Research Article

IS IT A HIDDEN HANDICAP? STUDENTS WITH SPECIFIC LEARNING DIFFICULTIES AND ITS PATTERNS OF STRENGTHS AND WEAKNESSES IN SCIENCE LEARNING

Bania Maulina^{1,*}, Alamsyah Lukito¹, Nana Mardiana²

- ¹ Fakultas Kedokteran, Universitas Islam Sumatera Utara, Sumatera Utara, Indonesia
- ² Fakultas Keguruan dan Ilmu Pendidikan, Sumatera Utara, Indonesia

Corresponding author email: <u>baniamaulinapsi@gmail.com</u>

Article Info

Received: Feb 11, 2025 Revised: Mar 05, 2025 Accepted: Apr 18, 2025 OnlineVersion: Apr 18, 2025

Abstract

The aim of the research is to explore the cognitive profiles patterns of strengths and weaknesses of children with specific learning difficulties and to assess how these profiles can inform individualized educational interventions. Using a collective case study approach, data were collected from four school-aged children (7-9 years old) with low academic performance through a mixed-method design involving parental interviews and comprehensive psychological testing. The Wechsler Intelligence Scale for Children-Revised (WISC-R) and the Marianne Frostig Developmental Test of Visual Perception were employed to assess intellectual ability, working memory, attention, and visual perception. Results revealed that all participants had average to very superior intellectual capacities, indicating that learning difficulties were not related to intelligence level. However, consistent patterns of weaknesses were identified in working memory, attention, and visualmotor coordination, while abstract verbal reasoning remained a cognitive strength. One participant exhibited a unique strength in perceptual organization, linked to enriched sensory interaction and high intellectual capacity. This research offers a novel perspective on recognizing specific learning difficulties through cognitive profiling rather than general academic performance. The findings underscore the importance of comprehensive assessments in identifying hidden handicaps and developing tailored educational strategies. The implication is clear: effective interventions must consider both cognitive strengths and weaknesses to support academic achievement and emotional well-being in children with specific learning difficulties.

Keywords: Hidden handicap, Learning problems, Pattern of strengths and weaknesses, Specific learning difficulties, Underachievers



© 2025 by the author(s)

This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

INTRODUCTION

Specific learning difficulties are one of the problems that most often arise in school, which affect about 3-4 percent of the population (Shah, Sagar, Somaiya, & Nagpal, 2019; Mandas &

Sensanen, 2022; Qiu, Ikeda & Yamashita, 2024) and these difficulties were more common in boys than girls, but there is no definitive evidence regarding gender. Data showed that more than 2.4 million children in regular schools were diagnosed with learning difficulties (Gorker, Bozatli, Korkmazlar, et al., 2017; Suaidi, Pius & Mengo, 2024).

Specific learning difficulties are issues related to a child's ability to learn and apply various skills. These skills include listening, speaking, reading, writing, reasoning as well as those for mathematics which are most often diagnosed in school aged (Stuart, et al, 2024; Syam, Falemu & Hussain, 2024). The acquisition, organization, retention, comprehension, and application of verbal or nonverbal information are all impacted by learning difficulties. Memory, attention, phonological processing, language processing, visuospatial processing, and other impairments are typically the cause of these problems, which then result in difficulties with oral language skills like speaking and comprehending grammatical constructions, reading skills like phonetic knowledge and word recognition, written language skills like spelling and alphabet recognition, and arithmetic skills like computation (Kohli & Padhy, 2019; Capin, et al. 2021).

Whereas in this case study, the focus is on specific learning difficulties which is not related to brought on by central nervous system dysfunction. Generally, the children showed poor performance in certain academic fields, but these conditions were not related to levels of intelligence (Brandenburg, et al, 2021). These children seem to have only been labeled with specific learning difficulties because their IQ's were high enough to allow them to succeed in certain subjects but low enough in others (Ottone, et al, 2019; Antonelli & Crosswaite, 2019). Mostly, they are essentially bright children which had intellectual potential in average to a very superior category. Consequently, the intelligence assessment must be an important part of the diagnostic for children with specific learning difficulties (American Psychiatric Association, 2013; Kurniawan, 2024). In addition to intellectual capacity, cognitive ability as well cognitive assessments as well could examine working memory, auditory processing, visual processing, phonological processing, and other fundamental cognitive functions. These evaluations aid in identifying particular cognitive strengths and deficits that support these children (Raharjo & Wimbarti, 2020; Asis, Ching, Suttiwan, 2023).

Patterns of strengths and weaknesses in children with specific learning difficulties have been the subject of several research. It is essential to recognize unique patterns of strengths and weaknesses to create interventions that capitalize on strengths while addressing weaknesses (Ottone, et al, 2019). The children exhibited a unique proficiency test score profile that reflects typical cognitive strengths and weaknesses. However, this individual-based analysis did not find a typical ability score profile of children (Watkins & Canivez, 2022). In general, they possess intelligence in the average or above average range or even higher. It meant that children with specific learning issues are actually smart or even talented. Therefore, it made the most crucial stage of diagnosis. In line with APA's (2013) opinion, individuals with this specific learning disorder usually (but not always) show poor performance on psychological tests related to cognitive processes. In order to accurately identify these children need comprehensive assessments. Knowing a child's preferred cognitive type might help develop more individualized and successful intervention strategies (Galletta, et al, 2021; Mature, Van Son & Che La, 2024).

Apart from that, the cognitive assessment also found that perceptual organization, motor skills, working memory and attention frequently develop into patterns of weakness (John, 2013; McCabe, 2019; Millitante et al., 2025). Deficits in working memory have been identified as a contributing factor to learning difficulties (Holmes, et al, 2021; Normalita, Svonni & Maluleka, 2023). On the Wechsler Intelligence Scale for Children, Fourth Edition (WISC-IV), it was found that children's intellectual capacities were in the normal average range, but they had a problem in digit span (both forward and backward) subtest. Some experts stated that it was related to being easily distracted. They also had problem in shift attention. They were difficult to divide their focus appropriately. As a result, they were unable to fully engage in classroom. Overall, working memory problems have been identified as a contributing factor. Although studies on working memory are still ongoing (Alloway & Carpenter, 2020).

Studies related to attention and perception have been carried out. It believed that perception plays a crucial role in the process of learning and experience. A person's perception arises from childhood through interaction with other humans which is also obtained by an individual through the five senses and then analyzed or organized, interpreted and then evaluated. Finally, people gain a meaning. It also refers to the process of grouping visual elements so that it is easy to determine the

overall meaning of the image. This is an important concept because it allows individuals to make sense of the things they see quickly. Overall, Alloway and Carpenter stated that it was arguably the most important cue for object recognitions and concept learning (Gongora, et.al, 2020).

Furthermore, visual perception, perceptual organization and visual motor skills were found to be significantly worse than verbal skills. These children have difficulty to distinguish visual stimuli and process visual information more accurately. Reading comprehension and vocabulary are prerequisites for comprehending written texts in math and reading contexts. Youngsters who have language impairments may find it difficult to understand instructions, mathematical texts, and word problems, which might affect how well they succeed in these areas, especially reading disorder and mathematics disorder (Snowling, Moll, & Hulme, 2021). Therefore, an assessment related to perception is needed (Fitri, 2023; R.k., 2023). Overall, the condition was linked to an attention deficit. Children's poor reading achievement could be caused by attention problems. Thus, improving concentration should be one of the intervention's primary objectives if we want to help children with specific learning difficulties improve their reading skills (Ferenczy, et al, 2022). Apart from obstacles in basic academic skills, children with specific learning difficulties also displayed issues with motor skills. It has shown that children with specific learning difficulties exhibited problems in fine and gross motor performance and balance. Their gross motor performance was worse compared to children in general, for example they look awkward when doing physical activities (Ibrahim, et.al, 2019).

Furthermore, common sense and the ability to reason abstractly are also considered above average. These conditions might develop into a pattern of strengths. Despite having good word meaning knowledge, but their ability to express this knowledge were limited. These children struggled frequently to find the right words (John, 2013; McCabe, 2019). The results point to difficulties in syntactic comprehension and production, suggesting that children with SLD may have trouble understanding and producing sentences with complex grammatical features. Working memory deficiencies seem to be linked to these issues, especially when it comes to tasks involving the transient manipulation and storing of language information (Stanford & Delage, 2020). Overall, Christani (2024) stated information about the unique learning profiles, known as cognitive profiles, i.e patterns of strengths and weaknesses could be associated wuth these condition to develop a supportive learning environment and to foster academic success and well being for students with learning needs. It could be utilized to diagnose clients and create the best possible interventions.

The gap analysis in this study is based on two previous studies that are relevant but have limitations in the scope of the approach. The study by Beck (2022) evaluated the implementation of reasonable adjustment plans for students with specific learning difficulties (SLD), with a primary focus on learning adjustment policies and strategies at the educational institution level. Although important, the study has not touched on the basic aspect of preparing adjustments, namely understanding the individual cognitive profile of students. On the other hand, the study conducted by Kritsotakis and Morfidi (2024) examined the linguistic abilities and reading comprehension of children with and without SLD, but was still limited to the language aspect without exploring more deeply other cognitive processes that underlie learning difficulties, such as working memory, attention, and visual perception. Therefore, the gap analysis shows the need for research that comprehensively examines the pattern of cognitive strengths and weaknesses in children with SLD through formal psychological assessments. This study is here to fill this gap by offering a cognitive profiling-based approach to provide a stronger scientific basis for designing individualized and targeted learning interventions.

This study presents a novelty by integrating a comprehensive psychological assessment approach using a combination of the Wechsler Intelligence Scale for Children-Revised (WISC-R) and the Marianne Frostig Developmental Test of Visual Perception explore patterns of individual cognitive strengths and weaknesses in children with specific learning disabilities (SLD). Different from previous studies that focused on educational policies or linguistic abilities alone, this study deeply maps cognitive aspects such as working memory, attention, perceptual organization, and visual-motor coordination as a scientific basis for designing more personalized, effective, and needs-based learning interventions for students.

SLD is often not detected early because it does not show clear physical symptoms, so children with high intellectual potential are often misunderstood as lazy or incapable. This condition causes them to not receive appropriate intervention, which has an impact on their academic performance and psychological well-being. Therefore, this research is urgently needed as an effort to provide a more accurate and scientific diagnostic basis, so that teachers, parents, and education practitioners can

develop learning strategies that are appropriate to the cognitive needs of each child. Amid the increasing number of students with learning difficulties in regular schools, understanding cognitive profiles is very important to support the success of inclusive education. Based on the explanation above, the aim of the research is to explore the cognitive profile patterns of strengths and weaknesses of children with specific learning difficulties and to assess how these profiles can inform individualized educational interventions.

RESEARCH METHOD

This study used a mixed-method design approach that combined qualitative and quantitative data (Fakhroni & Puotier, 2023; Matović & Ovesni, 2023). Quantitative data were obtained through psychological test results using the Wechsler Intelligence Scale for Children-Revised (WISC-R) and the Marianne Frostig Developmental Test of Visual Perception. Qualitative data were obtained through interviews with the participants' parents. Data from both methods were integrated to provide an in-depth picture of the cognitive strengths and weaknesses of children with specific learning disabilities. It involved four children registered as regular school, aged 8-12 years old, who were referred for a psychological examination at a psychology consulting with low academic performance score.

The research instrument consists of interview sheets and psychological examination data. Interviews were conducted with their parents and then continued with a complete psychological examination including the Wechsler Intelligence Scale for Children-Revised (WISC-R) and the Marianne Frostig Developmental Test of Visual Perception (Akgül & Afat, 2025). By using the WISC-R, information about the cognitive profile will be obtained, namely the level of intellectual ability, abstract verbal reasoning ability, working memory, attention and perceptual organization. Furthermore, data on visual perception ability which is a major characteristic for children with specific learning disabilities was obtained from the Marianne Frostig Developmental Test of Visual Perception. The instrument grid in this study can be seen in the following table 1.

Table 1. Qualitative Instrument Grid

Topics	Key Questions	Objectives	
Child Behavior Patterns	What are the main challenges your child faces in learning?	Identify key issues	
Home Environment Support	How do you support your child's learning?	Assess parental support	
Child Interactions	How does your child interact with peers?	Assess child's social skills	

Table 2. Quantitative Instrument Grid

Test Types	Components	Indicators	Items	
WISC-R	Intellectual Abilities	Overall IQ score	Logical problem solving	
	Working Memory	Remembering sequences of numbers	Digit span forward/backward	
	Attention	Focusing on tasks	Sustained attention tests	
	Perceptual Organization	Grouping visual patterns	Block design	
Marianne Frostig Developmental Test of Visual Perception	Eye-Hand	Accuracy in drawing	Drawing lines according	
	Coordination	shapes	to patterns	
	Background Differentiation	Identifying key images	Selecting objects in a crowd	
	Perceptual Grouping	Organizing visual elements into units	Solving visual puzzles	

Data regarding psychological examinations including the Wechsler Intelligence Scale for Children-Revised (WISC-R) and Marianne Frostig Developmental Test of Visual Perception wiere analyzed quantitatively. Manual instructions for correct/incorrect answers were followed, as were procedures for calculating using standar guidelines. Whereas, the interview data was analyzed qualitatively (Cheung, 2023; Dessi & Shah, 2023).

The study was conducted in three main stages. The first stage was a semi-structured interview with parents, which aimed to gain information about the child's behavioral patterns, learning challenges, and home environmental support. The interview lasted for 30-45 minutes and was conducted in a consultation room (Kofod et al., 2024; Simamora et al., 2024). The second stage was the administration of psychological testing to the child individually, involving the use of the WISC-R to measure cognitive abilities and the Marianne Frostig Developmental Test of Visual Perception to assess visual perception abilities. Each testing session lasted for 60-90 minutes under full supervision by the researcher. The final stage was data analysis, where the results of the quantitative tests and qualitative interviews were integrated through triangulation to gain a comprehensive understanding of the child's cognitive strengths and weaknesses profile (Bans-Akutey & Tiimub, 2021; Endra & Villaflor, 2024).

Parents came to the psychology bureau to carry out a complete psychological assessments related to the chief complaint. Informed consent was given to parents of children with specific learning difficulties who attend this study. Researcher also informed parents about examination procedures and data confidentiality

RESULTS AND DISCUSSION

The author conducted a psychological assessment on each participant. Through document analysis, data regarding cognitive profiles (i.e working memory, attention and perceptual organization), visual perception skills, and intellectual capacity were discovered. These would be each child's unique patterns of strengths and weaknesses.

Case study 1

NA, a boy of eight years and six months who was currently taking part in academic activities in class III elementary school at a regular school. His mother was referred to the psychological bureau by his homeroom teacher who was worried about his inability to focus. According to the teacher's report, he also needed support and more time to understand the lesson material, especially when the material was expressed in the form of long sentences. However, when it was conveyed in short sentences, he was able to understand it. These conditions had an impact on scores below standard in several subjects, i.e., math, science, English and Bahasa. Long sentences were difficult for him to understand, and he did not write to the required standard. Some of the letters had varied positions. He rearranges letters all the time. He frequently adds and subtracts letters.

Case study 2

Eight years and three months was the age of FA, the girl. She was a student in a regular school. Parents were complaining about her reading and writing skills. FA need more help than other kids to learn how to read and write. FA had trouble focusing and was often distracted. These circumstances had an effect on academic performance scores that were below average.

Case study 3

MA, a boy was enrolled in regular school system. Eight years and seven months was his age. He was lived in the plantation area for a long time. It was suggested by his school that he undergo psychological testing to address his focus problems. By now, he was still using his spelling. His ability to write was equally subpar. These circumstances had an effect on subpar academic performance results.

Case study 4

At 7 years, 3 months old, NG, a boy, started attending a conventional school. His homeroom teacher recommended that the parents schedule a psychological evaluation with the psychologist. Compared to his colleagues, he developed his learning more slowly. He needed more assistance in order to comprehend instructions. To convey his point, he employed linguistic structures backwards. These circumstances affected academic performance ratings that were below average. For some children, learning can be very difficult, particularly if they struggle with their learning problems. The strengths and weaknesses profiles of children with special learning difficulties have been the subject of several research. By using qualitative approach, this study found profile of strengths and weaknesses from four participants, which could be completely seem in the following table 3.

Table 3. Patterns of Strengths and Weaknesses for All Four Students

	Participants			
	NA	FA	MA	NG
Gender	Boy	Girl	Boy	Boy
Age	8.6 y.o	8.3 y.o	8.7 y.o	7.3 y.o
Intellectual capacity (O _{IQ})	115	93	138	112
	(H.Ave)	(Ave)	(V.Sp)	(H.Ave)
Abstract verbal reasoning	+1	0ka	+1	+1
Perceptual organization	-1	-1	+1	-1
Perceptual grouping	9.0 y.o	6.9 y.o	9.0 y.o	3.6 y.o
Figure-ground differentiation	6.6 y.o	4-0 y.o	8-3 y.o	5.9 y.o
Working memory	-1	-1	-1	-1
Attention	7.0 y.o	5.3 y.o	7.0 y.o	6.0 y.o
Perceptual Quotient (PQ)	88	66	96	93
	(below)	(below)	(below)	(below)
Eye motor coordination	7.0 y.o	5.3 y.o	7.0 y.o	7.0 y.o

Note: Ave = Average; H. Ave = High Average; V.Sp = Very Superior

We found a wide range of individual differences using the Wechsler Intelligence Scale for Children-Revised (WISC-R) test. This profile led us to the conclusion that they were talented. They did not have problems on intellectual capacity. All of them were smart because they had intelligence levels on average range (O_{IQ} = 93) to a very superior category (O_{IQ} = 138). Given their level of intellectual capacity, they ought to face no difficulties in the classroom. However, this was not the case in practice. Unfortunately, they were frequently labeled as odd, sluggish, and underachievers.

From that table, we could also see the cognitive profile of each participant. Their abstract verbal reasoning ability was likewise strong. Research indicated that children with specific learning impairments have above average abstract verbal reasoning and common-sense skills. While children seem to have a reasonable understanding of word meanings, their expressive language skills seem to be lacking. They frequently struggle to say the correct things to themselves. But the participants, all showed poor attention, working memory, and eye-hand coordination. Previous studies stated that children struggle with voice perception and recognition, especially in relation to noise. It affected children's school performance negatively. They need to have access speech signals to understand or follow verbal instructions.

Learning remains a multifaceted-phenomena to this day. A youngster is considered to have unique learning challenges when they struggle in certain areas, known as specific learning difficulties" occurs when children who are typically thought to be intelligent—not to mention a few who are intelligent beyond average—in reality struggle significantly in multiple developmental domains. One of the areas of development that faces challenges is the academic domain (Mandas & Sensanen, 2022). Therefore, the specific learning difficulties are not related to below average intelligence. In fact, these children who involved in this case study also had intellectual capacity in the average until a gifted category (John, 2013; McCabe, 2019). In this study, all partisipants were smart. They had intelligence levels from average (O_{IQ} = 93) to a very superior (O_{IQ} = 138).

These case studies illustrated the difficulties that many parents encounter in determining their children's needs and making sure that any exceptionalities are developed to the fullest extent possible. In fact, knowing a child's needs derived from patterns of strengths and weaknesses could help teachers and parents may be helpful and successfully applied to create lesson plans that meet to each student's specific needs; improve educational programs so that children can learn in a better setting. The significance of comprehending the particular cognitive aspects that have an impact on kids who struggle with memory, learning, and attention (Holmes, et al, 2021; Jumaera, Blessing & Rukondo, 2024). These was not only focused on strengths, but weaknesses profiles in children with special learning difficulties were also an important point.

Weinfeld, et al (2021) stated that these children actually performed problems in one or more of basic psychological process involved in understanding or using language, includes spoken or written language. It might manifest in the imperfect ability to listen, read, write, spell or solve mathematical problems. Furthermore, they also faced multiple challenges in classrooms settings, i.e having various auditory demands, especially understanding verbal instructions with background noise. Moreover,

auditory and visual distractions also have further hinder children's ability to focus on verbal instructions or even on task completion. Overall, it posed a risk for academic failure and underachievement (Ferenczy, et al, 2022).

In this study, although they had abstract verbal reasoning skills with a good category, but they had problems in understanding sentences, especially in long form. As a whole, it is closely related to deficit in working memory and attention. They were hard to understand or catch on the meaning of information completely. Therefore, the teacher must use shorten instructions ("one to one instruction") to reduce their working memory load. According to earlier research, children had trouble recognizing and perceiving voices, especially when there were background noise. Children's academic performance was adversely impacted. For them to comprehend or comply with spoken commands, they must have access to voice signals.

Furthermore, visual perception and visual motor skills were significantly weaker than verbal skills. Furthermore, it is believed to be an indication of attentional problems. These children have difficulties perceiving and identifying information from the environments. In addition, environmental factors also have an effect. Perception is learned through interaction with the surrounding environment. A person's perception arises from childhood through interaction with other humans. This participant has lived in the plantation area for a long time. Therefore, he has a greater chance to engage his five senses. So, it made his perception much more developed. Moreover, his intellectual capacity is a very superior category. This makes easy and fast to learn and solve new problems using logic, pattern recognition and puzzle solving which is part of perceptual organization. He also could sift through new problems and create logical solutions by identifying the patterns and relationships that cause those problems (Gongora, et.al, 2020; Ndatyapo et al., 2024). The capacity to distinguish variations and parallels in size, shape, color, and pattern is known as visual perceptual discrimination. Youngsters must to be able to identify details in visual imagery. The ability to discern minute variations in items, such as letters and numbers, in order to set them apart from one another, is known as visual discrimination. For instance, sorting coins reveals that while pennies and nickels are the same color, dimes are consistently smaller (R.K., 2023; Sirait & Ratti, 2024).

In this study, a high index in perceptual organization as unique pattern was found in one of the participants. We found one partisipant showed a high score in perceptual organization. It seen more developed than other participants. It happened because certain factors that were part of perceptual organization, namely figure ground differentiation and perceptual grouping has sufficiently developed in participant with a high index in perceptual organization. Even though figure-ground differentiation was indicated a delay (± 3 months late), but it was not significant. However, other participants showed significant delays, both on figure ground differentiation and perceptual grouping. In addition, there are other conditions that are connected to this (i.e other exceptionalities condition because his intellectual capacity was above a score of 130).

Previous research by Krämer, Möller, and Zimmermann (2021) evaluated the effectiveness of inclusive education for students with general learning disabilities through a meta-analysis. This research provides comprehensive insights into inclusive education policies and strategies in general, but does not delve into individual cognitive needs. In contrast, Ege et al.'s (2025) research focuses on mapping the strengths and weaknesses of artificial intelligence (ChatGPT) compared to humans in engineering design, with the aim of optimizing AI-based interventions. These two studies offer different but complementary approaches. Krämer et al. present a macro view of education, while Ege et al. highlight a micro approach to the strengths and weaknesses of AI systems. The present study seeks to fill the gap between these two approaches by delving into the individual cognitive profiles of students with specific learning disabilities through an analysis of their strengths and weaknesses patterns, providing a more detailed scientific basis for personalized interventions in inclusive education settings. This approach not only adds to the understanding of individual needs, but also enriches the discussion on how strengths and weaknesses patterns can be used across domains, both human and technological.

This study offers novelty by integrating an in-depth psychological approach to map the patterns of cognitive strengths and weaknesses of children with specific learning disabilities. Unlike previous studies that tend to focus on evaluating inclusive education policies in general, this study provides highly personalized insights, allowing for the design of interventions that are more tailored to the needs of individual students. Another novelty is the use of a combination of psychological instruments such as the WISC-R and the Marianne Frostig Developmental Test to describe previously under-recognized cognitive aspects, such as visual-motor coordination and perceptual organization.

The implications of this study are that it provides a scientific basis for the development of more personalized learning strategies in inclusive education settings, which can improve students' academic success and emotional well-being. In addition, the findings can serve as guidelines for teachers and parents to understand the unique needs of students, so they can provide more targeted support. However, this study has several limitations, including the small sample size, which limits the generalizability of the findings. The study also used only two primary psychological instruments, so it did not cover all cognitive aspects that may be relevant. Future research is recommended to involve more participants and additional instruments to provide a more holistic picture.

CONCLUSION

In fact, children with specific learning difficulties were talented, but they showed poor performance in basic academic skills. i.e reading, writing or mathematics. Therefore, these problems are not related to intellectual disability or lack of educational opportunities. Therefore, measuring cognitive abilities and assessing information processing activities is an important part of the diagnostic process of children with specific learning difficulties.

The information regarding cognitive profiles can be useful and effectively used for individual education program. In this case study, all of participants exhibited same type of working memory, attention and eye motor coordination. They were hard to understand or catch on the meaning of information completely. Therefore, the teacher must use shorten instructions ("one to one instruction") to reduce their working memory load. Improving concentration should be one of the intervention's primary objectives if we want to help children with spesific learning difficulties improve their reading skills. A high indice in perceptual organization as unique pattern was found in one of the participants that was arguably the most important cue for object recognition and concept learning. It might related to other exceptionalities condition. Further, remedial teaching as the alternative form of intervention for children, which in practice is based on pattern of strengths and weaknesses.

Further research is recommended to involve a larger sample size so that the results of the study can be more generalized to a wider population. In addition, the use of additional instruments such as neuropsychological tests or technology-based assessment tools can help expand the understanding of cognitive aspects relevant to specific learning disabilities.

ACKNOWLEDGMENTS

I would like to thank to our participants who volunteered to participate in this study.

AUTHOR CONTRIBUTIONS

Conceptualization and Methodology; Alamsyah Lukito. Software and Writing – Original Draft Preparation; Nana Mardiana.

CONFLICTS OF INTEREST

The author(s) declare no conflict of interest.

REFERENCES

- Akgül, S., & Afat, N. (2025). Exploring the Needs and Profiles of Gifted Children: An Analysis of WISC-R Results and Test Administrators' Recommendations. *Kıbrıs Türk Psikiyatri ve Psikoloji Dergisi*, 7(1), 39-47.
- Alloway, T. P., & Carpenter, R. K. (2020). The relationship among children's learning disabilities, working memory, and problem behaviours in a classroom setting: Three case studies. *The Educational and Developmental Psychologist*, 37(1), 4-10. https://doi.org/10.1017/edp.2020.1
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders*, 5th edition. (DSM-5 TM). American Psychiatric Association.
- Antonelli-Ponti, M., & Crosswaite, M. (2019). Teachers' perceptions about the etiology of intelligence and learning difficulties. *International Journal of Educational Psychology*, 8(2), 162-187.
- Asis, A., Ching, C. P., & Suttiwan, W. (2023). Increasing Students' Cognitive Absorption Through Remedial Learning in Physics. *Schrödinger: Journal of Physics Education*, 4(3), 86-91. https://doi.org/10.37251/sjpe.v4i3.709
- Baharudin, N. S., Harun, D., & Kadar, M. (2020). An Assessment of the Movement and Function of Children with Specific Learning Disabilities: A Review of Five Standardised Assessment

- Tools. The Malaysian Journal of Medical Sciences: MJMS, 27(2), 21. https://doi.org/10.21315/mjms2020.27.2.3
- Bans-Akutey, A., & Tiimub, B. M. (2021). Triangulation in research. Academia Letters, 2(3392), 1-7.
- Beck, S. (2022). Evaluating the use of reasonable adjustment plans for students with a specific learning difficulty. *British Journal of Special Education*, 49(3), 399-419.
- Brandenburg, J., Huschka, S. S., Visser, L., & Hasselhorn, M. (2021). Are Different Types of Learning Disorder Associated With Distinct Cognitive Functioning Profiles?. *Frontiers in Psychology*, 12, 725374
- Capin, P., Cho, E., Miciak, J., Roberts, G., & Vaughn, S. (2021). Examining the reading and cognitive profiles of students with significant reading comprehension difficulties. *Learning Disability Quarterly*, 44(3), 183-196.
- Cheung, K. K. C., & Tai, K. W. (2023). The use of intercoder reliability in qualitative interview data analysis in science education. *Research in Science & Technological Education*, 41(3), 1155-1175.
- Christani, P. (2024). Case study of student diagnosed with dyslexia and ADHD-teaching intervention strategies. World Journal of Advanced Research and Reviews, 21(1), 770-779
- Dessi, L. C., & Shah, M. (2023). Application of the Numbered Head Together Type Cooperative Learning Model to Improve Student Learning Outcomes in Mathematics Subjects. *Interval: Indonesian Journal of Mathematical Education*, 1(2), 67-72. https://doi.org/10.37251/ijome.v1i2.773
- Endra, K., & Villaflor, G. M. (2024). Integration of the POE Model and Metaphoral Thinking in Student Worksheets: Improving Mathematical Reasoning Abilities in the Modern Education Era. *Journal of Educational Technology and Learning Creativity*, 2(1), 41-53. https://doi.org/10.37251/jetlc.v2i1.981
- Fakhroni, A. A., & Puotier, Z. (2023). Efforts to Improve Mathematics Learning Outcomes Using Napier Bone Teaching Aids for Elementary School Students. *Interval: Indonesian Journal of Mathematical Education*, *I*(2), 36-46. https://doi.org/10.37251/ijome.v1i2.779
- Ferenczy, M., Pottas, L., & Soer, M. (2022). Speech perception in noise in children with learning difficulties: A scoping review. *International Journal of Pediatric Otorhinolaryngology*, 111101. https://doi.org/10.1016/j.ijporl.2022.111101
- Fitri, F. (2023). The Effectiveness of Peer Assessment in Assessing Students' Spiritual Attitudes in Islamic Religious Education Learning in Middle Schools. *Jurnal Pendidikan Agama Islam Indonesia (JPAII)*, 4(4), 95-99. https://doi.org/10.37251/jpaii.v4i4.784
- Galletta, D., D'Amaro, M., Celentano, S., Santoriello, C., & Passerini, R. (2021). Cognitive styles and specific learning disorders in children and adolescents. *European Psychiatry*, 64(S1), S384-S385.
- Giofre, D., Stoppa, E., Ferioli, P., Pezzuti, L., & Cornoldi, C. (2016). Forward and backward digit span difficulties in children with specific learning disorder. *Journal of Clinical and Experimental Neuropsychology*, *38*(4), 478-486. https://doi.org/10.1080/13803395.2015.1125454
- Gongora, D., Vega-Hernández, M., Jahanshahi, M., Valdés-Sosa, P. A., Bringas-Vega, M. L., & CHBMP. (2020). Crystallized and fluid intelligence are predicted by microstructure of specific white-matter tracts. *Human brain mapping*, 41(4), 906-916. https://doi.org/10.1002/hbm.24848
- Gorker, I., Bozatli, L., Korkmazlar, U., Karadag, M. Y., Ceylan, C., Sogut, C., & Turan, N. (2017). The probable prevalence and sociodemographic characteristics of specific learning disorder in primary school children in Edirne. *Archives of Neuropsychiatry*, *54*(4), 343. https://doi.org/0.5152/npa.2016.18054
- Holmes, J., Guy, J., Kievit, R. A., Bryant, A., Mareva, S., CALM Team, & Gathercole, S. E. (2021). Cognitive dimensions of learning in children with problems in attention, learning, and memory. *Journal of Educational Psychology*, 113(7), 1454–1480. https://doi.org/10.1037/edu0000644
- Ibrahim, S., Harun, D., Baharudin, S., & Hui, E. J. T. (2019). Motor performance and functional mobility in children with specific learning disabilities. *Med J Malaysia*, 74 (1), 35.
- John, A., Sadasivan, A., Sukumaran, B., Bhola, P., David, N. J., & Manickam, L. S. S. (2013). Practice guidelines: Learning disability. *Indian Journal of Clinical Psychology*, 40(1), 65-88.
- Jumaera, S., Blessing, O. T., & Rukondo, N. (2024). Optimizing Student Activities and Learning Outcomes through Problem Solving Models in Stoichiometry Material. *Journal of Chemical*

- Learning Innovation, 1(2), 39-44. https://doi.org/10.37251/jocli.v1i2.1147
- Kurniawan, Y. (2024). Motivation of Class XI Students towards Learning Physical Education Sports and Health. *Multidisciplinary Journal of Tourism*, *Hospitality*, *Sport and Physical Education*, *I*(1), 16-20. https://doi.org/10.37251/jthpe.v1i1.1038
- Kofod, F. G., Christensen, A. M. S., Hvidt, E. A., Arreskov, A. B., & Guassora, A. D. (2024). Space, time, and presence in video consultations: an interview study in Danish general practice. *BMC Primary Care*, 25(1), 425.
- Kohli, A., & Padhy, S. K. (2019). Profile of Deficits on Assessment Battery in Children with Specific Learning Disorders. *Journal of Postgraduate Medicine, Education and Research*, 52(3), 120-127.
- Kritsotakis, G., & Morfidi, E. (2024). Reading Comprehension and Linguistic Abilities of Children with and without Specific Learning Difficulties: Theoretical and Educational Implications. *Education Sciences*, 14(8), 884.
- Mandas, A. L., & Sensanen, E. (2022). Kesulitan Belajar Spesifik pada Anak SD. *Journal of Psychology Humanlight*, 3(2), 114-124.
- Matura, E., Van Son, Q., & Che Lah, Y. (2024). Exploring the potential of traditional congklak in the development of early childhood cognitive abilities. *Journal of Basic Education Research*, *5*(2), 48–53. https://doi.org/10.37251/jber.v5i2.959
- Matović, N., & Ovesni, K. (2023). Interaction of quantitative and qualitative methodology in mixed methods research: integration and/or combination. *International Journal of Social Research Methodology*, 26(1), 51-65.
- McCabe, S. (2019). Pattern of Strengths and Weaknesses in WISC-V Profiles: Implications for Specific Learning Disability Identification (Doctoral dissertation, Fairleigh Dickinson University).
- Militante, A., Ferrer, B., Añonuevo, B., De Lara, R. B., Bastida, E., & Sabanal, J. J. (2025). Service-Learning Integration as Pedagogical Strategy for Enhancing Higher Education Students' Global Citizenship Competencies. *Journal of Social Knowledge Education (JSKE)*, 6(1), 38-53. https://doi.org/10.37251/jske.v6i1.1222
- Moll, K., Kunze, S., Neuhoff, N., Bruder, J., & Schulte-Körne, G. (2014). Specific learning disorder: Prevalence and gender differences. *PLoS one*, *9*(7), e103537. https://doi.org/10.1371/journal.pone.0103537
- Ndatyapo, N. N., Abdulkarimli, Z., Aihua, Y., & Basa, R. (2024). Forensic Linguistic Analysis of Defamation in Everyday Life. *Journal of Language, Literature, and Educational Research*, *1*(2), 102-110. https://doi.org/10.37251/jolle.v1i2.1382
- Normalita, E., Svonni, C., & Maluleka, P. (2023). Application of Discussion Methods and Memory Board Games to Increase Student Activity and Learning Outcomes in History Learning. *Indonesian Journal of Education Research (IJoER)*, 4(6), 147-154. https://doi.org/10.37251/ijoer.v4i6.774
- Ottone-Cross, K. L., Gelbar, N. W., Dulong-Langley, S., Root, M. M., Avitia, M. J., Bray, M. A.,& Pan, X. (2019). Gifted and learning-disabled: A study of strengths and weaknesses in higher-order processing. *International Journal of School & Educational Psychology*, 7(sup1), 173-181.
- Qiu, L., Ikeda, F., & Yamashita, N. (2024). Development of Logic-Based Question Classification Methods to Measure the Ability to Ask Questions Essential for Setting Research Questions. Integrated Science Education Journal, 5(2), 91-100. https://doi.org/10.37251/isej.v5i2.1003
- R., K. (2023). A study to assess the effectiveness of Stroop task performance to improve visual perceptual discrimination among various childhood disorders at selected home, Puducherry. *International Journal of Advanced Research*, 11(12), 172–176. https://doi.org/10.21474/ijar01/17972
- Raharjo, T., & Wimbarti, S. (2020). Assessment of learning difficulties in the category of children with dyslexia. *Jurnal Konseling Dan Pendidikan*, 8(2), 79-85
- Shah, H. R., Sagar, J. K. V., Somaiya, M. P., & Nagpal, J. K. (2019). Clinical practice guidelines on assessment and management of specific learning disorders. *Indian journal of psychiatry*, 61(Suppl 2), 211. doi: 10.4103/psychiatry.IndianJPsychiatry_564_18
- Sirait, M. C., & Ratti, P. (2024). Building Health Awareness: Analysis of the Relationship between Knowledge and Attitude with BSE Behavior in Public Health Science Students. *Journal of Health Innovation and Environmental Education*, 1(2), 53-59.

https://doi.org/10.37251/jhiee.v1i2.1206

- Simamora, N. N., Alrefay, K. A., Qasem, A. A., Lorenzo, A., & Kara, M. K. (2024). The Influence of Teachers' Digital Literacy and the Use of Technology Media on Students' Ability to Identify Hoaxes in the Digital Era. *Journal of Educational Technology and Learning Creativity*, 2(2), 223-234. https://doi.org/10.37251/jetlc.v2i2.1412
- Snowling, M. J., Moll, K., & Hulme, C. (2021). Language difficulties are a shared risk factor for both reading disorder and mathematics disorder. *Journal of Experimental Child Psychology*, 202, 105009.
- Stanford, E., & Delage, H. (2020). Complex syntax and working memory in children with specific learning difficulties. *First language*, 40(4), 411-436.
- Stuart, N., Zoia, S., Biancotto, M., & Barnett, A. L. (2024). The Handwriting Legibility Scale: A Language and Age Extension for Students With and Without Specific Learning Difficulties. *Journal of Motor Learning and Development*, *I*(aop), 1-25.
- Suaidi, M., Pius, O. H., & Mengo, N. (2024). The Implementation of Teaching and Learning English for Tourism of Tourism and Hospitality Majors. *Journal Evaluation in Education (JEE)*, 5(3), 118-122. https://doi.org/10.37251/jee.v5i3.1050
- Syam, M. I., Falemu, F. A., & Hussain, M. B. (2024). Integration of Qur'anic and Hadith Values in Evolution Learning: Innovation of Biology Modules Based on Faith Education. *Journal of Academic Biology and Biology Education*, 1(2), 66 74. https://doi.org/10.37251/jouabe.v1i2.1143
- Watkins, M. W., & Canivez, G. L. (2022). Are There Cognitive Profiles Unique to Students With Learning Disabilities? A Latent Profile Analysis of Wechsler Intelligence Scale for Children–Fourth Edition Scores. *School Psychology Review*, *51*(5), 634-646
- Weinfeld, R., Barnes-Robinson, L., Jeweler, S., & Shevitz, B. R. (2021). Smart kids with learning difficulties: Overcoming obstacles and realizing potential. Routledge.