

# Diagnostic validity of the fifth Integrated version of IQ scales Wechsler children in students with learning disabilities in Mazandaran province

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## ABSTRACT

In this Research, the "diagnostic validity of the fifth integrated version of Wechsler IQ scales for children with learning disabilities in Mazandaran province Students" has been studied. The main question of the research is whether the fifth integrated version of Wechsler Intelligence Scales for children with learning disabilities in Mazandaran province has diagnostic validity. The present research method is in the field of psychometric studies, which is a subset of the methodological research method. The research community includes all students of Mazandaran province who are studying in the first elementary school (first, second and third grade) in the 97-98 academic year and as students with learning disabilities in private and public centres under Coverage of educational-therapeutic services, consisting of 240 students with learning disabilities were selected as the sample size using purposive sampling. The measurement Instrument in this Research is the fifth integrated version of the Wechsler Children's Intelligence Scale, which has good validity and reliability. The statistical model used in the present Research to determine diagnostic validity is the confidence interval method. Finally, the research findings showed that the tests of "Digit Span Forward", " Digit Span Backward" and "sentences recall" in students with learning disabilities have diagnostic validity and can exclude students with learning disabilities from other students.

## **1. Introduction**

The term "learning disability" refers to the disability of that group of children who have a disorder in one or more basic psychological processes related to understanding language or its spoken or written use; This disorder may manifest as an inability to listen, think, speak, read, write, spell, or perform mathematical calculations. This term includes complications such as cognitive disabilities, brain damage, partial brain dysfunction, dyslexia, and developmental aphasia. But it does not include those types of learning problems that are the result of visual, hearing, or movement disabilities, mental retardation, emotional disorder or unfavourable environmental, cultural or economic situation (Lerner, 1997; Danesh translation, 2019).

Learning disability first entered in the 1960s as the newest subfield in the realm of exceptional children. In 1963, Samuel Kirk, at a meeting of parents in New York City, first coined the term "learning disabilities" for children who have problems in school but cannot be considered as emotional disorders or mental retardation. suggested (Ahadi and Kakavand, 2011).

Many students in schools suffer from severe learning difficulties despite the absence of any physical or emotional problems. Usually, these students have average or high intelligence, but in almost the same educational conditions, they show weaker academic performance than other students, and despite being in a suitable educational environment, as well as the absence of obvious biological wastes and the absence of problems Acute social and psychological problems are not able to learn in certain fields (reading, writing and calculation). These students gradually realize that their other classmates are better than them academically, and feel inferior. they experience and little by little dislike of lessons and school arises in them. The topic of students who have learning problems is not new, but the concept of learning disabilities has a short and turbulent history. Learning disabilities are included in the four categories of reading disability, math disability, written expression disability, and unspecified learning disability (Fraser, Youngstrom, Glotting and Watkins, 2007).

The 5th supplemental version of the Wechsler Children's Intelligence Scales was published as a supplemental tool that provides increasingly useful indicators for learning disorders and attention-deficit/hyperactivity/impulsivity. This tool provides standard indicators to measure exam behaviour, problem-solving style and cognitive processes. David Wechsler and Edith Kaplan (2015) believe that the supplementary version examiner should have a lot of mastery in the field of process-oriented approach assessment.

On the other hand, the process-oriented approach was published in the supplementary version related to the Wechsler intelligence scales for children in 2004. This action is known as a turning point in the practical fields of measuring the structure of intelligence with a process-oriented approach. After that, in 2014, the fifth edition of the Wechsler IQ Scales for children was published, and everyone was waiting for the publication of the supplementary edition in 2015. Therefore, Wechsler's supplementary version always follows the process-oriented approach in cognitive assessment (Flanagan, Fiorello and Ortiz, 2010).

The supplementary version related to the fifth version of the Wechsler IQ scale for children, like the supplementary version related to the fourth version of the Wechsler IQ scale for children, is used in the fields of measuring learning disabilities and provides a suitable platform for identifying and then educational-clinical interventions based on Kettle, Horn and Carroll's theory provides. Therefore, it is necessary to compare the subject's level scores in the verbal comprehension scale from the fifth edition with the supplementary edition (Donna and Watkins, 2012).

From the research conducted in this field, we can refer to Bernstein and Tigerman (1991), who believe that vocabulary knowledge has a high relationship with academic achievement. Having a wide vocabulary allows the child not only to understand and express complex topics, but also to gain a higher ability in reading and writing.

Also, Kanios, Watkins and McGill (2018) evaluated the fifth version related to the Wechsler intelligence scales for children. Researchers with a sample size of 415 people found that this tool has good content and construct validity. In addition, it has diagnostic validity in groups of exceptional children, especially attention deficit disorder and learning disorder.

Kanios, Watkins and Dembrowski (2018) addressed the structural validity of the fifth version of Wechsler's intelligence scales. In this way, researchers with a sample size of 2200 people were able to confirm 5 scales in the second level and 32 tests in the third level through the method of confirmatory factor analysis. Finally, the findings of the confirmatory factor analysis were representative of the internal structure of the fifth version of the Wechsler IQ scales in normative groups. Based on psychometric analysis, it was determined that both the fifth and supplementary versions of the Wechsler intelligence scales for children have structural validity and 32 tests can be presented in 5 scales.

Dembrowski, Kanews, Watkins, and Biogin (2015) conducted an exploratory two-factor analysis of the fifth and supplementary version of Wechsler's intelligence scales with 32 tests. According to the sample size of 2200 people from the normative group, it was determined that this tool has 5 factors of verbal comprehension, visual visualization, fluid reasoning, active memory and processing speed. Finally, the findings of the research showed that the tool has construct validity and can include 5 scales with 32 tests in the hierarchy of internal structure. Also, its concurrent validity was calculated with the fourth and supplementary version of the Wechsler IQ Scales for children with a value of 0.78, which indicates concurrent validity..

Leserf and Kanios (2018) analyzed the confirmatory and supplementary exploratory factor of the fifth edition of Wechsler's intelligence scales. Referring to psychometric analysis, the researchers stated that it is not possible to mention 5 factors as its constituent factors, but the tool has 4 scales. Exploratory findings emphasized the internal structure of the fourth version of Wechsler's intelligence scales; Because in this version, the internal structure had only 4 scales. Finally, the researchers proposed the internal structure of the fourth version of the Wechsler intelligence scales for the fifth version of the Wechsler intelligence scales.

Dombrowski, Kanews and Watkins (2018) discussed the internal structure of the fifth version of Wechsler's intelligence scales. According to the separation of 2200 people from the samples into four age groups: 6 to 8 years, 9 to 11 years, 12 to 14 years, and 15 to 16 years, it was determined that in the age range of 6 to 11 years, the internal structure of this tool has 4 scales. but in the age range of 12 years and above, the internal structure increases to 5 factors.

Therefore, considering that the supplementary version of the fifth version of the Wechsler intelligence scales for children is used as a tool for diagnosis and educational interventions for learning disabilities, it is necessary to use the existing tool as a supplementary information collection tool. brought Emphasises the process of diagnosing a learning disability, it is suggested that after screening for a learning disability, it is necessary to diagnose the learning disability and use them to derive diagnostic criteria for a learning disability; Then he used the components above in the context of psychometrics and using the process of operationalization or operational definition, put forward the diagnostic criteria in an operational form. Such measures can lead to the importance of diagnostic tools in the field of learning disabilities and create the belief that the development of diagnostic tools in the field of psychology of exceptional children especially learning disabilities is a regional action in commented; Because it should be mentioned as a national movement. Through the development of diagnostic tools in the field of learning disabilities, it is easy to design effective therapeutic interventions and create significant empowerment for students with learning disabilities, which is about 15% (Kamkari and Shokarzadeh, 2015).

Therefore, the theoretical gaps in the cognitive field and the lack of empirical findings in the field of intelligence scales for children's clinical problems have made the research problem highly complex. Referring to the lack of empirical findings in the field of diagnostic validity of the supplementary version related to the fifth version of the Wechsler intelligence scales for children,

which is considered the source of the problem, the main question of the research is as follows: Is the fifth version Does the addition of Wechsler's intelligence scales for children in students with learning disabilities in Mazandaran province have diagnostic validity?

## Method

According to the subject of the present research, which is aimed at "diagnostic validity of the fifth supplementary version of the Wechsler intelligence scales for children in students with learning disabilities in Mazandaran province", the present research is in the field of psychometric designs, which is a subset of methodological studies. It is cognitive, it takes place and by emphasizing the assumption of methodological designs, psychometric features such as validity and reliability are always taken into consideration, which in the present research is one of the types of validity which is diagnostic validity and for the group. Clinical - exceptional cases are used and have been discussed. Therefore, the current research method is psychometric and it is in the field of methodological research.

The statistical population of this research is all the students of Mazandaran province who are studying in the first period of elementary school (first, second and third grade) in the academic year 97-98 and as students with learning disabilities in private centres They are covered by government educational-therapeutic services (they have a diagnostic file as learning disorder) and they are considered as a statistical population.

Therefore, in order to determine the sample size and sampling method, after referring to the psychological file of students with learning disabilities, a more detailed evaluation of the subjects was done and based on the academic performance, the diagnosis of learning disorder was made. Was performed. In this way, the accurate evaluation of students' academic performance was considered as an action that the researcher paid attention to under the conditions or criteria for entering the current research; Also, the absence of brain damage, absence of sensory impairment (vision and hearing impairment), motor impairment and, most importantly, the absence of mental impairment were mentioned among other criteria. Any injury in the sensory, motor and psychological fields was considered as the criteria for leaving the present study. Therefore, among the centres of Mazandaran province, 12 centres were selected as samples and 20 people from each centre were evaluated as samples. Finally, 240 people were selected as a statistical sample in the present study with the purposeful sampling method available to the candidates.

The tool used in this research, as it is clear from the title of the research, is the fifth supplementary version of the Wechsler intelligence scales for children, which was compiled and standardized by Edith Kaplan, who is known as one of the greatest founders of intelligence measurement. Following David Wechsler, he sought to develop a process approach to the clinical assessment of intelligence. Kaplan also emphasized on evaluating the subject's behaviours, problem-solving styles and cognitive processes of the subject during the test to gain more knowledge about the subject's cognitive processes. He was able to use the process approach in measuring the structure of intelligence, and for more than thirty years, he has obtained valid achievements from the application of the process approach to the clinical psychology assessment of neurotic children.

Kaplan believed that the process approach can provide more information about cognitive deficits, which leads to the collection of a wider range of clinical information. Analyzing different types of subject errors is an effective method that has gained global fame in clinical fields by Kaplan. In addition, the analysis of various strategies of the subject is one of the other solutions that can provide valuable information about psychological complications in the subject's cognitive actions.

Edith Kaplan believes that the process-oriented approach in the clinical assessment of intelligence leads to more sensitivity in the structuring of individual intelligence assessment tools, increasing the sensitivity feature in intelligence structure assessment tools leads to a more accurate identification of the subject's strengths and weaknesses in the functions To obtain knowledge and the needs of educational-psychological intervention are based on measurement, such measures are considered as a necessity for the development of Wechsler's supplementary scales of intelligence.

Sensitive tools to identify the subject's weaknesses and strengths with an emphasis on cognitive processes that can provide more comprehensive clinical information to the subject's intervention needs is the basic assumption of Wechsler's supplementary intelligence scales. When the diagnosis can lead to identification and needs assessment based on psychological assessment, then it should be emphasized to compare the subject's performance in two integrated versions of individual Wechsler intelligence scales for children. This type of information can be obtained by comparing the subject's performance in children's Wechsler intelligence scales with additional children's Wechsler intelligence scales. This process started in the fourth version of the Wechsler Intelligence Scales for children and it is also observed in the fifth version of the Wechsler intelligence scales for children.

Dean Delis (2015) believes that child clinical psychologists, clinical neuropsychologists, school psychologists, child psychiatrists and other specialists who do not consider psychological assessment to be limited to diagnosis and should lead diagnosis to identification, implement , scoring and interpretation of the fifth edition of the Wechsler supplementary intelligence scales for children in need. Referring to the intra-subject inter-scale approach, he suggests that the comparison of the subject's functions in two scales, the fifth version and the supplemental Wechsler supplement for children, provides rich and diverse clinical information.

When Edith Kaplan modified the third edition of the Wechsler IQ Scales for Children as a process tool in 1999 and scored such measures with Woodcock's supervision and practical guidelines, she was able to expand the scope of interpretation beyond the assessment of intelligence and developmental level scores. to give He was able to present the clinical effectiveness of the process approach to the world by comparing the dispersion among the balance scores. This process continued and several achievements were made by comparing the fourth edition of the Wechsler IQ Scales for children with the fourth edition of the supplementary Wechsler Intelligence Scales for children to assess the need for interventions. Today, the comparison of the fifth edition of the Wechsler intelligence scales for children with the fifth edition of the supplementary Wechsler intelligence scales for children is known as the transformation of diagnosis to identification in neurodevelopmental disorders.

Supplemental version, different range of questions or response frameworks such as multiple choice increases the clinical efficiency of Wechsler IQ scales. By comparing the functions of the subject in the fifth edition of the Wechsler intelligence scales for children (which has 16 tests) with the fifth edition of the supplementary Wechsler intelligence scales for children (which has 14 tests), the professional tester can obtain useful information for diagnosis, identification and assessment of educational needs. - Provide treatment.

The fifth supplementary version of the Wechsler intelligence scales for children was designed and standardized in 2015 by Edith Kaplan. The approach of this clinical tool is that it is implemented individually for the cognitive evaluation of children between 6 years 16 years and 11 months. The fifth supplemental version of the Wechsler intelligence scales for children includes five main scales verbal comprehension, visuospatial processing, fluid reasoning, working memory and processing speed. The tool has 14 tests. There are multiple-choice of similarities, multiple choice of words, multiple choice of image words, multiple choice of information and multiple choice of understanding in the verbal comprehension scale. In addition, multiple design options are placed with the cube on a visual-spatial scale. Also, the weights of process image, process calculations and written calculations are placed in the scale of fluid reasoning. Spatial capacity and sentence recall are on the working memory scale, and encoding recall, encoding copy, and deletion abstraction are on the processing speed scale.

Finally, it is suggested that the calculations related to the diagnostic validity were done through the confidence interval method; In examining the diagnostic validity of the differences between the intelligences of the Wechsler intelligence scales, various methods have been mentioned, but the confidence interval method of more than one standard deviation is the most accepted method to identify the diagnostic validity of the intelligence of the Wechsler intelligence scales. This

method is also used to identify the diagnostic validity of intelligence, which are related to four intelligences in Wechsler, which provides comprehensive information for examining the diagnostic validity by emphasizing the four bits of intelligence. To identify the intelligence skills of Wechsler's intelligence scales, which are verbal comprehension, visual-spatial, perceptual reasoning, working memory and processing speed, it is possible to emphasize the detailed examination of the diagnostic validity of the tests of said scales to identify learning disabilities. had in cases where the said difference exceeds one standard deviation, it is possible to refer to the related intelligence or the test as a diagnostic axis and consider it to have diagnostic validity. Therefore, if each of the five intelligences in Wechsler (except total intelligence) has a score of less than 85 in the scales of active memory and verbal comprehension as a clinical sample, or each of the tests has a score of less than 7 in the tests related to If the scales of verbal comprehension and memory are active, the aforementioned axis can be considered to have diagnostic validity (Rovid, 2011). According to the examination of the five intelligences in the 5th supplementary version of Wechsler for children, experimental averages are presented first, and then, emphasizing the confidence interval method, the cut-off point of 85 for the scales and the cut-off point of 7 for the tests as a lower standard deviation. They are considered from the average to be able to determine the diagnostic validity of the combined axes related to the intelligence and tests in question.

### Findings

Emphasizing the confidence interval method to calculate the diagnostic validity, it can be stated that there is a significant difference at the  $\alpha=0.01$  level between the theoretical average (score of 10) and the experimental averages in the "direct spatial capacity" tests. There is "reverse spatial capacity" and "sentence recall"; Therefore, since the experimental averages are lower than the theoretical average, it can be said that the "direct spatial capacity", "reverse spatial capacity" and "sentence recall" tests in the fifth supplementary version of the scale Wechsler's IQ of children in learning disabled students has diagnostic validity and can show good performance in diagnosing students with learning disabilities.

### Discussion and conclusion

Considering that all children in literate societies have the right to be literate, and in the education system, it is expected that students read fluently and understand what they have read at the end of primary school, and as a result, they can read to learn. Therefore, there are many concerns about children who have reading problems in the school system. However, reading disorders are generally associated with other neurodevelopmental disorders, such as disruptive behaviour disorders, and anxiety is proportionally increased in dyslexic individuals (Carl and Iles, 2006; cited by Snowling and Holm, 2012). Therefore, the existence of a suitable tool to diagnose dyslexia is necessary and important.

Therefore, accurate and advanced tools are needed to diagnose and identify exceptional children, which has established a new discipline as exceptional assessment. In exceptional assessment, the principles and techniques of psychometrics are used and efforts are being made to find accurate tools with optimal sensitivity in the fields of diagnosing exceptional children with emphasis on the structure of intelligence, especially mentally retarded, gifted, learning disabled and the standard superlative form (Kamkari, Shokarzadeh and Kiyomathi, 2016).

Such actions require the structuring, accreditation, and legalization of various psychological tests. Psychological tests are classified in the dimensions of ability and personality, which can easily be considered as the most important and original psychological test in the exceptional measurement movement. Considering the movement of exceptional assessment on the one hand and the importance of measures related to the diagnosis and identification of these children on the other hand, reliable tools in the field of exceptional assessment have been designed to identify these children, which can be referred to the fourth and supplementary version of Wechsler's intelligence scales. Children pointed out. Since the diagnostic validity of the mentioned version in students with learning disabilities has not been investigated, therefore, in the present research, the

diagnostic validity of the fifth supplementary version of Wechsler's intelligence scales in students with learning disabilities in Mazandaran province has been discussed. The findings of the research according to the main question of the research are presented as follows:

Does the supplementary version of the Wechsler intelligence scale for children have diagnostic validity in students with learning disabilities in Mazandaran province? In line with the test of the above question, by using the confidence interval method, it was determined that there is a significant difference at the level of  $\alpha=0.01$  between the theoretical average (score of 10) and the experimental averages in the "direct spatial capacity" tests. There is inverse spatial capacity" and "sentence recall"; Therefore, since the experimental averages are lower than the theoretical average, it can be said that the "direct spatial capacity", "inverse spatial capacity" and "sentence recall" tests in the fifth supplementary version of the scales Children's intelligence has diagnostic validity in learning disabled students and can show good performance in diagnosing students with learning disabilities.

Finally, by comparing the findings of the current research and the research conducted in the field of the fifth supplementary version of the Wechsler intelligence scales for children, it is suggested that little research has been done in the field of the fifth supplementary version of the Wechsler intelligence scales for children and most of the research in the field The psychometric properties of the fifth edition of the Wechsler intelligence scales for children have been carried out; Therefore, the comparability of the findings of the current research with previous research is limited. Nevertheless, the comparison of the existing and conducted research in the field of the fifth supplementary version of the Wechsler intelligence scales for children is discussed. Among the research that have been conducted in this field, Miller's (2015) research on the "Presentation of the school's neuropsychological assessment model by combining the fourth edition of the Woodcock-Johnson cognitive tests, the fifth edition of the Wechsler intelligence scales for children, the fifth supplementary edition Wechsler intelligence scales for children and the third version of the Wechsler intelligence scales for adults" pointed out that the only research conducted in the field of the fifth supplementary version of the Wechsler intelligence scales for children. In the current research, it has been suggested that the fifth supplementary version of Wechsler's intelligence scales for children has diagnostic validity and can distinguish students with learning disabilities from normal students in Mazandaran province; Therefore, it can be used as a reliable and valid tool that has desirable psychometric properties, in learning disorder centers and schools, and all curriculum planning experts, learning disorder experts in The Ministry of Education and the Exceptional Organization, the consultants of the counseling centers affiliated to the Exceptional Organization and Education should use it as a diagnostic tool; Because in Miller's research, it was also suggested that the tests of the fifth supplementary version of the Wechsler IQ Scales for children have simultaneous validity with three other tools under the fourth edition of the Woodcock-Johnson cognitive tests, the fifth edition of the Wechsler IQ Scales for children and the version The third is Wechsler's intelligence scales for adults and all four tools are used in the same direction and to complement each other and can be used to diagnose and identify students with learning disabilities. Therefore, the findings of the current research are consistent with the research of Miller (2015).

Finally, it is presented because the research finding is aimed at the standardization of the fifth supplementary version of the Wechsler intelligence scales for children in learning disabled students of Mazandaran province and the findings showed that all the intelligence scales and tests of the said scale have It has diagnostic validity and the tests related to working memory have diagnostic validity, it is suggested that the specialized group of learning disabilities in the education and upbringing of exceptional children and especially learning disabilities centres of Mazandaran province use the said scale to A way to identify students with learning disabilities.

**The table related to the examination of "diagnostic validity" of the fifth supplementary edition of the scales Wechsler's intelligence of children in learning disabled students with emphasis on the "Confidence Interval" method**

Diagnostic validity	Space confidence	Average theory	Experimental average	Tests	Scales
does not have	less than 1 standard deviation	10	9/02	Multiple choice of similarities	<b>verbal comprehension</b>
does not have	less than 1 standard deviation	10	9/24	Multiple choice words	
does not have	less than 1 standard deviation	10	9/37	Multiple choice visual vocabulary	
does not have	less than 1 standard deviation	10	8/66	Multi-choice information	
does not have	less than 1 standard deviation	10	9/36	Multiple choice comprehension	
does not have	less than 1 standard deviation	10	9/04	Multiple design options with cubes	<b>Visual-spatial</b>
does not have	less than 1 standard deviation	10	9/27	A process of shape weights	<b>Fluid reasoning</b>
does not have	less than 1 standard deviation	10	9/01	Calculation process (Part A)	
does not have	less than 1 standard deviation	10	9/06	Calculation process (Part B)	
does not have	less than 1 standard deviation	10	8/66	Written calculations	
does not have	less than 1 standard deviation	10	6/88	Direct spatial capacity	
does not have	less than 1 standard deviation	10	6/69	Inverse spatial capacity	<b>active memory</b>
does not have	less than 1 standard deviation	10	5/97	Remembering sentences	
does not have	less than 1 standard deviation	10	7/61	Encryption reminder	<b>active memory</b>
does not have	less than 1 standard deviation	10	7/72	Encrypted copy	
does not have	less than 1 standard deviation	10	7/63		



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