

Sensory Based Learning and Self-Efficacy in Students with ADHD

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Introduction

Self-efficacy has been studied by many researchers in various formats dating back to Albert Bandura's studies of social foundations. As explained by Bandura (1986), self-efficacy is the perceived capabilities to organise and execute particular courses of action to complete a particular task. A student's self-efficacy is a vital component of their growth and achievement, however, some students may experience a lower sense of self-efficacy. Stemming from pre-determined diagnoses, students with ADHD may struggle with a sense of self-worth, which may dictate a generalized and perceived understanding of how they will automatically score in classes due to their disability. Results from a study of self-perception by Dumas and Pelletier (1999) indicated that students with hyperactive behaviors struggled with scholastic competence, social acceptance and behavioral conduct. An alternative study on innovative methods of learning, such as sensory based learning, aiding students with special needs learn a foreign language, it notes that students with disabilities (ie. ADHD, Autism Spectrum Disorders, Learning Disabilities, etc.) may struggle with perceptual, communication and adaptive barriers while learning, which can influence student self worth, and therefore, student performance (Kachur, 2025). Throughout transitional periods of life, particularly adolescence, the appreciation of self worth and self-confidence positively impacts academic achievements (Ashraf et. al, 2024), consequently encouraging or discouraging further motivation and achievement among students in schools.

One teaching method that has been looked to as an appropriate teaching style to engage students with ADHD is sensory based learning, or learning that utilizes multiple senses: touch, taste, smell, sound and/or sight. Recently, Azizah and Saragiah (2025)

researched how structured sensory play-based learning may increase the attention and focus, leading to greater achievement for students with ADHD. Through multi-sensory instruction, will students with ADHD participate in more self-regulated and self-motivated learning, reaching higher abilities and success? This paper will review research on ADHD and self-efficacy, as well as the effects of multi-sensory learning on ADHD student performance, discuss why this research is important, and apply this research in terms of assisting those who struggle with hyperactivity and self-regulated learning.

Literature Review

ADHD is a common neurodiverse disability which impacts the executive functioning skills of an individual, affecting around 5-8% of children in the United States (Salari et. al, 2023). According to the American Psychiatric Association (2022), the Diagnostic and Statistical Manual of Mental Disorders states that individuals with ADHD may struggle with inattention and/or impulsive behaviors and sensory processing difficulties, among other deficits. The power that ADHD holds over students and their learning can control the belief of how students will achieve, which can lead to learned helplessness or low self-efficacy. In a study done by Tabassam and Grainger (2002), both the Learning Disability and LD/ADHD groups who participated in the study, had significantly lower scores on their academic self-concept, academic self-efficacy beliefs and academic attributional style. This study aligns with a variety of research which state that students with ADHD struggle with academic competence and self-regulated learning (Kent et. al, 2011; Sibley et. al, 2019; Major et. al, 2013). Teacher relationships can impact a student's self-efficacy, with studies showing that the attitude the teacher

has in the classroom can affect children's school experience (Erickson, 2025). Students with ADHD may exhibit hyperactive behaviors, impulsive behaviors, and other executive functioning deficits, which can affect the relationship between the teacher and student. Both teachers and students alike, do best when regulated and able to access the executive states of their brains, leading to a sense of higher self worth and academic self-efficacy. Sensory-based learning can help students with ADHD regulate their physical sensory needs and attend to tasks with greater success. As researched, the integration of structured sensory play-based learning through providing multi-sensory experiences provides external structure, delivers targeted sensory stimulation and gradually improves children's self-regulation capabilities for better attention and focus outcomes (Azizah & Saragiah, 2025). Another study focused on individuals diagnosed with a form of learning difficulties were researched to determine whether multi-sensory instruction enhanced student learning and success, where both male and female participants increased their academic success (Khasawneh, 2024). An increase in academic success can be understood by an increase in understanding due to a multi-sensory approach of receiving new information, in addition to a more self-regulated learning environment. With this research in mind, it can be determined that for students with ADHD to succeed in a learning environment with a self-regulated body and mind, teachers must provide space and opportunity for students to regulate using their senses.

Application

There are a few limitations that stem from the research presented, which may pose difficulties for teachers aiming to utilize multi-sensory instruction in their

classrooms. Curriculum policy, though at times not sufficiently informed, locks teachers into specific formats of teaching, limiting creativity and the use of independently determined techniques (Wyse and Bradbury, 2022). Teachers are also sometimes left without much curriculum at all, relying on their own resources to teach students in appropriate ways. Teacher burnout rates are high, and professional self-efficacy can be lacking in those teachers (Madigan et. al, 2023), impacting teacher motivation to create and differentiate instruction in multi-sensory ways. Materials can be difficult for teachers to acquire depending on the setting in which they are teaching (Carrete-Marín et. al, 2024), which can influence the ability for the teacher to provide an exciting sensory-based instructional approach. Regardless of the limitations, there are always ways for teachers to embark into new and innovative ways to utilize student senses to enhance the learning experience.

The approach of sensory-based instruction strengthens neural connections, improves retention, and makes learning more accessible for all students, especially those with ADHD (Busari et. al, 2025). There are many ways to include multi-sensory instruction within the classroom. In a study of the effects of multi-sensory instruction and peer tutoring for students with ADHD, students who received multi-sensory instruction and peer tutoring performed better than the students who received the conventional method (Babalola, 2021). Utilizing older methods in collaboration with multi-sensory strategies can improve student achievement and self-efficacy.

Multisensory instruction is beneficial for all types of learners, those with Autism Spectrum Disorders, Learning Disabilities, and Dyslexia (Rudnick, 2021), in addition to it continuing to increase intrinsic motivation and enjoyment for typical learners, even

babies learning their ABC's (Park, 2022). Young students, grades K-2, can greatly benefit from the use of multisensory techniques when learning their phonics (Kalogris, 2024). Teachers, parents and leaders around the world can utilize multi-sensory instruction as a teaching method which increases the learner's understanding and helps with the storage of knowledge.

Discussion and Conclusions

According to this compilation of findings, it can be determined that students diagnosed with ADHD struggle with self-regulated learning and academic success typically in the format of executive functioning deficits, and therefore have a lower sense of academic self-efficacy. These findings exemplify the importance of helping students with ADHD to get their individualized needs met in order to be academically successful. According to research, some children with ADHD have a problem with a reticular formation disorder which helps the brain process new sensory based stimuli and has a role in consciousness, motivation, learning, self-control or impulsivity (Mesulam, 1981). Mesulam (1981) also states, when the brain cannot process these stimuli from the environment in the typical format, any stimulus will draw the attention of the individual with ADHD and take them off their previous course of action. When teachers are able to control the type of sensory stimuli within the environment of the learner, distractions can be limited and sensory needs can be met.

Though all of this can be deduced from a large amount of research in the area of multi-sensory instruction, more research is needed to determine the direct effects of multi-sensory instruction on a student with ADHD's self-efficacy. As reviewed prior, individuals with ADHD struggle with a lower sense of self-efficacy, especially in an

academic setting. However, within a multi-sensory framework of learning, students with ADHD improve in areas of deficit (i.e. focus, impulsive behaviors, self-regulation, student-teacher relationships), which impact the self reflective judgements made on themselves that make up their self-efficacy, or the beliefs of their educational experience. Therefore, it can be concluded that a student's academic self-efficacy will increase when students are provided with sensory-based instruction.

References

American Psychiatric Association. (2022). Neurodevelopmental disorders. In Diagnostic and statistical manual of mental disorders (5th ed., text rev.).

Ashraf, K., Zahra, S. S., Hussain, H., Noor, F., Anwar, M., Abbasi, Z. I., ... & Aliyah Usman Qureshi, H. A. (2024). Effect of Attention-Deficit on Self-Efficacy and Academic Performance in Secondary School Going Children: A Comparative Cross-Sectional Study. *International Journal*, 11(1), 421-37.

Babalola, F. G. (2021). Effects of multisensory approach and peer tutoring on academic performance of pupils with attention deficit hyperactivity disorder in literacy (Master's thesis, Kwara State University (Nigeria)).

Bandura, A. (1986). Social foundations of thought and action. Englewood Cliffs, NJ, 1986(23-28), 2.

Bettcher Erickson, N. D. (2025). THE IMPACT OF EDUCATORS' PERCEPTIONS OF NEURODIVERGENCE ON THEIR SELF-EFFICACY IN TEACHING MIDDLE AND HIGH SCHOOL STUDENTS WITH ADHD AND AUTISM IN RURAL MINNESOTA.

BUSARI, M., ROSS, H., & BERRY, D. (2025). Multisensory Approaches to Literacy Instruction.

Carrete-Marín, N., Domingo-Peñafiel, L., & Simó-Gil, N. (2024). Teaching materials for rural schools: challenges and practical considerations from an international perspective. *International Journal of Educational Research Open*, 7, 100365.

DUMAS, D., & PELLETIER, L. (1999). A study of self-perception in hyperactive children. *MCN: The American Journal of Maternal/Child Nursing*, 24(1), 12-19.

Kachur, V. (2025). SENSORY AND PLAY-BASED LEARNING: HOW INNOVATIVE METHODS HELP CHILDREN WITH SPECIAL NEEDS LEARN ENGLISH. *Pedagogy and Education Management Review*, (2(20), 75–82.

Kalogris, C. L. (2024). Effectiveness of Utilizing Multi-sensory Phonics Methods with Reading Curriculum in K-2 Inclusion. St. Thomas University.

Kent, K. M., Pelham Jr, W. E., Molina, B. S., Sibley, M. H., Waschbusch, D. A., Yu, J., ... & Karch, K. M. (2011). The academic experience of male high school students with ADHD. *Journal of abnormal child psychology*, 39(3), 451-462.

Khasawneh, M. A. S. (2024). The Role of the Multi-Sensory Environment in Developing Learning Skills Among Students with Learning Difficulties in the Asir Region. *Kurdish Studies*, 12(1).

Madigan, D. J., Kim, L. E., Glandorf, H. L., & Kavanagh, O. (2023). Teacher burnout and physical health: A systematic review. *International Journal of Educational Research*, 119, 102173.

Major, A., Martinussen, R., & Wiener, J. (2013). Self-efficacy for self-regulated learning in adolescents with and without attention deficit hyperactivity disorder (ADHD). *Learning and Individual Differences*, 27, 149-156.

Mesulam, M. M. (1981). A cortical network for directed attention and unilateral neglect. *Annals of Neurology: Official Journal of the American Neurological Association and the Child Neurology Society*, 10(4), 309-325.

Park, S. (2022). Multisensory Alphabet Instruction for Young Children. The Ohio State University.

Rudnick, A. L. (2021). The impact of multisensory techniques for 2nd grade readers who struggle to decode (Master's thesis, The William Paterson University of New Jersey).

Saragih, Y. V., & Azizah, N. (2025). Enhancing Attention and Focus in Children with ADHD Through Structured Sensory Play Based on Project-Based Learning. *Journal of Innovation and Research in Primary Education*, 4(3), 1861–1870.

Salari, N., Ghasemi, H., Abdoli, N. et al. The global prevalence of ADHD in children and adolescents: a systematic review and meta-analysis. *Ital J Pediatr* 49, 48 (2023).

Sibley, M. H., Graziano, P. A., Ortiz, M., Rodriguez, L., & Coxe, S. (2019). Academic impairment among high school students with ADHD: The role of motivation and goal-directed executive functions. *Journal of school psychology*, 77, 67-76.

Tabassam, W., & Grainger, J. (2002). Self-Concept, Attributional Style and Self-Efficacy Beliefs of Students with Learning Disabilities with and without Attention Deficit Hyperactivity Disorder. *Learning Disability Quarterly*, 25(2), 141-151.

Wyse, D., & Bradbury, A. (2022). Reading wars or reading reconciliation? A critical examination of robust research evidence, curriculum policy and teachers' practices for teaching phonics and reading. *Review of education*, 10(1), e3314.