Academic Engagement in Children With Autism Spectrum Disorder (ASD): A Systematic Literature Review

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Abstract: Children with autism have equal opportunities in education as do neurotypical children. Academic engagement in schools is important for academic achievement and learning success. Academic engagement is a multidimensional structure with emotional, cognitive, and behavioral dimensions. This study aimed to determine the factors that can lead to academic engagement among students diagnosed with autism spectrum disorder (ASD). The method used was a systematic literature review (n= 4 journals) of articles obtained from the exclusion and inclusion process (n= 175) using PRISMA. Journal articles were retrieved from an electronic database and then downloaded. The results showed that children's academic engagement at school was strongly influenced by the child's external environment, namely support and closeness with peers and teachers, as well as physical activity. School performance has shown that a supportive environment for children with autism can be conditioned. Children with autism's willingness to learn can also be optimized by taking advantage of fun activities and health. The factors identified can be used to optimize the participation of children with autism in academic life. Further research should examine internal factors in children. Related database searches can be added and expanded.

1 INTRODUCTION

Autism Spectrum Disorder (ASD) is influenced by genetic factors that cause disturbances in neurodevelopment, mentality, and behavior. According to DSM V, there are two main characteristics of ASD, the first is experiencing deficits in communication and social interaction; the second has behaviors, interests, and activities that are repetitive and limited (American Psychiatric Association, 2013). These symptoms are present from childhood, limiting and even impairing daily functioning.

ASD has deficit behavior in providing social-emotional feedback, such as difficulty talking to others and failure to respond when interacting with others. There are limitations in social skills, communication, language, behavior, and individual abilities. Children with ASD experience difficulties in communication, in addition to challenges in adapting to social environments, particularly in the context of peer relationships. Children with ASD tend to view the collaborative roles of teachers and parents in daily life, particularly at school, as a positive aspect of their educational experience (Sari et al., 2021).

Children with ASD have the same education opportunities. Schools that are open to both regular and special needs children are called inclusive schools. Inclusive schools can enhance the learning experiences of ASD children, while regular children can learn to interact with ASD friends as well (Arini & Kurniawati, 2020). Participation for students in school is important for academic achievement and learning success. However, placing ASD children in certain schools cannot be a permanent solution, because of inadequate school management and closeness between students and teachers (Gavaldá & Qinyi, 2012).

Student participation in academics is called academic engagement. Fredricks et al. (2004) explained that academic engagement is participation in academic, social, and extracurricular activities to achieve positive academic results. According to Reeve (2013), academic engagement is a multidimensional structure that includes emotional, cognitive, and behavioral dimensions. Fredricks et al. (2004) explained three aspects of academic engagement. First, emotional engagement is feeling

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positive and negative about academics (teacher, friend, and task) such as: belonging (a feeling of being important to the school) and value (an appreciation of success in school-related outcomes). Second, cognitive engagement is thoughtfulness and willingness to learn such as: psychological investment in learning, a desire to go beyond the requirements, and a preference for the challenge. Third, behavioral engagement includes involvement in academic, social, or extracurricular activities such as: entails positive conduct, involvement in learning and academic tasks, and participation in school-related activities.

Children with ASD's involvement in school will be high if there are relationships with teachers and friends, and vice versa if students experience conflict with teachers and friends, which will reduce their involvement in school (Roorda et al., 2021). Academic engagement can increase children's willingness to attend school and complete assignments. Therefore, this study aimed to determine the factors that can lead to academic engagement among students diagnosed with autism spectrum disorder (ASD).

2 METHOD

The data collection was conducted in October 2022 through electronic databases, including ScienceDirect, ProQuest, Sage Journals, and Scopus. The data collection was specifically limited to the years 2018 to 2022, focused on psychological research, and the keywords used to search the database were "academic engagement" and "Intellectual Disability" or "disability" or "autism"; "academic engagement" and "autism"; "academic engagement" and "Intellectual Disability"; "academic engagement" and "disability".

The articles were subjected to a rigorous screening process to ensure alignment with the research objectives. The article review used guidelines from selected reporting items for systematic reviews and meta-analyses (PRISMA) (Page et al., 2021). The article review process uses the Rayyan website tool (https://www.rayyan.ai/) and then excludes articles that are not appropriate and includes articles that contain information on "academic engagement" and "Autism Spectrum Disorder (ASD)". The following are the results of PRISMA with the help of Rayyan's web:

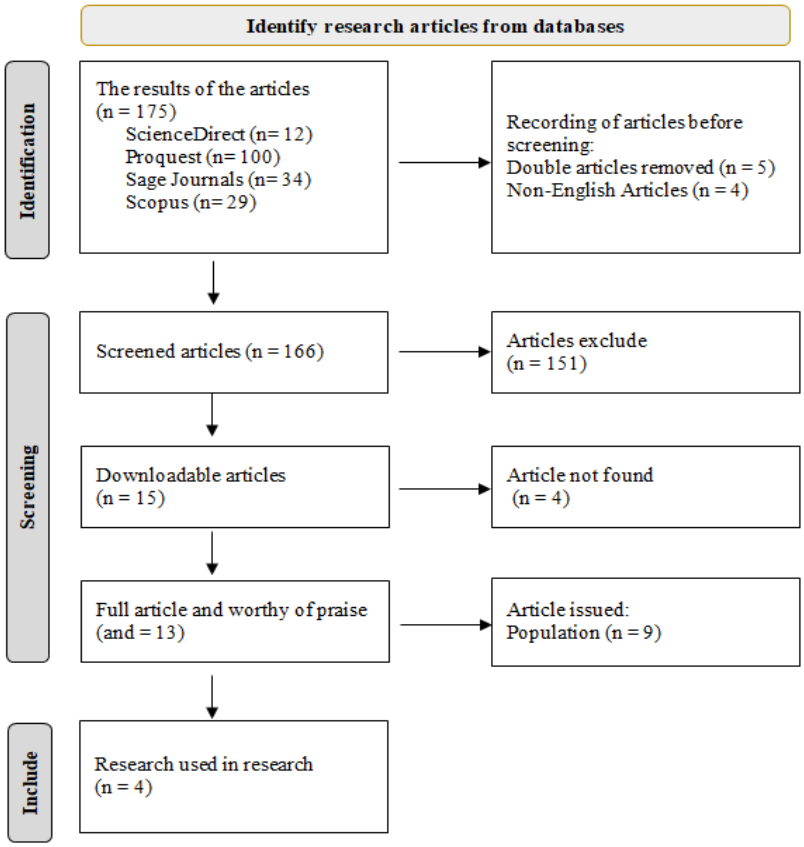

Figure 1. Review Flow by PRISMA.

3 RESULTS

The four obtained articles used different research designs, including descriptive analysis, longitudinal study, experimental, and cross-sectional surveys. The four of the studies were conducted on participants aged 5-17 years.

The result found that the influence factors of academic engagement in children with ASD include: teacher-student relationships; support from friends; physical activity; anf healthy behaviors (i.e., screen time, sleep duration) (Israel et al., 2020; Garcia & Hahs-Vaughn, 2021; Harbin et al., 2021; Losh et al., 2022). Children with ASD have difficulty surviving and concentrating on the learning process.

Israel et al. (2020) observed the three ASD children who attended comparative learning in an inclusive school. Israel et al. (2020) use the collaborative discussion framework (CDF) method to facilitate collaborative interactions and encourage students to talk with their friends. The result showed that participant 1 has the enthusiasm to complete the task independently and indirectly seeks help from friends, but interaction with the teacher rarely occurs if the teacher does not Start to approach participant 1, and participant 2 interacts with friends to ask for help in completing assignments. A different thing happened to participant 3, when he was asked to do a task that he did: play a video game, and he would return to work if the teacher asked him to. Participant 3 had little interaction with peers. Students with ASD need help and direction from other people such as friends and teachers, other people's directions can increase the independence of ASD students in solving problems or assignments (Halimah et al., 2021). The difference in academic engagement of ASD students can also be due by a process of reaction to instructions and task solving.

This was also in line with the research of Losh et al. (2022), which states that a positive student-teacher relationship at the beginning of the school year will encourage student behavioral engagement in class until the end of the school year. Teachers will teach different students every year, and the duration in proximity will affect the involvement of ASD children. This closeness can have a positive impact on students, including their becoming more adaptive, motivated, and having potential for achievement (Gallo et al., 2022). Achievement at school was proof that an environment that supports children with ASD can be conditioned. The interventions provided can be designed in school settings such as learning processes, curriculum, teachers, peers, and facilities. Optimizing and exploring children's abilities became easier.

Children with ASD's willingness to learn can also be optimized by taking advantage of fun activities and health. Children with ASD have behaviors that cannot last long and focus, giving physical activity before learning can increase the potential for being involved in academics for 20-30 minutes (Harbin et al., 2021). Physical activity had a positive emotional and, this plays a role in the success of children in life at school (Riyanto & Mudian, 2019). Another health activity in this era was the duration of using gadgets or screens in children.

Garcia and Hahs-Vaughn (2021) in their research divided 3 children profiles as follows: Profile 1 was characterized by poor health, social/academic involvement, and moderate screening duration; Profil 2 was characterized as having poor health, social/academic engagement, and the highest screen time; Profile 3 was characterized by excellent health, social/academic engagement, and the lowest screen time. These 3 profiles showed that children with ASD are 75% not included in the highest screen duration category. This study clearly found that healthy behavior was related to academic engagement and social interaction. Having a high gadget duration can stimulate children to seek information from gadgets, but it has a negative impact on controlling the emotions of children who are easily angry and talk to themselves with gadgets (Syifa et al., 2019).

Table 1. Results of Systematic Literature Review.

Author (year)	Research title	Sample	Design	Measurement	Research Result
Israel et al., (2020)	A descriptive analysis of academic engagement and	3 ASD students (grades 3 and 4)	Qualitative study (descriptive)	Observation in class to see their level of academic engagement and participation in	All three students were engaged in the activity for most of the instructional time with varying degrees of involvement and participation. All students had

Author (year)	Research title	Sample	Design	Measurement	Research Result
	collaboration of students with autism during elementary computer science			computer class. Video screen capture data. Interview as data triangulation.	difficulty surviving and working through computerization problems, and they did not receive sufficient support in overcoming this challenge. The collaborative discussion framework (CDF) did not provide sufficient support for these students.
Losh et al., (2022)	Impact of student-teacher relationship quality on classroom behavioral engagement for young students on the autism spectrum	146 second-year ASD students	Quantitative – Longitudinal study	1) The Behavioral Engagement Subscale (BES) of the Academic Engagement Scale (AES) 2) The Student-Teacher Relationship Scale (STRS) 3) The Autism Diagnostic Observation Schedule	These results indicate that the quality of the student-teacher relationship (STR) uniquely influences the engagement of classroom behavior for ASD students. Specifically, the quality of STR in the first study influenced engagement at the end of the school year, but the quality of STRs at the end of the school year did not affect engagement in subsequent school years.
Harbin et al., (2021)	The Effects of Physical Activity on Engagement in Young Children with Autism Spectrum Disorder	3 ASD participants. (2 male, 1 female). (5y 6m; 6y 4m; 6y 7m)	Experimental study	1. Physical Activity is measured using ActiGraph GT3X accelerometers 2. Engagement is observed by observing during class activities for 20-30 minutes	In summary, this study showed that brief, enjoyable, and embedded antecedent exercise (AE) predicted the increases levels of engagement during large group activities immediately after PA as well as independent academic tasks 20–30 minutes later for two out of three kindergartners with ASD.
Garcia & Hahs-Vaughn, (2021)	Health Factors, Sociability, and Academic Outcomes of Typically Developing Youth and Youth with Autism Spectrum Disorder: A Latent Class Analysis Approach	894 Children with ASD and 28,458 children without ASD (ages 12-14 (n=13,079) and 15-17 (n=16,273)).	Cross-sectional survey	ASD status obtained from doctor's statements Weight, physical activity, screen duration, sleep duration, Academic Engagement, Social Interaction obtained from parent reports with the help of question items	1) The study found that about a quarter of adolescents with ASD Profile 2 had the highest amount of screen time. In contrast, more than 50% of adolescents with ASD Profile 1 were described as having moderate screen time. 2) Results from the current study provide evidence showing that healthy behavior in adolescents with ASD was associated with academic engagement and social interaction

5 CONCLUSION

Due to the specified characteristic of participants, children with ASD, the articles reviewed in this study were limited. However, the study managed to find that academic engagement at school was strongly influenced by the child's external environment, namely support and closeness with peers and teachers. In addition, this study was also found that ASD students had learning difficulties which could be prevented by physical activity.

Future research should reviewed study in Indonesia and examined the internal factors that might influence the academic engagement of ASD students.

REFERENCES

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5 th ed.). American Psychiatric Association. https://doi.org/10.1176/appi.books.9780890425596

Arini, S., & Kurniawati, F. (2020). Sikap guru terhadap anak usia dini dengan autism spectrum disorder. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *4*(2), 639. https://doi.org/10.31004/obsesi.v4i2.410

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: potential of the concept, state of the evidence. *Review of Educational Research*, *74*(1), 59–109.

Gallo, A., Olivier, E., Archambault, I., & Morin, A. J. S. (2022). Student-teacher relationship and classroom goal structure profiles: Promoting achievement and preventing externalizing and internalizing behaviors. *Learning and Instruction*, *82*, 101684. https://doi.org/10.1016/j.learninstruc.2022.101684

Garcia, J. M., & Hahs-Vaughn, D. L. (2021). Health factors, sociability, and academic outcomes of typically developing youth and youth with autism spectrum disorder: a latent class analysis approach. *Journal of Autism and Developmental Disorders*, *51*(4), 1346–1352. https://doi.org/10.1007/s10803-020-04572-7

Gavaldá, J. M. S., & Qinyi, T. (2012). Improving the process of inclusive education in children with asd in mainstream schools. *Procedia - Social and Behavioral Sciences*, *46*, 4072–4076. https://doi.org/10.1016/j.sbspro.2012.06.200

Halimah, L., Pandikar, E., Azhari, N., & Hidayah, Y. (2021). Upaya guru dan orang tua dalam membangun karakter mandiri siswa autis di sekolah luar biasa negeri a kota cimahi. *Jurnal Hurriah: Jurnal Evaluasi Pendidikan Dan Penelitian*, *2*(3), 41–63.

Harbin, S. G., Davis, C. A., Sandall, S., & Fettig, A. (2021). The effects of physical activity on engagement in young children with autism spectrum disorder. *Early Childhood Education Journal*. https://doi.org/10.1007/s10643-021-01272-4

Israel, M., Chung, M. Y., Wherfel, Q. M., & Shehab, S. (2020). A descriptive analysis of academic engagement and collaboration of students with autism during elementary computer science. *Computer Science Education*, *30*(4), 444–468. https://doi.org/10.1080/08993408.2020.1779521

Losh, A., Eisenhower, A., & Blacher, J. (2022). Impact of student-teacher relationship quality on classroom behavioral engagement for young students on the autism spectrum. *Research in Autism Spectrum Disorders*, *98*, 102027. https://doi.org/10.1016/j.rasd.2022.102027

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*, n71. https://doi.org/10.1136/bmj.n71

Reeve, J. (2013). How students create motivationally supportive learning environments for themselves: The concept of agentic engagement. *Journal of Educational Psychology*, *105*(3), 579–595. https://doi.org/10.1037/a0032690

Riyanto, P., & Mudian, D. (2019). Pengaruh aktivitas fisik terhadap peningkatan kecerdasan emosi siswa. *Journal Sport Area*, *4*(2), 339–347.

Roorda, D. L., Zee, M., Bosman, R. J., & Koomen, H. M. Y. (2021). Student–teacher relationships and school engagement: Comparing boys from special education for autism spectrum disorders and regular education. *Journal of Applied Developmental Psychology*, *74*, 101277. https://doi.org/10.1016/j.appdev.2021.101277

Sari, A. N., Budiman, & Hadinata, E. O. (2021). Interaksi sosial anak autis di sekolah inklusi SD Harapan Mandiri Palembang. *Indonesian Journal of Behavioral Studies*, *1*(1), 122–135.

Syifa, L., Setianingsih, E. S., & Sulianto, J. (2019). Dampak penggunaan gadget terhadap perkembangan psikologi pada anak sekolah dasar. *Jurnal Ilmiah Sekolah Dasar*, *3*(4), 527–533.