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The Reliability of the PEP-3 in the Arab Context: Algerian-Tunisian

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ABSTRACT

The objective of this study is to validate the applicability of the PEP-3 in the Arab context (Algerian-Tunisian) within a sample of 116 children with TSA, ranging in age from 2 to 12 years. Between February and August 2024, data were collected from various geographical regions (north, central, and south) in Algeria and Tunisia. The research employed an analytical approach using Cronbach's alpha coefficient along with a descriptive analytical method. The present study examined the effectiveness of the Psychoeducational Profile - Third Edition (PEP-3) in the Algerian-Tunisian environment. The PEP-3 was applied to a sample of 116 children with autism spectrum disorder in Algeria and Tunisia. The construct validity of the PEP-3 was supported by the high internal consistency of each subtest, in addition to the medium to large correlation coefficients between the subtests. The results of the Cronbach's alpha coefficient for the test ranged from 0.93 to 0.94 for the procedural axes. The correlation matrix ranged from 0.71 to 0.95. The findings indicate that the scale in the Algerian-Tunisian context demonstrates an overall stability rate of 0.95. These results provide strong evidence of the construct validity of the PEP-3 and its effectiveness in the Algerian-Tunisian environment.

1. Introduction

Autism spectrum disorder was diagnosed in multiple ways in the past. Terms such as psychosis, dissociative psychosis, atypical child,[1] borderline schizophrenia,[23] learning disabilities,[4] and early childhood disorders [5] [6] were commonly used to describe it. Experts did not agree on how to differentiate between children using these labels, as the diagnosis often depended on the geographic location and the theoretical orientation of the examined.[7]Although

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many of these terms stemmed from the prevailing theories of the time, especially Freudian theories and various psychodynamic interpretations that were popular over 50 years ago, some of these "labels" have persisted to this day.[89]

Leo Kanner (1943) was the first to use behavioral observation to describe a specific group of children who showed signs of early childhood autism [10] The existence of similar children was reported by many other researchers around the world shortly afterward. These children shared a number of characteristics, including primary difficulties in social interaction and communication problems ranging from muteness to a unique language. Their interests ranged from stereotyped body movements [11]

to specific interests in time, computer technology, or other specialized activities.[12] [13] [14] [15] As knowledge and research have advanced, the specific characteristics of autism spectrum disorders have not changed much over the different editions of the DSM. For example, Asperger syndrome became a distinct condition from pervasive developmental disorders (PDDs) in the last edition of the DSM-IV-TR, published by the American Psychiatric Association in 2000.[16] [17][18]The development of normal language occurs much earlier in children with Asperger syndrome, which is a significant difference between autism and Asperger syndrome. This distinction expanded the scope of the PDD classification[19] [20] [21] .

A type of autism described as mild, without intellectual disability, is called high-functioning autism, or level 1, also known as Asperger's syndrome. Impaired social interaction and restricted, stereotyped, and repetitive interests and activities are the main signs.[22] [23]

The first study to report the prevalence of autism was conducted by Wing, Yates, Brierley, and Gould (1976). [24] Current epidemiological studies estimate that approximately 1% of the world's population could be diagnosed with

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autism.[25] [26] [27] [28] Many studies have highlighted a strong genetic contribution to this disorder, with more than 200 genes associated with it [29] . Current challenges include improving early diagnosis and offering support pathways or even care when necessary while taking into account the abilities and difficulties of each individual. [30] [31]

2. Materials and Methods

2.1 Participants

Data were collected from 116 children diagnosed with autism at the Farah Association for the Integration of Autistic Children in Tunisia, with the participation of the Algerian Foundation for the Empowerment of Neurodiversity Children in Algeria. The diagnoses of the autistic sample were made by consultant psychiatrists. Participants' ages ranged from 2.0 to 12 years. Tables 1 and 2 summarize the characteristics of the three samples.

Country	**children TSA**
ALGERIA	62
TUNISIA	54
Total	**116**

TABLE 01: Diagnostic characteristics of samples by country

Region_Country	**North**	**Central**	**South**	**Total**
ALGERIA	31	11	20	**62**
TUNISIA	27	17	10	**54**
TOTAL	58	28	30	**116**

TABLE 02: Geographic characteristics of samples.

2.2 Procedure

After the pilot study, the current study was conducted at the Farah Association for Autistic Children in Tunisia and the Algerian Foundation for the Empowerment of Neurodiverse in Algeria. A group of professionals, including speech therapists, occupational therapists, and psychologists, administered the performance tests and assessed the participants. All participants were experienced in working with and testing young children and had previously practiced and mastered the test.

2.3 Instruments

The *Psychoeducational Profile - Third Edition* (PEP-3), developed by Schopler et al. (2005), was translated into Arabic. Adaptations and modifications were made, taking into account cultural and linguistic factors. Arabic words were used to replace French words in items for letter matching, naming, and sorting.

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The test consists of two parts:

1. The **Performance Test** which uses direct assessment and observation of the child. It consists of 10 subtests, 6 of which measure developmental abilities, while the remaining 4 measure maladaptive behaviors. These subtests are grouped into three categories: communication, motor skills, and maladaptive behaviors.
2. The **Parent Interview**, which assesses additional aspects of the child's abilities and challenges.

The relative success of this program led to its export and adoption outside the United States. To this day, the TEACCH method is recognized as one of the most effective autism care methods in the world (*Paul Alerini, 2011, p. 7-31*).

The objectives of this test are as follows:

- (a) Identify the strengths and weaknesses of each child to create the most appropriate educational program.
- (b) Collect information to confirm the diagnosis.
- (c) Evaluate levels of development/adaptation.
- (d) Serve as a research investigation tool.

3. Data Analysis

The internal consistency of the instrument was examined by calculating the correlation between the items and the total for each subtest using Cronbach's alpha coefficient for each test axis, along with Pearson's correlation coefficient.

Table 3 shows the coefficient of PEP-3, which ranged from 0.93 to 0.94. These findings confirm the reliability of the PEP-3 in the Arab context (Algerian-Tunisian).

3.1 Cronbach's alpha coefficient

AXES	Alpha de Cronbach
AE	,941
CMP	,939
CVB	,941
CVP	,948
EL	,943
FM	,941
GM	,948
RL	,935
SR	,939
VMI	,946

Table 3: Alpha de Cronbach -total correlation coefficients for the PEP-3 subtests in the Arab context (Algeria-Tunisian)

The results were based on the autistic sample (N =116)

CVP cognitive verbal/preverbal, EL expressive language, RL receptive language, FM fine motor, GM gross motor, VMI visual-motor imitation, AE affective expression, SR social reciprocity, CMB characteristic motor behaviors, CVB characteristic verbal behaviors,

3.2 Corrélation de Pearson

Table 4 shows the correlation matrix for the subtests' raw scores. Different subtests of PEP-3 measure different aspects of autistic children's development, and the coefficients range from 0.71 to 0.95. These findings show the construct validity of PEP-3 and the fiabilite of this test in the Arab context (Algerian-Tunisian)

	AE	CMP	CVB	CVP	EL	CMP
AE	1	,910**	,871**	,773**	,756**	1
CMP	,910**	1	,890**	,809**	,775**	,910**
CVB	,871**	,890**	1	,784**	,797**	,871**
CVP	,773**	,809**	,784**	1	,938**	,773**
EL	,756**	,775**	,797**	,938**	1	,756**
FM	,775**	,803**	,719**	,908**	,821**	,775**
GM	,749**	,753**	,667**	,697**	,624**	,749**
RL	,826**	,837**	,794**	,917**	,881**	,826**
SR	,957**	,934**	,865**	,826**	,792**	,957**
VMI	,802**	,783**	,705**	,805**	,740**	,802**

Table 4: Construct Validity of the Psycho-Educational Profile-3rd Edition (PEP-3) in the Arab context (Algerian-Tunisian)

CVP cognitive verbal/preverbal, EL expressive language, RL receptive language, FM fine motor, GM gross motor, VMI visual-motor imitation, AE affective expression, SR social reciprocity, CMB characteristic motor behaviors, CVB characteristic verbal behaviors

4. Discussion

The current study is the first scientific investigation into the validity of the PEP-3 on a large sample of children with autism spectrum disorder in Algeria and Tunisia. This is a noteworthy contribution to the field.

Cronbach and Meehl (1955) emphasized that construct validity is essential for every psychological test. The more strategies employed to demonstrate a test's validity with convincing evidence, the greater the confidence users can have in its construct validity. The current study represents a significant contribution to research and services for children with autism in Arab countries, particularly in Tunisia and Algeria.

Although internal consistency is the most widely used measure of reliability, it helps researchers better understand the structure of a scale or subscale by examining the relationships between item responses and the total subtest score. It also indicates whether the items included in a test or subtest are truly cohesive and interrelated. In this sense, internal consistency complements our understanding of validity. Overall, the results of this study provide sound evidence for the structural validity of the PEP-3.

The study demonstrated a high degree of stability of the PEP-3 scale in the Algerian-Tunisian environment across all its axes. The positive results enhance confidence in the scale and confirm the findings of previous studies regarding the effectiveness and stability of the PEP-3 in assessing the skills of children with autism, communication disorders, and developmental disabilities. Furthermore, the PEP-3 proves to be an effective assessment and diagnostic tool for evaluating the levels and skills of children with autism spectrum disorder in this regional context.

Additionally, the study examined d the PEP-3's ability to differentiate between children with autism spectrum disorder and typically developing peers. The findings align with those reported by Schopler et al. (2005) on U.S. samples, providing further evidence of the PEP-3's validity in the Algerian-Tunisian context.

However, several limitations of this study should be acknowledged. First, although the overall sample size was reasonably large, the number of children under two years of age was limited. This may have introduced bias and yielded uninterpretable results for analyses involving this age group. Future research should investigate whether the instrument can effectively capture developmental differences between high- and low-functioning children with autism, as well as differences between children with autism and typically developing peers.

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