

## **The Psychometric Proprieties of the Jordanian Version of the Childhood Autism Rating Scale – Second Edition (CARS2-HF)**

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### **ABSTRACT**

The purpose of this study was to verify the psychometric proprieties of the Jordanian version of the Childhood Autism Rating Scale - HF (second edition) to diagnose the individuals with high functional autism spectrum disorder, on a sample of (20) students distributed in three districts areas in Jordan ranging from (6-18) years, including (10) high functional autistic students, (5) students with ADHD, and (5) ordinary. The scale was applied to the previous sample after being presented to a group of arbitrators and practitioners in the field. The results showed that the measure have an excepted level of contend validity, where the correlation of paragraphs with the instrument as a whole ranged from (0 – 0.92), and the discriminatory honesty through the existence of statistically significant differences ( $\alpha = 0.05$ ) between the ordinary students on the one hand and other students; On the other hand the differences came in favor of both students with ASD-HF, ADHD, as shown by statistically significant differences between students with ASD-HF, ADHD and there were also statistically significant differences between students with ASD-HF, ADHD, and the differences were in favors of students with ASD-HF, while persistence in internal consistency was calculated by calculating the alpha-Cronbach equation (0.96). Also the results showed the existence of another characteristic of scale such as objectivity, ease of application, correction and interpretation of results.

**Keywords:** Autism Spectrum Disorder (ASD); High Function (HF); ADHD; CARS2; Jordanian Version.

### **Introduction**

Autism spectrum disorder (ASD) is a neurodevelopmental disorder that directly affects the individual's performance and functional abilities, and is one of the most controversial developmental disorders among specialists, whether this controversy is associated with symptoms or diagnosis, and the controversy gap broadened in the absence of the ability to determine the causes of this disorder in a precise manner.

In spite of the foregoing, autism spectrum disorder is a global phenomenon, identified in almost every region of the world, and it is perhaps striking the constant and accelerating increase in the number of children with autism spectrum disorder worldwide.

Thus, several standards, tools and diagnostic lists have emerged and developed to diagnose autism spectrum disorder to match the specific developments and updates in the diagnostic standards contained in the Diagnostic and Statistical Manual of Mental Disorders (DSM) of the American Psychiatrists Association, The World Health Organization and International Classification of Diseases (ICD) in an effort by researchers to provide the best and most accurate diagnoses, and to establish the primary building block for the delivery of best training services and the best training and educational services.

It's not easy to conduct an accurate diagnosis of autism spectrum disorder (ASD), especially since individuals with autism spectrum disorder are not homogeneous in their abilities and characteristics, and because of the presence of

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diseases and disabilities associated with autism spectrum disorder, in addition to that autism spectrum disorder affects the social, communicative and personal aspects, which makes interacting with an autistic child more difficult. Also, autism symptoms may be similar to many other developmental disorders. Since autism is defined as behavioral, the means of examination and diagnosis and their procedures must mainly include direct behavioral observation and ensure the presence of the largest number of behavioral characteristics that indicate this disorder. Accordingly, efforts by researchers and those interested in autism spectrum disorder have focused on developing measuring and observing tools based on these characteristics (Al-Khatib, Al-Hadidi, Al-sorour, Al-Samadi, Al-Rousan, et al., 2018)

Al-Masoud (2017) referred to the types of measures used to identify Autism Spectrum Disorder, includes the following scales:

- Screening measures: such as the Checklist for Autism in Toddlers CHAT.
- Diagnostic scales (diagnosis and differential diagnosis): such as the Indian scale to assess autism spectrum disorder, the autistic child scale, and the Childhood Autism Rating Scale, CARS).
- In addition to the above, there are evaluative measures such as Psychoeducational Profile, Third Edition PEP 3.

### **The Study Problems:**

One of the most challenges for specialists in the field of the special education, especially in the field of measurement and diagnosis standards, and especially in the measurement and diagnosis of autism spectrum disorder, is the overlap of the characteristics with each other communications disorder, attention deficit hyperactivity disorder.

In the absence of adequate diagnostic tools meeting the demand of modern technology and developments in diagnostic standards, it was necessary to come up with tools meet a sense of sincerity and consistency that provide accurate information that enables specialists to make accurate diagnostic decisions.

So, the purpose of this study was to develop the measure of childhood autism rating scale in its second edition (The version of the diagnosis of individuals with autism spectrum disorder who have high functioning abilities) in the Jordanian environment.

The study's problem is to answer the following questions:

1. What are the signs of validity of the Jordanian version from the childhood Autism rating scale – second edition (HF)?
2. What are the signs of reliability of the Jordanian version from the childhood Autism rating scale - second edition (HF)?

### **Importance of the study:**

Accurate diagnosis and identification of situations, strengths, weaknesses and the actual level of performance helps field workers to plan and design effective therapeutic programs, and facilitate the process of making appropriate educational decisions.

This study is one of the few Arabic studies that dealt with the specific diagnosis of individuals with autism spectrum disorder, especially those with high language abilities. The importance of the study is to provide an accurate and appropriate diagnostic tool for measuring and diagnosing this category.

In addition to the above, the study seeks to create a tool that is easily used by professionals and allows them to identify and evaluate the behavioral characteristics of individuals with autism spectrum disorder who have a high linguistic ability in an accurate manner, allowing them to stand up to their actual performance, and the ability to make appropriate decisions for referral and design effective therapeutic programs.

### **Study terms:**

Autism Spectrum Disorder: Definition of the (The Nation Society for Autistic Kids, NSAC, 1978). It indicates that autism disorder is defined from its behavioral characteristics which must appear before the child reaches the age of 30

months, which includes the following:

- Disorder in the speed or sequence of growth.
- A disturbance in sensory responses to the exciter.
- Speech disorder, language and cognitive capacity.
- Disorder in attachment or belonging to people, events and subjects.

The U.S. National Research Council, 2001, also defined autism as a spectrum of various disorders of severity, symptoms, age at injury and its relationship to other disorders, and the symptoms of autism vary among children and within the child itself over time, and in general there is no single sustainable behavior for autism and there is no automatically excludes the child from the diagnosis of autism even with strong similarities especially in social defects.

Also defined by (The American Society of Autism, 1999) which corresponds to the contents of the fourth Diagnostic and Statistical Manual (DSM-4, 2000) issued by the American Psychiatrists Association which states that:

Autism is a type of developmental disorder that appears during the first three years of the child's life, where this disorder results from an imbalance in the nervous system, which affects the functions of the brain, and thus affects various aspects of growth leading to a lack of social interaction, and lack of verbal or non-verbal communications, and these children responses to surrounding objects more than their response to people, and these children are disturbed by any change in their environment, and they always repeat physical movements or passages of words in an automatic and repetitive way.

The behavioral characteristics of children with autism spectrum disorder according to the (Diagnostic and Statistical Manual of Mental Disorders (DSM-V):

1. Persistent disability in social interaction across multiple perspectives concluded current or prior illustrative and not exhaustive examples:

1.1. Disability in exchange or social emotional responses, for example, from the abnormal social approach and failure to maintain an interactive conversation; to decrease participation in interests, emotions, or lead to failure in the ability to initiate responses and interactions.

1.2. Lack of many non-verbal communication behaviors used in social interaction, example, from weak and failures in all of verbal and non-verbal communication, to deficiencies in visual communication, body language, inability to understand and use gestures, and lack of facial expressions.

1.3. Failure to make friends, establish and maintain social relations, difficulties in adjusting adequate behaviors with social attitudes to the difficulty of participating in imaginary play or making friends, and loose of interest in peers.

2. Recurring behavioral patterns, specific interests and activities, which consist of at least two of the following: (illustrative, not exhaustive examples):

2.1. Stereotyped or repetitive images of physical or verbal movements, or through the use of objects (such as flap of hands, play games, phrases repletion -echolalia).

2.2. Reject any changes, inflexible, committed to routine, or formal patterns of verbal or non-verbal behavior (anxiety and discomfort with any slight change, difficulties in transition, rigid thinking patterns, observances, insisting on performing the same routine or eating habits).

2.3. Become very limited of abnormal interests or concentration (extremely attached or obsessed with objects, very limited interests).

2.4. High or low sensitivity to surroundings, or unusual sensory interests (dos not differentiate between pain when interact with heat or cold, negative responses to certain sounds or like to touch and sniff materials or to a great extent sensitive, tendency to attachment to the lights or motion).

3. The symptoms must appear at an early age.

4. Symptoms lead to a clear inability in social and functional skills.

5. It's hard to explain these disorders by mental disability or in early development stages delays.

**High functional Autism spectrum disorder (ASD- HF):**

These children's over six years of age and are fluent in language proficiency and score above 80 IQ standards.

**Childhood Autism Assessment Measure (Childhood Autism Rating Scale (CARS-2 HF) (2<sup>nd</sup> edition):**

Developed by (Schopler, Recheler, Runner, 2011) is a measure applied to individuals aged six years and over with the aim of identifying and diagnosing individuals with high functional autism spectrum disorder, and the scale consists of fifteen paragraphs.

**Validity:** The degree of test measures, its characteristic developed by (Al-Batsh and Abu Zeina, 2006).

**Reliability:** It is the degree of stability or consistency in achieved on the scale over time (al-Batsh and Abu Zeina, 2006).

**Previous studies:**

The Childhood Autism Rating Scale (CARS) was used as a key component in many Arab and foreign studies and researches, the results of which encouraged the use of the scale in its current form, the standard versions (CARS2-ST), and the high-functional version (CARS2-HF).

The studies were carried out by (Schopler, Recheler and Runner, 1988) A study aimed at developing a modified version of the Childhood Autism Assessment (Childhood Autism Rating, CARS), which was built by Schopler, Devilish. Recheler and & Daly, 1980) to identify children with autism and differentiate between them and children with disabilities, especially those with mental and has the ability to be trained. The measure also works to differentiate between degrees of autism range from moderate and severe, and the scale consists of (15) items and measure as:

**According to the scale:**

1. Children between the levels (30-36) are classified as being autistic to a simple to moderate degree.
2. Children scored between 37 and 60 are classified as severely autistic.

The scale has been certified as a standard honesty by comparing the total number of grades and clinical estimates obtained from the same diagnostic sessions, which reached the result of the correlation (0.83).

In the United States of America, Schopler and others conducted a study aimed towards the behaviors in terms of severity, duration of occurrence and characteristics of these behaviors, which provides greater flexibility to gather information about the situation in a more comprehensive manner as well as the consistent quantitative outcomes.

The results of the study showed that the measure have acceptable signs of validity and reliability, as well as the measurement diagnosis individuals with high functional autism spectrum disorder of fluent language and high IQ, in addition to the ability of the scale to differentiate between autism spectrum disorder and other similar disorders.

Dickerson, Susan, Micheal, Jill, Kirsten, Shiyoko, Heather, Fauzia, James and Christopher, 2012, "The authors of the Childhood Autism Rating Scale (CARS) state in the manual that the best cutoff score for distinguishing low functioning autism (LFA) from intellectual disability is 30 for children and 28 for adolescents and adults. This study determined that a cutoff score of 25.5 was most accurate in differentiating between high functioning autism or Asperger syndrome (HFA; n = 197) and ADHD (n = 74) in a sample of 1- to 16-year-olds with IQs of 80 or higher. Classification accuracy was 96% using clinician scores and 72% using parent scores. Children with LFA (n = 193) had significantly higher clinician and parent scores than children with HFA, and scores were negatively correlated with IQ. None of the typical children (n = 30) earned parent scores greater than 28."

[https://www.researchgate.net/publication/241647695\\_Use\\_of\\_the\\_Childhood\\_Autism\\_Rating\\_Scale\\_CARS\\_for\\_Children\\_With\\_High\\_Functioning\\_Autism\\_or\\_Asperger\\_Syndrome](https://www.researchgate.net/publication/241647695_Use_of_the_Childhood_Autism_Rating_Scale_CARS_for_Children_With_High_Functioning_Autism_or_Asperger_Syndrome)

In France, Santos, Barbosa, Pimentel, Pimentel, Lacerda, Balestro, Amato, and Fernandes (2012) conducted a study aimed at comparing the use of autism Behavior Checklist, ABC with the Childhood Autism Rating scale (CARS). The sample consisted of 28 children diagnosed with autism spectrum disorder. After both measures were applied to students by parents and therapists, the data were statistically processed and the results showed a medium to high correlation factor in performance on both scales. The study recommended that both measures should be applied to

achieve an accurate diagnosis of autism spectrum disorder as only one is ineffective.

In China, Li conducted (Li, 2012) (10) a study aimed at developing a Chinese version of the Second Edition of the Childhood Autism Rating Scale (CARS2) for the CARS2-QPC questionnaire, as well as a Chinese-language version of the Gilliam Rating Autism in its second edition (GARS-2). on a sample of (20) children aged 2-17 years, where the researcher translated the scale into Chinese and then into English and then presented it to the arbitrators. The results indicated the diagnostic scale capacity and also indicated a high correlation coefficient between the original and the Chinese version.

In Australia, Nah, Young and Brewer, 2014 conducted a study aimed at assessing predictive validity for early childhood autism detection by researching the long-term outcomes of children participating in the early intervention programmer, with the sample of (55) children (44) males, (11) females and 19-42 months of age. Children were assessed through the Early Detection tool for early childhood autism (Autism Detection in Early Childhood, ADEC) and through the Childhood Autism Rating Scale (CARS) and follow-up their assessment every two to six years and the results showed accepted correlation factor. The researchers recommended that more extensive studies should be conducted using larger samples.

In Lebanon, Dirani, Alameddine, Salamoun, 2013 conducted a study aimed to specify the psychometric properties of the Lebanese version of the Childhood Autism Rating Scale Second Edition, High Functioning Version (CARS2-HF). The participants consisted of 30 children aged 6–18 years among which 24 had a clinical diagnosis of Asperger disorder or Pervasive Developmental Disorder, and 6 had a clinical diagnosis of Attention Deficit Hyperactivity Disorder (ADHD). All participants were verbally fluent and had IQ estimates of 80 or higher (Wechsler Nonverbal Scale of Ability). Forward and backward translation of the Childhood Autism Rating Scale Second Edition. The results showed that the Lebanese version of the Childhood Autism Rating Scale Second Edition, High Functioning Version (CARS2-HF) has a high degree of internal consistency (.92), inter-rater reliability (.97), and test–retest reliability (.99). Receiver Operating Characteristic analysis determined that individuals with total raw scores below 26 are less likely – to be in the autism spectrum. This instrument can be used in screening and assessing for ASD in high-functioning Lebanese and Arab speaking individuals.

#### **The Study procedures and community:**

The study community consists of children diagnosed with high functional autism spectrum disorder who are over 6 years of age and have high mental abilities (IQ.80) and language fluency and who receive special education services in Amman, Irbid and Karak, and children diagnosed with ADHD in the city of Amman, as well as the sample included a group of ordinary children.

#### **Sample Study:**

The study sample included (20) children aged from 6 to 18 years, all of whom have linguistic fluency and intelligence ratios (80) and above on IQ standards, distributed as follows:

- (10) Diagnosed with autism spectrum disorder.
- (5) Diagnosed with attention deficit disorder and hyperactive (ADHD).
- (5) Ordinary students.

**Table (1)**  
**Study Sample Group Distribution Table**

<b>Groups</b>	<b>Number of Participant</b>
Diagnosed with High autism spectrum disorder	10
Diagnosed with attention deficit disorder and hyperactive (ADHD). Teachers	5
Ordinary Students	5
Totals	20

**Study tool:**

Childhood Autism Rating Scale - High Functioning Autism second edition (CARS-2-HF) developed by Schopler et al., 2010, is a measure applied to individuals aged 6 years and older to identify and diagnose individuals with high functional autism spectrum disorder (overall IQ 80 and above standards, and fluency in communication), the measure consists of The followings:

1. Understanding the social emotions.
2. Expression and regulation of emotions.
3. Belonging and interacting with others.
4. Use the body.
5. Use things in play.
6. Adapting to the change/specific interests.
7. Visual response.
8. Auditory response.
9. Respond and use the senses of taste, touch and smell.
10. Fear and anxiety.
11. Verbal communication.
12. Non-verbal communication.
13. Thinking/cognitive skills.
14. The level and stability of the mental response.
15. General Impression.

The rating values for each of the 15 CARS2 – HF items range from 1 to 4. Generally, 1 indicates that behavior is within normal limits for an individual of that age. A value of 2 means that the behavior is mildly abnormal compared with a person of the same age. A value of 3 indicates that the individual's behavior is moderately abnormal for that age. A value of 4 indicates that the individual's behavior is severely abnormal for that age. In addition to these four ratings, the midpoints between them (1.5, 2.5, and 3.5) should be used when the behavior appears to fall between two categories. Thus the seven allowable rating for each item are as follows: 1 (Within normal limits for that age), 1.5 (Very mildly abnormal for that age), 2 (Mildly abnormal for that age), 2.5 (Mildly to moderately abnormal for that age), 3 (Moderate abnormal for that age), 3.5 (Moderately to severely abnormal for that age), 4 (Severely abnormal for that age).

The measure is generally based on the behaviors shown by individuals and empirical data, which makes it appropriate as a tool for collecting appropriate and reliable information by specialists, and in its second edition the measure is based on modern research that is the main feature of autism spectrum disorder. The main version of the CAR-2-ST scale was based on the criteria set by Kanner, 1943 (9), Kirk (Creak, 1961) (6) for the diagnosis of autism spectrum disorder, as well as the compatibility of the scale with all diagnostic criteria for autism spectrum disorder contained in all versions of the guide. Diagnostic and statistical mental disorders issued by the American Psychiatric Association (DSM, 1952, 1968, 1980, 1987, 1994, 2000, 2013). The CARS-2-HF version was based on the scale in its original form but was based on the results of recent studies and research to be used to identify the behavioral characteristics and features of individuals with high functional autism spectrum disorder. Both models actively contribute to the identification of the behavioral features of autism spectrum disorder, which supports diagnosis, classification, research and studies.

**In addition to the above, the scale has a host of other advantages:**

1. The models include paragraphs that include a wide range of diagnostic criteria, reflecting the expansion of data on autism spectrum disorder as a result of continued experimental studies on autism spectrum disorder.
2. The evolution of the scale has improved its applications and uses that have lasted for decades and in thousands of cases.
3. Paragraphs are arranged in such a way that individuals can be evaluated and ranked at all ages and career levels.
4. The measure in two versions (CARS-2-ST, CARS-2-HF) provides concise, quantifiable objectives based on

behavioral observation, while providing comprehensive, extensive and clinically reliable coverage of the characteristics and features of autism spectrum disorder and assisting specialists in planning the intervention process.

5. The measure of the estimate of childhood autism in the second edition (CARS-2) helps specialists to provide feedback back to the family about the diagnosis process, it provides a description of the severity and degree of behaviors suffered by the child associated with autism spectrum disorder. This helps the family and makes them feel confident that their child has undergone a thorough behavioral assessment that has taken into account all his behaviors and all his behaviors well.

#### **The tools of study preparation**

Prepare the Jordanian image from the measure of the childhood autism rating scale- high-functional individuals (CARS-2-HF) according to the following steps:

- Obtain permission from the Pro-ed, Inc. Publisher to translate and apply the scale within the study.
- Translating the scale into Arabic.
- Re-translate from Arabic into English to make sure the translation is safe.
- The measure, which has been translated into Arabic, was presented to a group of arbitrators, to be judged in terms of the appropriateness of translation and the soundness of its language.
- Make appropriate adjustments recommended by the arbitrators.
- Apply the scale to a survey sample of (5) students with autism spectrum disorder with high abilities ranging from 6 to 12 years of age.
- Apply the scale to the selected sample, which consisted of 20 children aged (6-18) divided into three categories (autism spectrum disorder, attention deficit hyperactivity disorder, and normal).

#### **Scale and Standards**

The meter scale (CARS2-HF) applied to the previous sample by the researcher and the mechanism of application has been done within the following steps:

- Make copies of the scale and necessary adjustment (Translating, Modification) it in accordance with the opinions and suggestions of the arbitrators.
- Apply the scale to a survey sample from outside the study sample consisted of (5) students with high functional autism spectrum disorder ranging from (6-12) years of age to extract evidence of constructive validity of the scale and consistency in the manner of internal consistency.
- Apply the scale to the study sample at Al- Twasul Center, Taqwa Center, Al-Tahady Center, and Meral Center for Behavioral Disorders and Autism.
- Statistical analyses were carried out and the evidence of the validity and reliability of the scale was extracted in its Jordanian image, and the following statistical treatments were used:

#### **Validity:**

- Content validity by presenting the tool to a group of arbitrators.
- The validity of construction.
- Distinguish and differential validity.

**Reliability:** The reliability coefficient was calculated using the Cronbach Alpha equation.

**Statistical method:** The following statistical methods were used as:

First, the researcher presented the scale to a group of arbitrators to extract the content validity, then the researcher and using the statistical platform (SPSS) found: discriminatory validity to determine the extent of its ability to differentiate between autism spectrum disorder and other similar disorders such as attention deficit disorder. for plus, use the Alpha Cronbach equation to calculate the stability of the scale.

#### **Results**

The evidence of the validity and reliability of the childhood autism rating scale was verified in its second edition (CARS2 - HF) by:

### 1. Content validity:

The measure was presented to a number of arbitrators after translation to ensure the integrity of the translation and the appropriateness of the paragraphs, (10) arbitrators, five of them professors of special education in universities and five practitioners in the field, and ensure the amendments and measure applied to the sample of the study.

### 2. Construction validity:

To extract the evidence of the construction validity of the scale, the coefficients of correlation of the corrected scale paragraphs with the total score were extracted in a survey sample from outside the study sample consisted of (5) students with autism spectrum disorder with high abilities ranging in age from (6-12) years, as the correlation coefficient here It is a sign of validity for each paragraph in the form of a correlation coefficient between each paragraph and the overall grade, and the coefficients of the correlation of paragraphs with the tool as a whole ranged from (0.58-0.92) and the following table shows the results.

**Table (2)**  
**Corrected correlation coefficients between paragraphs and overall grade**

Group No.	Number of Links	Coefficient
		1
	0.58	2
	0.84	3
	0.884	
0.74	5	
0.78	6	
0.85	7	
0.61	8	
0.71	9	
0.58	10	
0.67	11	
0.82	12	
0.84	13	
0.94	14	
0.92	15	
0.89		

It should be noted that all correlation suppositions were statistically acceptable and functioning, and therefore none of these paragraphs were deleted.

### Validity stands:

To verify the excellence of the corrective calculation, the arithmetic averages and standard deviations were extracted according to the disability grade variable, and the table below Shows in the following tables.



**Table (3)**  
**Computational averages and standard deviations by variable degree of disability**

<b>Groups</b>	<b>Numbers</b>	<b>Arithmetic Mean</b>	<b>Standard Deviations</b>
<b>Normal/Ordinary</b>	<b>5</b>	<b>15.30</b>	<b>0.447</b>
<b>Autism spectrum disorder</b>	<b>10</b>	<b>33.30</b>	<b>3.967</b>
<b>Attention deficit &amp; attention Dispersion disorder</b>	<b>5</b>	<b>23.5</b>	<b>2.345</b>
<b>TOTAL</b>	<b>20</b>	<b>26.35</b>	<b>8.267</b>

Table (3) shows an apparent variation in arithmetic averages and standard deviations due to different disability variable categories, and to indicate the significance of statistical differences between computational averages, a single variance analysis was used by table (4).

**Table (4)**  
**Analysis of the single variation of the impact of the degree of disability**

<b>Cronbach Alpha Coefficient</b>	<b>Alfa</b>	<b>Ave Square</b>	<b>Degree of</b>	<b>Total</b>	<b>Sources</b>
<b>Freedom</b>	<b>Squares</b>				
<b>0.0</b>	<b>58.639</b>	<b>567.075</b>	<b>2</b>	<b>1134.150</b>	<b>between</b>
<b>Groups</b>					
<b>9.671</b>	<b>17</b>	<b>164.400</b>	<b>in the Groups</b>		
<b>Totals</b>			<b>19</b>	<b>1298.550</b>	

Table (4) found statistically significant differences at the indication level ( $\leq 0.05$ ) attributable to the degree of disability, and to show the statistically functioning marital differences between mathematical averages, the dimensional comparisons were used in a manner chevilless as shown in table (5).

Table (5)

## Distance comparisons in a chevatic way to the impact of the degree of disability

ADHD	ASD	N	Arithmetic Mean
15.3		N	
18.0	33.3		ASD
9.8	8.2	23.6	ADHD

Function at the indicative level ( $\alpha \leq 0.05$ ).

Table (5) shows that there are statistically significant differences ( $\alpha \leq 0.05$ ) between ordinary students on the one hand and each of the students with autism spectrum disorder and attention deficit disorder and hyperactivity disorder on the other hand and the differences came in favor of both students with autism spectrum disorder and attention deficit disorder and hyperactivity disorder almost as well as differences as well as differences Statistically significant among students with autism spectrum disorder and ADHD, the differences came in favor of students with autism spectrum disorder Or using Kruskal-Wallis Test to verify the excellence of honesty Crosscal test was extracted and not by variable degree of disability, the table below shows this relation.

Table (6)

## Kurscal test and not by variable degree of disability

Degree of deficiency	No.	Rank Median	Chi-Square	Deg. of Freedom	Cronbach Alpha
N	5	3.0	16.144	2	0.00
ASD	10	15.5			
ADHD	5	8.0			
Total	20				

Table 6 shows that there are statistically significant differences at the level of indication ( $\alpha \leq 0.05$ ) attributable to disability, indicating excellence.

**The reliability of the study tool:**

To confirm the reliability of the tool, internal consistency was calculated on a survey sample from outside the study sample consisting of (5) students with autism spectrum disorder with high abilities ranging in age from (6-12) years, according to the Cronbach Alpha equation of (0.96), and this percentage was considered suitable for the purposes of these Study.

Discussing the above results showed that, the existence of secondary characteristics of the scale, the most important of which are:

1. Objectivity: It was noted that the grades given based on the scale are not affected by the subjective ness of the application of the tool due to the availability of clear, accurate and procedural standard instructions for application and correction, and the existence of pre-planned grades or markers for answers to paragraphs and the existence of specific

standard answers support the property Objectivity in the scale increases confidence in the degrees produced by this tool.

2. Ease of application: It was noted that the meter requires only the examiner to possess the basic skills that are supposed to be available to the specialist of special education and behavioral observer.

3. Ease of correction: The scale contains predetermined grades and criteria for correction and it is possible for any application to perform this process.

4. Ease of interpretation: It was noted that the degree obtained from the scale was directly explained and did not require theoretical preparation by the researcher and this finding is consistent with the findings of Schopler, Recheler and Runner, 1988 and Schopler, et al., 2010 and Dickerson, Susan, Micheal, Jill, Kirsten, Shiyoko, Heather, Fauzia, James and Christopher, 2012 and (Santos, Barbosa, Pimentel, Lacerda, Balestro, Amato, and Fernandes (2012) and Li, 2012)

#### **Recommendations:**

- Due to the small size of the sample, it may be appropriate to conduct further studies on larger numbers of students.
- Activating the use of the scale in public schools and private centers as a unified and structured measure for measuring and making a difference to distinguish between children with autism spectrum disorder and other similar disorders.

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ثبات الصورة الأردنية من مقياس تقدير التوحد الطفولي. (الطبعة الثانية) الخاص بتشخيص الأفراد ذوي اضطراب طيف التوحد الذين يتمتعون بقدرات مرتفعة

نبيل حميدان، لينا المحارمة\*

### ملخص

هدفت هذه الدراسة إلى التحقق من دلالات صدق وثبات الصورة الأردنية من مقياس تقدير التوحد الطفولي. (الطبعة الثانية) الخاص بتشخيص الأفراد ذوي اضطراب طيف التوحد الذين يتمتعون بقدرات مرتفعة، وذلك على عينة بلغت (20) طالبًا موزعين على ثلاث محافظات أردنية (محافظة إربد، محافظة العاصمة، محافظة الكرك)، تراوحت أعمارهم من (6-18) سنة، منهم (10) طلاب من ذوي اضطراب طيف التوحد الذين يتمتعون بقدرات مرتفعة، و(5) من ذوي اضطراب فرط الحركة وتشتت الانتباه، و(5) من العاديين. وقد طُبِّقَ المقياس على العينة السابقة بعد عرضه على مجموعة من المحكمين والممارسين في الميدان. وقد أوضحت النتائج تمتع المقياس بدلالات صدق وثبات ملائمة تمثلت في صدق المحكمين وصدق البناء؛ حيث تراوحت معاملات ارتباط الفقرات مع الأداة ككل ما بين (0.58 - 0.92)، والصدق التمييزي من خلال وجود فروق ذات دلالة إحصائية ( $\infty = 0.05$ ) بين الطلبة العاديين من جهة وكل من الطلبة ذوي اضطراب طيف التوحد واضطراب فرط الحركة وتشتت الانتباه من جهة أخرى. وجاءت الفروق لصالح كل من الطلبة ذوي اضطراب طيف التوحد واضطراب فرط الحركة وتشتت الانتباه، كما تبين وجود فروق ذات دلالة إحصائية بين الطلبة ذوي اضطراب طيف التوحد واضطراب فرط الحركة وتشتت الانتباه، وجاءت الفروق لصالح الطلبة ذوي اضطراب طيف التوحد، فيما تمثل الثبات في الاتساق الداخلي بحساب معادلة كرونباخ ألفا (0.96). كما أظهرت النتائج وجود خصائص ثانوية للمقياس كالموضوعية وسهولة التطبيق والتصحيح وتفسير النتائج.

**الكلمات الدالة:** اضطراب طيف التوحد، القدرات المرتفعة، فرط الحركة وتشتت الانتباه، مقياس تقدير التوحد الطفولي، الصورة الأردنية.

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