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Comparison of Behavioral Disorders in Educable Children with Intellectual Disabilities and Children with Autism Spectrum Disorder

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ABSTRACT

The present study aimed to comparatively examine the prevalence and severity of be disorders in educable children with intellectual disabilities and children with autism s disorder (ASD) in Urmia, Iran. Employing a causal-comparative research desi fundamental nature, the study sought to identify differences in behavioral patterns t inform targeted interventions. The statistical population comprised all children aged years attending Rahmat School (educable children with intellectual disabilities) and t Pishgaman Center (children with ASD) in Urmia. A total of 100 participants, inclu children with intellectual disabilities and 50 children with ASD, were selected convenience sampling. Behavioral assessments were conducted using the C Behavioral Rating Scales (1960), a standardized and widely validated instrume analysis was performed using multivariate analysis of variance (MANOV independent-samples t-tests with SPSS version 21. The findings revealed sig differences between the two groups across multiple domains of behavioral di including conduct problems, learning difficulties, psychosomatic syn hyperactivity/impulsivity, and anxiety/inhibition ($p < 0.05$). Notably, children wi demonstrated more pronounced behavioral difficulties compared to their pee intellectual disabilities. These results underscore the need for tailored be interventions and support strategies to address the specific challenges faced by child ASD, contributing to improved educational and developmental outcomes.

1. INTRODUCTION

According to the American Association on Intellectual and Developmental Disabilities (AAIDD), intellectual disability is a type of disability characterized by significant limitations in both intellectual functioning and adaptive

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behavior, manifesting before the age of 18. Educable children with intellectual disabilities typically have an IQ between 50 and 75 [1].

Autism Spectrum Disorder (ASD), according to the DSM-5, is characterized by deficits in social communication and interaction across multiple contexts, either currently or historically, as follows: deficits in social-emotional reciprocity (e.g., abnormal social behaviors and failure in face-to-face conversations), reduced shared interests, emotions, or feelings, and difficulties initiating or responding to social interactions. There are also deficits in nonverbal communicative behaviors used for social interaction (e.g., impaired integration of verbal and nonverbal communication, abnormal eye contact and body language, or deficits in understanding and using gestures), as well as deficits in developing, understanding, and maintaining relationships (e.g., difficulties in behavioral adaptation across social contexts, problems participating in imaginative play or making friends, lack of interest in peers).

The term behavioral disorders entered the field of psychology approximately 85 years ago, without a universally accepted definition. Educators, physicians, psychologists, and others working with children with emotional and behavioral problems have used this term to describe their observations. However, defining behavior as normal or abnormal remains challenging. Behavior, as defined in psychology, refers to observable actions, habits, and speech that can be consistently measured, evaluated, and predicted. Abnormality is often viewed as an extreme deviation from normal behavior, existing on a continuum rather than as a clear-cut distinction [2]. When defining behavioral disorders, it is important to consider factors such as frequency, intensity, duration, age, and the context in which the behavior occurs.

Childhood is a critical stage in life during which personality is shaped. Many behavioral disorders and maladjustments in later life stem from insufficient attention to sensitive developmental periods and improper guidance in the growth process. Neglect can result in poor adaptation to the environment and various deviations across developmental domains [3]. Children with limited ability to express emotions such as pain, deprivation, anxiety, and fear often exhibit behavioral or somatic signs such as enuresis, sleep disturbances, teeth grinding, tics, restlessness, poor appetite, abdominal pain, or stealing. Without early diagnosis and intervention, these children are at higher risk for serious behavioral problems, weak social skills, and academic difficulties in later life.

Limited research on behavioral disorders in children with ASD has indicated that these individuals perform poorly in tasks requiring behavioral functioning [4]. Corbett [5] found that children with ASD exhibited significant differences in behavioral flexibility compared to typically developing peers. Most studies support deficits in executive functions and behavioral disorders in children with ASD.

Considering the co-occurrence of intellectual disabilities and ASD, the potential for differential diagnosis, and the limited research in this area, this study poses the following question: Are there significant differences in behavioral disorders between educable children with intellectual disabilities and children with ASD?

Attention to children's behavioral and psychological disorders is important because almost all contemporary psychological and psychiatric theories emphasize childhood experiences and family influence as critical determinants of personality and mental health. Social pathology studies have shown that many maladaptive behaviors originate within the family environment.

Recent research indicates that children with intellectual disabilities and ASD exhibit behavioral skills at lower levels compared to their peers. Given the importance of the topic and the lack of sufficient studies on these populations in Iran, it is necessary to conduct research aimed at developing interventions to accelerate the acquisition and improvement of these skills.

2. RESEARCH VARIABLES

Dependent variable: Children with intellectual disabilities (educable) and children with ASD.

Independent variable: Behavioral disorders.

Behavioral disorders: No universally accepted definition exists; however, the focus is on the degree, intensity, duration, age, and context of abnormal behavior.

Autism spectrum disorder: Characterized by a range of language, communication, behavioral, and social abnormalities.

Intellectual disability: A disability with significant limitations in intellectual functioning and adaptive skills, manifesting before 18 years of age.

2.1. Research Methodology

Given the nature and objectives of the study, the present research is descriptive-causal-comparative. It compared behavioral disorders in educable children with intellectual disabilities and children with ASD. The study population included children aged 6–12 attending Rahmat Special School (educable children with intellectual disabilities) and the Omid Pishgaman Center (children with ASD) in Urmia. The sample consisted of 50 children from each group, selected through convenience sampling.

3. RESEARCH INSTRUMENT

3.1. Conners' Behavioral Disorders Questionnaire

The development of Conners' multi-dimensional scales began in 1960 by Keith Conners. The Conners' Rating Scale was initially designed to assess the effects of stimulant medications on hyperactive children and to differentiate hyperactive children from typically developing peers. Initially, the questions for this scale were derived from informal data collection from parents who referred their children to the Johns Hopkins University treatment center. These data were analyzed using factor analysis by Conners in 1970, resulting in 73 items.

In 1973, Conners introduced a 93-item parent form measuring children's behavioral problems across 25 areas. Subsequent factor analysis confirmed 7 factors. The scale has been used in several countries, and its validity and reliability have been confirmed. Goite, Conners, and Ulrich implemented a short-form (48-item) parent version of the Conners' Rating Scale on a sample of children aged 9 to 11 in Petersburg. The correlation between parent-completed questionnaires was 0.41. Factor analysis for both mother- and father-completed forms produced six factors, which were later consolidated into five factors.

The parent form of the Conners' Rating Scale consists of 48 items completed by the child's parents. Parents rate items on a Likert-type scale, with scores ranging from 0 (not at all true/never/rarely) to 3 (completely true/often/almost always). The short-form parent questionnaire includes the following subscales (24 items are categorized under these factors; remaining items are not assigned to a specific factor):

- **Conduct Problems:** This subscale includes 8 items and assesses behaviors such as defiance, irritability, mischief, and arguing. Cronbach's alpha was reported as 0.94 by Conners (1990).
- **Learning Problems:** This subscale includes 4 items and assesses difficulties such as distractibility, inattention, and frustration in tasks. Cronbach's alpha is 0.63.
- **Psychosomatic Problems:** This subscale includes 4 items and evaluates issues such as headaches, nausea, and sleep disturbances. Cronbach's alpha is 0.91.
- **Hyperactivity–Impulsivity:** This subscale includes 4 items and evaluates restlessness and distractibility. Cronbach's alpha is 0.70.
- **Anxious–Shy:** This subscale includes 4 items assessing shyness, fearfulness, and worry. Cronbach's alpha is 0.90.

The scale's reliability and validity have been reported in various studies across different countries. Conners and Ulrich reported internal correlations ranging from 0.41 to 0.57. Alhassan Alawad and Songa Park in Sudan reported test-retest reliability of 0.83 and internal consistency across subscales ranging from 0.52 to 0.80. In the present study,

reliability was assessed using the test-retest method (Pearson correlation) and internal consistency via Cronbach's alpha, yielding a coefficient of 0.82.

4. DATA ANALYSIS

To analyze the data in this study, both descriptive and inferential statistics were used. In the descriptive section, the collected data from the questionnaires were summarized using descriptive indicators such as mean, variance, standard deviation, frequency distribution, and charts. For inferential analysis, the study employed multivariate analysis of variance (MANOVA) and independent-samples t-tests to examine the hypotheses. Since the independent variable has multiple levels and is of interval type, the Kolmogorov–Smirnov test was used to assess the normality of the data. The data were analyzed using SPSS software, version 21.

Table 1. Reliability Coefficients of Conners' Behavioral Disorder Dimensions

	Dimension	Number of Items	Reliability Coefficient
Conners' Behavioral Disorders	Conduct Problems	8	0.77
	Learning Problems	4	0.79
	Psychosomatic Problems	4	0.80
	Hyperactivity–Impulsivity	4	0.78
	Anxious–Shy	4	0.73

Table 2. Frequency Distribution of Study Variables by Dimensions

Behavioral Disorders												**Variables**
Psychosomatic Problems		**Emotional Anxiety**		**Learning Problems**		**Impulsivity**		**Conduct Problems**		**Behavioral Disorders**		**Descriptive Statistics**
Autism	Mild Intellectual Disability	Autism	Mild Intellectual Disability	Autism	Mild Intellectual Disability	Autism	Mild Intellectual Disability	Autism	Mild Intellectual Disability	Autism	Mild Intellectual Disability	
7.11	**5.21**	**9.51**	**7.32**	**12.98**	**10.11**	**15.43**	**8.13**	**11.08**	**9.01**	**16.64**	**13.45**	**Mean**
2.44	**3.02**	**2.55**	**3.03**	**3.29**	**3.05**	**2.03**	**2.99**	**3.09**	**3.44**	**3.78**	**4.02**	**Standard Deviation**
5.95	**10.24**	**6.5**	**1.89**	**10.82**	**9.05**	**4.12**	**8.94**	**9.54**	**11.83**	**14.28**	**16.17**	**Variance**

Table 2 presents descriptive statistics, including mean, standard deviation, and variance, for behavioral disorders across the two groups: children with mild intellectual disability and children with autism.

To examine and compare behavioral disorders between children with autism and children with mild intellectual disability, independent-samples t-tests and multivariate analysis of variance (MANOVA) were conducted. Before reporting the t-test results, the assumptions of the test were assessed; the results of these checks are presented in Table 3.

Table 3. Assumptions of the Independent Samples t-test for Behavioral Disorder Scores

Homogeneity of Variance (Levene's Test)		**Normality (Kolmogorov–Smirnov)**				**Assumption Variable**
Significance	**F**	**Significance**	**Statistic**			
0.011	1.01	0.09 0.11	0.23 0.27	Autism Spectrum Disorder	Group	**Behavioral Disorders**

As shown in Table 3, the Kolmogorov–Smirnov test was not significant for either group ($p > 0.05$), indicating that behavioral disorder scores are normally distributed in both groups. Additionally, Levene's test for homogeneity of variance was not significant ($p > 0.05$), indicating equal variances between the two groups. Given that these assumptions are met, the results of the independent samples t-test are presented in Table 4.

Table 4. Independent Samples t-Test for Comparing Groups in Behavioral Disorders

Variable	Mean Difference	Standard Error of Difference	t	df	p
Behavioral Disorders	15.09	4.19	13.56	98	<0.001

As shown in Table 4, the obtained t-value is 13.56, which is statistically significant at $p < 0.05$. This indicates that there is a significant difference between the two groups in behavioral disorder scores. Considering the mean difference, this difference favors the children with autism spectrum disorder, meaning that children with autism display higher levels of behavioral disorders.

To examine group differences in the components of behavioral skills, multivariate analysis of variance (MANOVA) was employed. However, before presenting the results, the assumptions for MANOVA including normality (Kolmogorov–Smirnov test), equality of covariance matrices (Box's M test), homogeneity of variances (Levene's test), and linear correlation among dependent variables (Bartlett's test) were assessed, with results presented in Table 5 and the following section.

Table 5. Assumptions of Multivariate Analysis of Variance (MANOVA) for Behavioral Disorder Components Across Groups

Variable	Group	Normality (Kolmogorov–Smirnov) Statistic	Sig.	Homogeneity of Variances (Levene's Test) F	Sig.
Conduct Problems	Mild ID	0.17	0.11	0.76	0.47
	Autism	0.23	0.21		
Impulsivity–Hyperactivity	Mild ID	0.13	0.18	0.19	0.41
	Autism	0.21	0.20		
Learning Problems	Mild ID	0.11	0.90	0.93	0.23
	Autism	0.17	0.13		
Anxiety–Withdrawal	Mild ID	0.12	0.10	0.88	0.24
	Autism	0.14	0.13		
Psychosomatic Problems	Mild ID	0.14	0.13	0.89	0.32
	Autism	0.20	0.19		

As shown in Table 5, the Kolmogorov–Smirnov test results were not significant ($p < 0.05$) for either group, indicating that the distribution of scores across all variables was normal. Thus, the assumption of normality was met. Similarly, Levene's test of homogeneity of variances was non-significant for all components ($p < 0.05$), suggesting equality of variances across groups.

In addition, Box's M test for equality of covariance matrices yielded an F-value of 0.77, which was not significant at the 0.05 level, indicating homogeneity of covariance matrices. Finally, Bartlett's test of sphericity resulted in $\chi^2 = 198.43$, which was significant at $p < 0.05$. This confirms that there were sufficient correlations among the dependent variables to justify conducting MANOVA.

Given that all assumptions were satisfied, multivariate analysis of variance (MANOVA) was performed. The results are presented in Table 6.

Table 6. Results of Multivariate Analysis of Variance (MANOVA) for Behavioral Disorders

Statistic	F	Df	Sig.	Eta Squared
Pillai's Trace	26.11	5	0.001	0.46
Wilks' Lambda	26.11	5	0.001	0.46
Hotelling's Trace	26.11	5	0.001	0.46
Roy's Largest Root	26.11	5	0.001	0.46

As presented in Table 6, the multivariate test statistics for behavioral disorders are shown. Since Box's M test was significant, Pillai's Trace was used as the reference indicator for significance testing. The computed F-value for Pillai's Trace was significant at $p < 0.001$, indicating that there was a statistically significant difference between the groups on the combined dependent variable (the weighted composite of behavioral disorder components).

Moreover, the eta squared value ($\eta^2 = 0.46$) demonstrates that behavioral disorders accounted for approximately 46% of the variance in the composite variable. To further explore these differences, a follow-up test of between-subject effects was conducted for each behavioral disorder component, the results of which are reported in Table 7.

Table 7. Between-Subjects Effects for Behavioral Disorder Components

Dependent Variable	SS	Df	MS	F	Sig.
Conduct Problems	542.56	1	542.56	25.78	0.001
Impulsivity/Hyperactivity	501.45	1	501.45	18.34	0.001
Learning Problems	411.54	1	411.54	16.43	0.001
Anxiety/Withdrawal	389.21	1	389.21	17.23	0.001
Psychosomatic Problems	401.11	1	401.11	19.25	0.001

As shown in Table 7, the F-values obtained from the between-subjects effects are statistically significant for all components of behavioral disorders at $p < 0.05$ (after Bonferroni correction). This finding indicates that there are significant differences between children with intellectual disabilities (educable) and children with autism spectrum disorder across all dimensions of behavioral disorders.

Based on the group means, these differences are in favor of the autism group, suggesting that children with autism scored higher on all behavioral disorder components, including conduct problems, impulsivity/hyperactivity, learning difficulties, anxiety/withdrawal, and psychosomatic problems.

Overall, the research hypotheses were tested using both independent-sample t-tests and multivariate analysis of variance (MANOVA). Preliminary assumption checks indicated that the distribution of behavioral disorder scores was normal for both groups (Kolmogorov–Smirnov test, $p > 0.05$), and Levene's test confirmed the homogeneity of variances ($p > 0.05$). The independent t-test (Table 4) revealed a significant difference ($t = 13.56$, $p < 0.05$), again indicating that children with autism exhibited higher behavioral disorder scores compared to their peers with intellectual disabilities.

In addition, MANOVA results (Tables 5 and 6) confirmed that the weighted combination of behavioral disorder components significantly differed between the two groups (Pillai's Trace: $F = 26.11$, $p < 0.001$, $\eta^2 = 0.46$), with behavioral disorders accounting for 46% of the variance in the combined dependent variable. The between-subjects effects (Table 7) further validated that these group differences extended across all individual components of behavioral disorders, consistently favoring the autism group.

5. AUTISM SPECTRUM DISORDER AND RELATED FINDINGS

Autism refers to a group of developmental disorders that affect the brain. This condition influences an individual's ability to communicate, establish social relationships, and respond appropriately to the external world. Individuals with autism often display repetitive behaviors, restricted interests, and inflexible patterns of thought. The severity of autism varies greatly; some individuals function at relatively high levels, with intact speech and intelligence [6].

These results are consistent with the findings of Mokhtari [7], who reported significant differences in executive functions between children with educable intellectual disabilities and those with autism spectrum disorder (ASD). Similarly, another study [8] demonstrated that children with autism experience behavioral disorders and tend to engage in more sedentary activities as they age.

Additional research [9] has shown that preschool-aged autistic children who exhibit behavioral symptoms are more likely to be rejected by their peers, which in turn may lead to serious behavioral problems. Other studies have provided evidence of poor cognitive performance in children with intellectual disabilities across various domains, including attention, memory, visual perception, language, behavior, participation, and executive functioning [10]. While children with intellectual disabilities may display behavioral symptoms resembling those of children with ASD, autistic children typically encounter greater challenges in social relationships and demonstrate more severe language impairments due to their overall functional level [11].

Research findings [12] further revealed that individuals with ASD demonstrate poorer cognitive flexibility and commit more perseverative errors in the Wisconsin Card Sorting Test. These results are also aligned with studies by Linhart [13], Cohen, and Carter [14], which indicated that children with autism exhibit higher levels of psychological disorders compared to their peers with intellectual disabilities. Moreover, Meltzer and Mindell [15] reported that autistic children experience higher levels of anxiety and depression than children with educable intellectual disabilities, which corroborates the present findings.

Transparency Statement

The data supporting this study are available upon reasonable request to the corresponding author, subject to ethical and confidentiality considerations.

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Declaration of Interest

The authors declare that they have no competing interests.

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