use among learners with ASD. The model explains 84.37% of the variation in self-regulation scores ($R^2 = 0.8437$), suggesting that self-efficacy is a major factor associated with the observed use and perceived effectiveness of self-regulation strategies among the learners in this study, such that learners rated as more confident and persistent in learning tasks also tend to be rated as more consistent in using coping strategies, following routines, seeking help, transitioning appropriately, and returning to tasks after frustration. This strong predictive relationship is consistent with research emphasizing that self-efficacy is closely tied to learners' strategic engagement and self-regulated learning behaviors, as learners who believe they can succeed are more likely to persist, use strategies, and re-engage after difficulty (Chen, 2022), and with evidence-based practice syntheses in autism education emphasizing that structured supports such as visual supports, reinforcement systems, and self-management procedures can simultaneously support regulation and strengthen beliefs about competence when implemented consistently (Hume et al., 2021; Steinbrenner et al., 2020). The findings further imply that interventions aimed at improving self-regulation among learners with ASD may be strengthened when paired with deliberate efforts to build self-efficacy, such that classroom

systems should not only teach coping and regulation tools but should also structure learning tasks in ways that make competence visible to learners through scaffolded steps, predictable reinforcement, and achievable short-term goals, consistent with research indicating that supportive teaching environments that sustain motivation and engagement are associated with better student involvement and adaptive participation (Olivier et al., 2020).

Synthesis

Taken together, the findings of this chapter demonstrate that the study drew on the perspectives of a predominantly female, 26 teachers or 86.67%, mature, 23 teachers or 76.67% aged 50 and above, married, 29 teachers or 96.67%, highly educated, with 36.67% holding and 40.00% pursuing doctoral degrees, and extensively experienced teaching workforce, with 93.33% reporting 15 years and above of general teaching experience and 86.67% reporting an equivalent tenure in Special Education, supplemented by substantial professional training, with 96.67% reporting 90 hours and above of relevant seminars, thereby directly addressing the objective of describing the demographic profile of the teacher-respondents. The learner profile, predominantly male at 88.46% and concentrated within the 10 to 15 age range, situates the findings within a developmental period of heightened regulatory and academic demands, fulfilling the objective concerning the demographic profile of the student-respondents. The descriptive results further reveal that learners with ASD often utilize self-regulation strategies, with a composite weighted mean of 3.78, particularly routine-based and externally supported strategies, while demonstrating comparatively lower use of higher-order, self-directed strategies such as goal-setting, WM = 3.43, and positive self-talk, WM = 3.50, addressing the objective concerning the extent of self-regulation strategy utilization. Academic achievement data show that 70.00% of learners attained High to Very High performance levels based on 23 valid GPA-equivalent entries, fulfilling the objective concerning the level of academic achievement, while the correlational analysis, $r = 0.3853$, $p = 0.0694$, fail to reject H_0 , indicates that self-regulation strategies bear only a moderate, statistically non-significant relationship with academic achievement, addressing the objective concerning this relationship and suggesting that academic success among learners with ASD is shaped by a broader constellation of instructional and contextual factors rather than self-regulation alone. Finally, the regression analysis, Pearson $r = 0.9185$, $R^2 = 0.8437$, $F(1, 28) = 151.0953$, $p = 8.43 \times 10^{-13}$, reveals that self-efficacy exerts a very strong and statistically significant influence on self-regulation strategy use, fulfilling the objective concerning the influence of self-efficacy and identifying it as a major lever for strengthening self-regulation among learners with ASD. Collectively, these findings contribute to the field by empirically situating self-efficacy, rather than self-regulation alone, as the more powerful and statistically robust predictor within this behavioral and academic framework, offering a refined understanding of how confidence-building and structured, externally supported regulatory practices interact to shape classroom engagement and achievement among learners with ASD. These results provide a sound empirical basis for the formulation of an action plan and set the stage for the summary, conclusions, and recommendations to be presented in the succeeding chapter, which will build upon the demographic, descriptive, and inferential findings established here.

CONCLUSION

This descriptive correlational study, which examined the relationship between self-regulation strategies and academic achievement among learners with ASD in selected schools in the district of Las Vegas, Nevada, as well as the influence of self-efficacy on the use and perceived effectiveness of these strategies, produced findings that offer valuable insight into the academic and behavioral profile of this population. The teacher respondents who participated in the study were predominantly female and largely within the middle aged to older age brackets, reflecting a mature and experienced teaching workforce. Most of them were married and held high educational qualifications, with a considerable number possessing doctorate degrees or units toward doctoral studies, while the majority also had extensive teaching experience, including many years of service in special education, along with substantial participation in trainings and seminars related to the field, indicating a strong commitment to continuous professional development. The learners with ASD involved in the study were mostly male and fell within the elementary to middle school age range, and their academic performance, based on cleaned GPA equivalent data, ranged from low to very high, with a notable proportion achieving high to very high academic levels.

With respect to the use of self-regulation strategies, learners with ASD were found to often employ practices such as following visual schedules, recovering from frustration, seeking help when overwhelmed, and demonstrating awareness of classroom expectations, suggesting that many of these learners possess functional self-regulatory behaviors that support their engagement in the classroom. This finding aligns with the observed variability in academic achievement among learners with ASD, wherein a considerable number attained high to very high academic performance while others demonstrated only average to low achievement, pointing to differences in individual capacity, support systems, and instructional context that shape academic outcomes within this population.

Further analysis revealed a moderate positive relationship between self-regulation strategies and academic achievement, although this relationship did not reach statistical significance at the 0.05 level. This outcome suggests that while learners with ASD are capable of achieving varying levels of academic success, including high academic performance, when appropriate instructional and behavioral supports are in place, self-regulation strategies alone do not independently predict academic performance. Academic success among learners with ASD therefore appears to be shaped by multiple interacting factors rather than by self-regulation in isolation. In contrast, a very strong and statistically significant predictive relationship was found between students self-efficacy and their use of self-regulation strategies, indicating that self-efficacy plays a critical and more decisive role in shaping how consistently and effectively learners apply these strategies in the classroom. Learners who demonstrate higher confidence, persistence, and belief in their own abilities are more likely to utilize self-regulation strategies consistently, underscoring the importance of fostering self-efficacy as a foundation for effective self-regulatory behavior.

In light of these findings, an action plan was formulated to strengthen self-efficacy and self-regulation skills among learners with ASD through structured instructional strategies, professional development for teachers, and collaborative support systems involving educators, families, and specialists. It is recommended that this action plan be implemented and periodically evaluated to assess its effectiveness in enhancing self-efficacy, self-regulation, and academic outcomes among learners with ASD, thereby ensuring that instructional practices and learner support systems in special and inclusive education settings continue to be responsive to the evolving needs of this population and supportive of their long term academic success.

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