

The Level of Knowledge of Teachers of Children with Intellectual Disabilities about the Applied Behavior Analysis Approach and Its Techniques in the State of Kuwait

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Abstract

This study aimed to assess the level of knowledge of teachers of children with intellectual disabilities about the applied behavior analysis approach and its techniques in Kuwait. It tested the differences in the level based on: the type of school, experience and gender. The study sample consisted of (160) teachers worked in schools of children with intellectual disabilities in the academic year (2019/2020).

To achieve the objectives of this study, the test of "Applied Behavior Analysis Approach and Its Techniques" was applied. The results indicated that the overall level was low. The dimension of "general principles of the Applied Behavior Analysis approach" was the highest with intermediate level score, followed by the "techniques of Applied Behavior Analysis", and "practical applications of the techniques of applied behavior analysis". Both of them with low level score.

The results showed that there are no significant differences in the total score and all sub-dimensions based on the school type. There are no significant differences in the total score and in the dimensions: techniques of applied behavior analysis and practical applications of applied behavior analysis techniques, based on the experience. Based on the experience, there are significant differences in the general principles of the applied behavior analysis approach, in favor of those teachers with experience of more than 10 years. There

are significant differences in the total score, and in the dimensions of: the general principles of the applied behavior analysis approach and techniques of applied behavior analysis based on the variable of gender, in favor of males.

This study recommends conducting a study to assess levels of special education teachers in the approach of applied behavior analysis, as a foundation of conduct future training.

Keywords: teachers, applied behavior analysis, children with intellectual disabilities, Kuwait

1. Introduction

Achieving a school environment that represents an integrated life for learners is a basic requirement that will enrich their lives and enable them to develop all capabilities to reach their maximum limits. This can only be achieved with the presence of competent teachers who are able to achieve the highest gains. The enrollment of children, especially the younger with intellectual disabilities, does not necessarily guarantee that their teachers possess the strategies and skills that meet their needs, especially in the presence of the challenges posed by their disability. Such challenges prevent them from achieving the desired benefit from the education process, especially when knowing that the intellectual disability is considered one of the most common developmental disorders in the world. It affects between (3-5%) of the total population. Also, it can be associated with another disability, which complicates the treatment (Srivastava and Schwartz, 2014).

Such disabilities are accompanied by non-adaptive behavioral patterns that affect the developmental areas, and create high levels of stress that affect parents, caregivers and teachers. These levels will increase if the teacher lacks the techniques and strategies that are based on scientific research and learning theories methods that teachers need to achieve the desired training and treatment goals away from randomness and in order to (Al-Khatib, 2005; Taylor, Brady and Richards, 2015).

Behavioral challenges also limit the ability of caregivers, especially teachers, to perform their tasks. The emergence of non-adaptive behaviors among these children overworks the teachers and causes pressure and confusion that may reach of affecting negatively their professional competencies and ability to meet the needs of children with disabilities. This pressure also may increase teachers' sense of disappointment and frustration that may push them to stop working and quitting (Gray, Honan, McClean and Daly, 2005)

By tracking the needs of teachers of special education in general, and teachers of children with intellectual disabilities in particular, and by reviewing the relevant scientific research, it became clear that they had urgent needs to assess the challenges facing them and their knowledge about behavioral interventions. This is important to prepare them for providing the necessary support through enrolling them in appropriate training on the techniques of applied behavior analysis in order to increase their performance efficiency (Al-Khatib, 1993; Khaleel, 2019; Fleming, Mackrain and Lebuffe, 2013).

Embodiment of the principles of caring about the right of persons with disabilities to receive services inside and outside schools, the State of Kuwait's endeavor to achieve a decent life for children with disabilities, just like their peers. Although the high efforts being made to them by the state, they look don't reach practically the level of ambition (Dokhi and Jarar, 2015), due to the absence of continuous monitoring and evaluation of teacher's level of knowledge and their application of scientific foundations methods. These methods are important to teachers to meet children's needs by providing best evidenced-based practices to ensure support them in their life. Hence the idea of this study.

This study aims to determine the level of knowledge of teachers of children with intellectual

disabilities about applied behavior analysis in the State of Kuwait and test the effect of different variables on the knowledge of such teachers. The results are important to determine the level of theoretical knowledge of teachers about behavioral interventions, and enrich the Arab library, including the Kuwaiti library, with theoretical content on applied behavior analysis with its techniques, especially with its scarcity in the country.

In pursuit of these objectives, the study tries to answer the following questions:

1. What is the level of knowledge of teachers of children with intellectual disabilities about applied behavior analysis techniques in Kuwait?
2. Are there statistically significant differences at the level ($\alpha = 0.05$) between the average teachers' scores on the "Applied Behavior Analysis and Techniques" test based on variables: "the school type", (government / private), "teaching experience" and "gender"?

2. Literature Review

2.1 Definition of Related Concepts

2.1.1 Applied Behavior Analysis (ABA) Definition

Applied behavior analysis (ABA) is the systematic science that seeks to develop human behavior of social importance to the individual and society by analyzing the functional relationship between the target behavior and the environment and applying scientific knowledge by employing the structured methods and techniques that are proven effective in behavior. It is applied approach that deals with distinct social problems based on conceptual systems stemmed from the behavioral laws that are effective in dealing with measurable behavior, providing an objective analysis of it, following the remedial procedures and describing them technically sufficiently and accurately to allow anyone trained to implement them (Al-Khatib, 2017).

2.1.2 Teachers of Children with Intellectual Definition

They are teachers who have an educational qualification in education and special education, and who carry out the educational process of education, training and rehabilitation in schools and centers that deal with learners with intellectual disabilities. Intellectual Disability (ID), as defined by the American Association on Intellectual and Development Disabilities (AAIDD), is: a disability characterized by a clear deficiency in mental function and adaptive behavior, which are represented by deficiencies in conceptual, social and adaptive practical skills, and this deficiency appears before the age of eighteenth (Schalock et al., 2010).

2.2 Applied Behavior Analysis (ABA)

The experimental practical branch of behavior analysis, now known as "behavior analysis", began in 1938 with the publication of Skinner's first major essay entitled "The Behavior of Organisms". His research identified two types of behavior: respondent and operant, in line with Pavlov's ideas about responsive behavior as an involuntary reaction elicited by stimuli

that precede it directly. In contrast; operant behavior was not affected by previous stimuli but rather is influenced by the consequences of it that followed the behavior in the past. Skinner noted that operant behavior has a unique relationship with the environment and deserves a separate field of research. In his attempt to provide a scientific basis for different types of behavior, and unlike other psychologists of his time, he found the Stimulus-Response (S-R) model. Skinner studied the relationships between behavior and the environment and contributed believed that behavior can be studied as a natural science, like biology for example. However, he argued that it is not appropriate to explain most behaviors because not all behaviors are response to antecedent stimuli (Morris, Smith and Altus, 2005).

Skinner then promoted the idea that the traditional model (S-R) should be replaced with a more descriptive functional analysis model of the relationship between the independent and dependent variable. Therefore, he introduced new model, three-term contingency: antecedent or stimulus, behavior consequence, and response to a stimulus. It was found that the S-R-S model was able to correctly interpret the behaviors that were not explained by the SR model. Behaviors that did not have a previous cause were clearly explained by the consequences, and these behaviors were described as an “operant”, behaviors affected by the results of similar behaviors in previous experiences (Cooper, Heron and Heward, 2007).

Skinner's main contributions to the analysis of applied behavior constituted the theory of experimental knowledge and the basic principles of behavior. The mid-twentieth century, especially the late fifties to sixties, witnessed the birth of what became known as the field of applied behavior analysis. In 1959, Ayllon and Michael published the first paper on ABA that investigated the effect of training on behavioral strategies among government hospital workers on improving the functional performance of patients with schizophrenia and other mental disorders. Later, the same principles of behavior were applied to a variety of research on difficult social behaviors and developmental disorders. These studies were able to demonstrate empirically that non-adaptive behaviors, such as self-directed aggression or aggression, can be explained as functional responses to environmental stimuli (Dixon, Vogel and Tarbox, 2012).

And later, therapeutic interventions began to appear by Ivar Lovaas and his colleagues at the University of California at Los Angeles in the 1960s, often referred to as Early and Intensive Behavioral Intervention (EIBI), which came based on conceptualization of presenting an intensive and early behavioral intervention model for people diagnosed with Autism spectrum disorder (ASD). It is a comprehensive model that is applied often 5-7 days a week, for more than 40 hours. Initially, the therapeutic intervention was provided individually and focused on reducing stereotypical behaviors and establishing educational skills. Then, it became group-oriented, less structured, and focused on more complex mental and social skills. Lovaas and his colleagues conducted an experimental study on (49) children with ASD whose age did not exceed (40) months at the beginning of the training. They distributed the children to two groups received the same intervention and differ in durations of these interventions. The first experimental group, which included (19) children, received individual intensive training of no less (40) hours per week over two consecutive years. While the second group, which consisted of (40) children, received simple individual training over a

period of two years, no more than (10) hours per week (Roane, Fisher and Carr, 2016).

The results between the two groups indicate a significant difference, (47%) of the first experimental group, who are between six and seven years of age, achieved a normal intelligence rate compared to (2%) for what the other group members achieved. Many of the first group members were successfully enrolled in Regular classrooms, in addition to the ability of more than half of the children in the same group, to achieve clear functional performance that enabled them to reach the ranks of their typically developing peers in regular schools in their first academic year. Only (2%) of the children of the other group achieved excellent results in educational and mental performance, while (45%) of them enrolled in special classes for people with language retardation, and (53%) classes of people with autism spectrum disorder (Rosenwasser and Axelrod, 2001).

2.3 Teachers of Children with ID, and ABA Approach

It is known that the special education teacher is an essential component of the special education component, which has a direct impact on the lives of many individuals, therefore it is required that he possess a wide knowledge of the field, strategies and skills necessary to deal with the wide range of students' abilities in order to ensure safe and effective practices. If the special education teacher lacks of cognitive and skill competencies, he will become a subject to continuous failure in the classroom, which reduces his effectiveness and confidence in overcoming challenges. The opportunity increases in his career's first years, as he suffers from constant stress, anxiety and failures, which threatens his continuation in practicing the profession. High levels of stress are a source of great concern in special education because of their contribution to the shortage of teachers. Studies reported that (75%) of teachers leave special education within the first ten years, most of them quit in the first three years (Lee, Patterson and Vega, 2011; Council for Exceptional Children, 2015).

It is possible to assume that teaching children with disabilities, including those with intellectual disabilities, is the most important role of teachers, along with the other roles they have. The Council for Exceptional Children, CEC (2015) assigned theoretical and practical competencies of the special education teachers: teacher's consideration of individual differences between learners and the impact of their disability on abilities, skills, and behavior, and his capability of providing a level of support appropriate to the individual's needs using evidence-based strategies and practices. Teachers' knowledge and training on evidence-based strategies lead to higher levels of teachers' self-efficacy. It comes by providing them with tools to improve students' performance, which in turn reduces teachers' stress (Ouellette, Pellecchia, Beidas, Wideman, Xie, and Mandell, 2019).

The most important thing is that the teacher organizes education in an effective manner that targets the individual needs of children, starting with planning, assigning possible goals and arranging them according to families' priorities, and following by designing the program, identifying practices and evaluation mechanisms in order to provide education and training that would improve the lives of people with disabilities. ABA is one of the most effective practices and treatments (Taylor, Brady and Richards, 2015).

Knowledgeable and qualified special education teachers are expected to provide proper behavioral techniques to achieve maximum results. However, the limited knowledge of teachers of children with intellectual disabilities of substandard behavioral interventions hinders their ability to implement. Loiacono and Allen (2008) reported that only (11.24%) of teachers of children with ASD received training on ABA techniques in order to be able and ready to present it effectively in their classrooms, while (88.76%) of teachers were absent from this. It can be assumed that familiarity with strategies of ABA, understanding the theoretical foundations and principles and training the teachers to use them, qualifies the teacher to apply them.

There are many reasons prevent teachers from applying ABA in schools: lack of knowledge and familiarity with the ABA, not engaging in theoretical or practical training about it, or internal negative concern about their ability to acquire the skills necessary to implement the intervention techniques. Teachers may receive sufficient training and knowledge, but they may fall into several lapses during the assigning of behavioral goals and during the application by reducing or standardizing the implementation and measurement techniques. Sometimes, some teachers may resist to apply strategies because they differ from what they are accustomed to in terms of strategies and teaching methods and the presence of difficulty in replacing them with strategies even if their effectiveness is proven. (Kearney, 2015; Gray, et al., 2005; Lovitt, 2012).

Professional development of in-service teachers is a significant to improve education. It should focus on assessing the current level of performance and then providing theoretical and practical training to teachers, in addition to enriching their practices by using the most effective strategies that are based on the latest scientific findings in order to increase the quality of educational and training interventions for students, especially in the existence of a set of political, social and economic challenges. Also, the educational process faces qualitative and quantitative challenges, related to preparing sufficient numbers of teachers to deal with people with disabilities. Therefore, there is a need of developing teachers' skills by updated knowledge and practices (Nasr, 2001; Tzivnikou, 2015).

The State of Kuwait paid great attention to people with disabilities since 1956 by issuing the Law (11/1956) for compulsory education for people with sensory, mental and physical disabilities. Kuwait traces the line of the United States' policies regarding the education and care of people with disabilities. As a result of the issuance of the American Law (49-142), (Education for All Handicapped Children Act), for the year 1975, which stipulated the necessity of providing the best educational and professional care methods for the mentally retarded persons, the State of Kuwait has started to prepare the necessary cadres of male and female teachers within a bachelor degree program offered at Kuwait University and the College of Basic Education of the Public Authority for Applied and Training Education (ALquraini and Gut, 2012).

Kuwaiti legislators hoped to add a new block to the educational building for people with disabilities. They ended the difficulties and attracted people to work in special education schools by reducing the teaching burden of teachers, decreasing class size, and allocating a

financial increase to the monthly salary of teacher. Also, the teachers had a chance to develop their professional skills and participate in making necessary decisions to develop educational programs (Al-Abbad, 2014).

2.4 Previous Studies Related to the Knowledge and Training of Teachers of Children with ID or Special Education Teachers in ABA

By reviewing the available databases, Edusearch, Sciencedirect, PsycArticles and PsycInfo, and summaries of the studies published between 1995 and 2020 in the "psychInfo" database, we came up with a group of studies related to the topic, as follows:

Flynn and Lo (2016) conducted a study aimed to investigate the effect of training teachers of children with ASD or with behavioral disorders to implement functional behavior analysis and differential reinforcement of alternative behavior. It also aimed to investigate the effect of training provided by the same teachers on their students. The study sample consisted of 3 female special education teachers and 6 students with ASD or a behavioral disorder. The teachers were trained through individual training sessions that included providing a written guide for student training mechanism, practical training and practice, and providing feedback for each teacher. Each teacher trained 2 students using the appropriate therapeutic behavioral intervention. The results indicated that all the teachers were able to apply the techniques with high-precision procedures after receiving the training sessions. 2 of the teachers generalized the acquired skills to other students with an accuracy of no less than 90%. The study indicated positive results regarding the behavior of the students, as the level of the challenging behaviors: verbal disturbances, laughter, self-stimulation and elopement, decreased. They got clear improvement in the level of alternative behaviors, such as: usage of verbal expression to say: "Give me a break please!" or using a nonverbal expression by raising the hand instead of outbursts of anger and screaming.

Denne, Thomas, Hastings and Hughes (2015) conducted a study aimed to evaluate the efficiency of UK teachers of children with ASD, who were 3-9 years, in providing behavioral interventions based on the ABA. The sample consisted of 13 teachers distributed between experimental and control groups. The members of the experimental group were trained for a year. The researchers used three tools to evaluate the teachers' competency: observation, written testing and analyzing the recorded video films. The results of the study indicated that the efficiency of the experimental group members in implementing the behavioral measures is much higher than the performance of the control group members.

Al-Khatib (2005) conducted a study aimed to verify the effectiveness of a training program based on the principles of modifying human behavior and its methods in order to improve the level of knowledge of teachers of children with ID. The sample consisted of 41 teachers from the Arab Gulf states, on whom the test of the principles of modifying behavior was applied on before the start of the program and after finishing. The program included: written theoretical evidence and two 6-hours training sessions. The total duration of the program was two weeks interspersed with activities and applied practices through case studies and training on designing a treatment program and using behavioral strategies: reinforcement, prompting, extinction, shaping, chaining and generalization. The results showed that the program has an

effective impact on increasing the level of knowledge of teachers about modifying behavior and its strategies, without any effect from level of education and teaching experience. The study recommended more future studies in the behavioral field using experimental designs without being limited to measure the impact on teachers of children with ID, but also measure the impact on the behavior of children with ID, in addition to measure the long-term impact of the program.

Sarokoff and Sturmey (2004) conducted a study aimed at evaluate the performance level of teachers of individuals with ASD using the DTT strategy. The sample consisted of 3 teachers and 1 child. The teachers received training on implementing DTT by providing modeling sessions, and the necessary instructions supported by theoretical evidence that includes application procedures. Then, each teacher would train the same child. The results indicated that teachers showed significant improvement in their performance for separate attempts after training. The improvement rate for each of them were 97%, 98%, and 99% respectively. It was 43%, 49%, and 43% for before the training, which indicates that the training is effective.

2.5 Commentary on Previous Studies

The presentation of the previous studies revealed the similarity of the current study with most of the previous studies in terms of dealing with ABA approach. Few of them used assessments that directly measure teachers' knowledge, which is what the current study investigated by providing a test to stand at the real level as much as possible. The nature of the current study, its approach, the sample used and also the nature of the society, is different. Through the presentation and review of the previous studies, the researcher benefited in preparing the study tool "Test of the Applied Behavior Analysis Approach and its Techniques". Their results also provided the possibility of presenting and discussing the results of the current study.

3. Methodology

3.1 Participants

The study population consisted of all teachers of children with ID and ASD, who were 302. The sample consisted of 160 teachers for children with ID: 80 were males and 80 were females. The sample was randomly selected from 5 government and private schools: The School of Intellectual Education- Girls, the School of Intellectual Education- Boys, the Kuwait Academy Educational School in Hawalli Governorate, the Heuristic Education School, and Umm Hani School for People with Special Needs in the Farwaniya Governorate. Table (1) shows the distribution of the sample:

Table 1. Distribution of the Study Sample Individuals on the Study Variables (N=160)

Variable	Variable levels	Total N	Sex		%
			M	F	
Experience	Less than 5 years	35	14	21	22%
	5-10 years	80	31	49	50%
	More than 10 years	45	25	20	28%
School type	Government	80	40	40	50%
	Private	80	30	50	50%
Working Place	The school of intellectual education Boys	40	40	0	25%
	Government schools				
	The school of intellectual education girls	40	0	40	25%
	The heuristic education school	30	20	10	18.75%
	Private schools				
	The Kuwait academy educational school Umm Hani school for people with special needs	30 20	10 0	20 20	18.75% 18.75%

3.2 Data Collection

3.2.1 ABA and It's Strategies Test

The “Applied Behavior Analysis and Techniques” test for special education teachers was used for the purpose of collecting data in the current study. The test was formulated based on literature review of relevant studies: (Gray, Honan, McClean and Daly, 2005), (Kearney, 2015), (Flynn and Lo, 2016), (Alotaibi, 2015) and others. Also, the evaluation questions contained in (Al-Khatib, 2017) were used after the author's approval. The initial draft included (54) items distributed in three dimensions: general ABA principles (14 items), ABA techniques (22 items), and practical applications of ABA techniques (18 items).

The draft was introduced to 8 specialized arbitrators, with the aim of evaluating the items in terms of their relevance to the dimension and the integrity of their formulation. Some editions were made based on the arbitrators' amendments. The items and dimensions that obtained an agreement rate (80%) were retained. The final test edition consists of 50 items in its final form, distributed on three dimensions:

1. General ABA principles: It included (11) items, which constituted a study of the foundations based on behavioral psychology that seeks to understand the behavior of an individual to employ scientific knowledge about it. The items covered the numbers (1-11).

2. ABA techniques: Which includes the behavioral mechanisms emerging from the ABA to acquire, strengthen or reduce the individual's skill. It is represented by (21) items from (12-32) numbers.

3. Practical applications of ABA techniques: It includes illustrative examples of using ABA with its techniques. It is represented by (18) items from (33-50) numbers.

First: The method of application: The test was applied to the examiners directly. The teachers chose the correct answer for each of the three phrases (A-B-C) for each item by placing a sign (O) around the symbol indicating it.

Second: Correction method: The scores of the test items were calculated on the binary ranking as follows: the correct statement takes (1), the wrong statement takes a score (0). A subject's score on the test ranged from (0- 50) indicating: (low) degree (0.00-16.76), (medium) degree (16.68-33.34) and (high) degree (33.35-50).

Ensuring validity and reliability of the "ABA approach and its techniques" test for special education teachers:

3.2.2 Validity

a. Construct validity: By relying on the educational literature that are directly related to the subject of the test, from the evaluation questions contained in (Al-Khatib, 2017).

b. Correlation coefficient: By applying correlation coefficients of the current study to an exploratory sample of (20) teachers of special education from outside the main study sample to verify the psychometric characteristics represented by the validity and consistency indications of dimensions and items, then the correlation coefficients between paragraph and dimension were found, as well as between the items and its total score; Table (2) shows these results:

Table (2) shows that: for the dimension of the general principles of ABA, the correlation coefficients between the item and the dimension ranged between (0.327-0.665), for the dimension of the techniques of ABA, they ranged between (0.389-0.792), and for practical applications of the techniques of ABA, they ranged between (0.383-0.757). Also, the table shows that: for the dimension of the general principles of ABA, the correlation coefficients between the item and the total score of the test ranged between (0.384-0.579), for the dimension of the techniques of ABA, they ranged between (0.364-0.786), and for practical applications of the techniques of ABA, they ranged between (0.445-0.802). These values are appropriate and indicate the construction validity of the test.

a. Content validity: Internal correlations validity

Table 2. Correlation Coefficients between the Items, the Total Score of the Dimension belonging to it and the Total Score of the "ABA and Its Techniques" Test for Special Education Teachers

General principles of ABA			ABA techniques			Practical applications of ABA		
Items N	Correlation between dimension	Correlation between total score	Items N	Correlation between dimension	Correlation between total score	Items N	Correlation between dimension	Correlation between total score
1	.604**	.445*	12	.587**	.566**	33	.626**	.625**
2	.446*	.384	13	.389	.364	34	.525*	.520*
3	.377	.424	14	.792**	.786**	35	.704**	.713**
4	.429	.579**	15	.482*	.538*	36	.625**	.557*
5	.377	.305	16	.603**	.576**	37	.549*	.445*
6	.487*	.569**	17	.646**	.664**	38	.565**	.504*
7	.578**	.428	18	.711**	.745**	39	.539*	.574**
8	.394	.550*	19	.622**	.574**	40	.683**	.639**
9	.327	.320	20	.624**	.639**	41	.493*	.515*
10	.621**	.387	21	.622**	.598**	42	.383	.445*
11	.665**	.523*	22	.499*	.451*	43	.640**	.682**
			23	.572**	.526*	44	.549*	.454*
			24	.494*	.533*	45	.601**	.541*
			25	.446*	.418	46	.757**	.802**
			26	.591**	.596**	47	.571**	.553*
			27	.664**	.638**	48	.383	.427
			28	.640**	.590**	49	.570**	.502*
			29	.516*	.468*	50	.619**	.672**
			30	.563**	.541*			
			31	.428	.443			
			32	.605**	.525*			

* Statistically significant at $\alpha=0.05$

** Statistically significant at $\alpha=0.01$

To ensure the internal correlations validity of the used test, correlation coefficients were extracted between the dimensions and the total score. Table (3) shows these results:

Table 3. Correlation Coefficients between the Dimensions and the Overall Score of ABA Scale and Its Techniques

The dimensions	General principles of ABA	ABA techniques	Practical applications of the techniques of ABA	The overall test score
General principles of ABA	1			
ABA techniques	.742**	1		
Practical applications of the techniques of ABA	.784**	.928**	1	
The overall test score	.846**	.973**	.976**	1

** Statistically significant at $\alpha=0.01$

It is evident from Table (3) that the correlation coefficients between the dimensions ranged between (0.742-0.928). They were (0.846) between the dimension of the general principles ABA and the overall score, (0.973) between the dimension of ABA techniques and the overall score, and (0.976) between the dimension of practical applications of ABA techniques and the overall score. These values are considered statistically significant values and indicate that the test has a validity degree appropriate for the purposes of the current study.

3.2.3 Reliability

The internal consistency was ensured by using the Cronbach's alpha. Table (4) shows the reliability coefficients of the test:

Table 4. Reliability Coefficients by the Method of Internal Consistency Using the Cronbach's Alpha for Test "ABA and Its Techniques" and Its Sub-dimensions

Number	The dimensions	Cronbach's alpha reliability
1	General principles of ABA	0.708
2	ABA techniques	0.893
3	Practical applications of the techniques of ABA	0.882
	The overall test score with its subdimensions	0.944

Table 4 shows that the overall reliability coefficient extracted by the method of internal consistency using the Cronbach's alpha for the "ABA and its techniques" test was (0.944). It was (0.708) for the dimension of the general principles of ABA, (0.893) for the dimension of ABA techniques, and (0.882) for the dimension of practical applications of ABA techniques. These values are appropriate and high indicating reliable internal consistency for the used "ABA and its techniques" test.

3.3 The Study Procedures

In order to achieve the objectives of the study, the mission facilitation letter was obtained from the Educational Research and Curriculum Sector of the Ministry of Education in the State of Kuwait. It was used to facilitate the researcher's task and contact the Special Education Schools Administration that issued the decision to the schools assigned to study, therefore, facilitate interviewing the concerned parties in order to organize a mechanism for applying and obtaining approval to undergo the study. The test was administered during the last two lessons of the school day to avoid disrupting the workflow and applying the "ABA and Techniques" test individually in a public room. The Statistical Package for Social Sciences (SPSS) was used to code, enter and analyze data. The results were discussed based on the theoretical literature and previous studies, and the recommendations were introduced.

4. Results and Discussion

4.1 Results

4.1.1 The Results of the First Question

To answer the first question: What is the level of knowledge of teachers of children with ID about ABA and its techniques in Kuwait? The correspondents' means and standard deviations of the "ABA and its techniques" test were extracted. Table (5) shows these values:

Table 5. Means, Standard Deviations, and the Level of Knowledge of Teachers of Children with ID about ABA and its Techniques in Kuwait

Number	The dimensions	Mean	SD	Level
1	General principles of ABA	.38	.176	Intermediate
2	ABA techniques	.29	.155	Low
3	Practical applications of the techniques of ABA	.28	.147	Low
	The overall mean of the measure	.30	.127	Low

Table 5 shows that the overall mean for the measure of the level of knowledge and application of teachers of children with ID about ABA and its techniques in Kuwait was (0.30)

at a low level. The means of the sub-dimensions ranged between (0.28 and 0.38): it was (0.38) for the dimension of the general principles of ABA at an intermediate level, (0.29) for the dimension of ABA techniques at a low level, and (0.28) for the dimension of practical applications of the techniques of ABA at a Low level.

4.1.2 The Results of Second Question

To answer the second question, means and standard deviations of the knowledge levels of teachers of children with ID about ABA were extracted using the Three-ways ANOVA Test. The data were used to know the significance of these differences in terms of school type and gender. Scheffe' Test POST was used to know the significance of these differences in terms of experience. The following table shows these results:

Table 6. Means and Standard Deviations of the Knowledge Levels of Teachers of Children with ID about ABA and Its Techniques Attributed to the Variables of School Type, Teaching Experience, and Gender

Variable	Variable levels		Subdimensions and the overall mean				
			General principles of ABA	ABA techniques	Practical applications of the techniques of ABA	The overall mean of the measure	
School type	Public (n=80)	Mean	4.35	6.43	5.30	16.08	
		SD	2.301	4.084	3.160	8.306	
	Private (n=80)	Mean	4.01	5.65	4.70	14.36	
		SD	1.471	2.099	1.971	3.258	
Experience	< 5 years (n=35)	Mean	4.06	5.71	4.31	14.09	
		SD	1.413	2.270	1.982	4.017	
	5-10 years (n=80)	Mean	3.84	5.83	5.10	14.76	
		SD	1.971	3.348	2.665	6.436	
		> 10 years (n=45)	Mean	4.89	6.67	5.36	16.91
			SD	2.058	3.705	2.986	7.376
Gender	Male (n=70)	Mean	4.77	6.74	5.43	16.94	
		SD	2.155	4.176	3.390	8.453	
	Female (n=90)	Mean	3.72	5.49	4.67	13.88	
		SD	1.608	2.184	1.818	3.525	

Table 6 shows apparent differences in means and standard deviations of levels of knowledge and application of teachers of children with ID about ABA in terms of school type, experience, and gender. To find out the significance of differences in the means, MANOVA test was performed. The following table shows the results:

Table 7. MANOVA Test of the Levels of Knowledge and Application of Teachers of Children with ID about ABA Attributed to the Variables of School Type, Teaching, and Gender

Source	Dimension	Type III sum of squares	df	Mean square	F	Sig.
School type Hotelling's trace=0.016 Sig=0.651	General principles of ABA	.017	1	.017	.603	.439
	ABA techniques	.039	1	.039	1.657	.200
	Practical applications of the techniques of ABA	.037	1	.037	1.770	.185
	The overall mean of the measure	.033	1	.033	2.175	.142
Experience Wilks' lambda=0.913 Sig=0.081	General principles of ABA	.192	2	.096	3.420	.035*
	ABA techniques	.038	2	.019	.818	.443
	Practical applications of the techniques of ABA	.066	2	.033	1.569	.212
	The overall mean of the measure	.054	2	.027	1.791	.170
Gender Hotelling's trace=0.016 Sig=0.044	General principles of ABA	.257	1	.257	9.155	.003*
	ABA techniques	.099	1	.099	4.222	.042*
	Practical applications of the techniques of ABA	.048	1	.048	2.301	.131
	The overall mean of the measure	.104	1	.104	6.911	.009*
Error.	General principles of ABA	4.343	155	.028		
	ABA techniques	3.618	155	.023		
	Practical applications of the techniques of ABA	3.255	155	.021		
	The overall mean of the measure	2.329	155	.015		
Total	General principles of ABA	4.907	159			
	ABA techniques	3.832	159			
	Practical applications of the techniques of ABA	3.423	159			
	The overall mean of the measure	2.559	159			

** Statistically significant at $\alpha=0.01$

Table 7 shows that the value of "F" based on school type variable was (0.603) for the dimension of the general principles of ABA, (1.657) for the dimension of ABA techniques,

(1.770) for the dimension of practical applications of ABA, and (2.175) for the overall test score. These values are not significant at $\alpha = 0.05$, meaning that there are no statistically significant differences in all sub-dimensions and the overall score of the “knowledge level and application of teachers of children with ID about ABA” test in terms of the school type variable.

Table 7 shows that the value of "F" based on teachers' experience variable was (0.818) for the dimension of ABA techniques, (1.569) for the dimension of practical applications of ABA, and (1.791) for the overall test score. These values are not significant at $\alpha = 0.05$, meaning that there are no statistically significant differences in dimensions of ABA techniques and practical applications of ABA and the overall score of the applied test in terms of the teachers' experience variable. The table shows that the value of "F" based on teachers' experience variable was (3.420) for the dimension of general principles of ABA which is a statistically significant value at $\alpha = 0.05$. This means that there are significant differences in the dimension of the general principles of ABA according to the variable of experience. To find out to whom the differences in this dimension are related, Scheffe's post-hoc test was performed for the dimensional comparisons. The following table shows the results:

Table 8. Scheffe's Post-hoc Test for the Dimension of General Principles of ABA Based on Teachers' Experience Variable

Experience	5-10 years	More than 10 years
Less than 5 years	0.02000	-0.0756
5-10 years		-0.0956*

Table 8 shows that there are statistically significant differences in the level of knowledge and application of teachers of children with ID with ABA according to the experience variable. There are significant differences on the dimension of the general principles of ABA between teachers with experience of (5 to 10 years) and teachers with experience of (more than 10 years), the differences were in favor of those with more than 10 years.

Table (7) shows that the value of "F" based on gender variable was (9.155) for the dimension of the general principles of ABA, (4.222) for the dimension of ABA techniques, and (6.911) for the overall test score. These values are significant at $\alpha = 0.05$, meaning that there are statistically significant differences in the dimensions of general ABA principles and ABA techniques and the overall score of the “knowledge level and application of teachers of children with ID about ABA” test in terms of the gender variable. The overall degree of the scale is in favor of males.

The table shows that the value of "F" for the dimension of practical applications of ABA techniques was (2.301), which is a non-statistically significant value at $\alpha = 0.05$. There are no statistically significant differences in the dimension of practical ABA applications in terms of

gender variable.

4.2 Conclusion

4.2.1 Discussion about the Major Findings

According to those results shown in the current study, the level of knowledge and practice of ABA techniques for children with ID is low, while their level of knowledge of general principles is intermediate. These results are consistent with what was reported by Dokhi and Jarar (2015). Indeed, these results are disappointing because special education teachers are required to achieve more ambitious goals responding to developmental differences between their students. Such goals require knowledge about evidence-based strategies and skills to educate and train a wide range of children with disabilities of various needs, especially the adaptive behavioral patterns that accompany developmental disabilities (Al-Khatib, 2014; Al-Zureikat, 2015). This results support the importance of applying evaluation and continuous monitoring of teachers' level of knowledge about ABA, which contribute in improving the training programs provided to teachers, as this approach usually records a huge amount of positive results according to the broad therapeutic interventions included in its strategies that made it a scientific approach capable of achieving impressive results.

The results show that there are no statistically significant differences in all the sub-dimensions and the overall score of the test in terms of school type variable. It is expected results because schools are subject to a supervisory authority with laws that are almost non-renewable, and not in line with the emerging human sciences. Also, the supervision within schools is unprofessional, as it doesn't take into account the importance of careful continuous monitoring, and restricts itself with field visits. It is likely that teachers demonstrate their ability to perform their role that stemmed from their sense of responsibility towards children and belief in their effective role in their education. However, it is not required that these roles be based on the organized knowledge of ABA, as they may be interpretations and attempts that lacked an organized scientific basis.

The study doesn't prove any statistically significant differences in the two dimensions: ABA techniques, and ABA practical applications, and the overall score of the test according to the experience variable. There are statistically significant differences in terms of the experience variable in the dimension of the general principles of ABA in favor of teachers with more than 10 years of experience. It is likely to be due to the seniors' awareness of the importance of knowledge of the principles. However, the overall knowledge level is low.

The results showed that there are statistically significant differences in the two dimensions: general principles of ABA and ABA techniques, and the overall test score in terms of gender, and in favor of males. This result may be due to the nature of male roles in Arab societies and their pursuit of financial privileges to support the family, so the male teachers might attend awareness courses or workshops about ABA. According to the researcher's observations in the field and during test monitoring, it is possible that this result is attributed to the organized and followed process of dealing with the application mechanism in male schools. During my presence as a female in those male schools, their administrations sought to prepare the

material and moral aspects to apply the test accurately and in the specified time in order to avoid any legal questions.

4.2.2 Practical Applications for the Study

Based on the results and findings of this study, the researcher calls on concerned parties in the field to take educational and research recommendations that ABA receives sufficient attention. This could be done by achieving the partnership between decision makers and those in charge of preparing teachers before service and those in charge of their professional development to include ABA within programs that prepare the special education teachers and their professional development. It is important to create a professional system in special education schools in Kuwait that includes a behavioral specialist named "Applied Behavior Analyst" to ensure the training and follow-up of the performance of special education teachers throughout the school year under the supervision of either a governmental or private body specialized in ABA. Also, there is a need to conduct annual survey at the state level to determine the knowledge level of teachers of special education about ABA and the extent of its practice, in preparation for meeting the training needs by organizing more training courses and programs targeting teachers, with the aim of developing their skills and raising their own competencies.

4.2.3 Limitations of the Study

The current study only included in its sample teachers of children with ID in five schools in Kuwait, during the first semester of the academic year (2019/2020). The results of this study may be restricted or generalized based on the characteristics of the sample, the used tool, and the teachers' seriousness in applying. The results of this study can also be generalized within the community from which it was chosen.

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