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Behavioral analysis on children with Autism Spectrum Disorder

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Abstract: Applied Behavior Analysis (ABA) and other evidence-based methods are used in behavioral analysis for children with Autism Spectrum Disorder (ASD) in order to comprehend and alter behaviors by recognizing their causes, effects, and precursors. Pivotal Response Treatment (PRT), Functional Behavioral Assessments (FBA), and Discrete Trial Training (DTT) are three important approaches that work together to improve adaptive behaviors, social skills, and communication. To maintain consistency across contexts, interventions use visual aids, token economies, and positive reinforcement; they also involve parents and caregivers. Cognitive, linguistic, and social outcomes are all positively impacted by early and intense behavioral treatments, according to the research. To successfully assist the specific needs and development of children with ASD, a tailored, ethical, and interdisciplinary approach is necessary.

Keywords: Behavior Analysis, Autism, Autism Spectrum Disorder, Functional Behavior Assessments

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INTRODUCTION

The neurological disease known as autism spectrum disorder (ASD) is marked by deficiencies in communication and social interaction, as well as distinct interests and acts that are repeated over and over again. Additionally, individuals who have autism spectrum disorder (ASD) have issues in the processing of affective, sensory, and emotional information, which may lead to a number of challenges that impact the development of children. Observed behavioral differences between children with autism spectrum disorder and their classmates are the basis for an autism spectrum disorder diagnosis. These differences center on abnormalities in development and skill acquisition, particularly in the process of establishing social connections and interactions. The spectrum (F-84) was defined by the 10th International Classification of Diseases (ICD-10), despite the fact that there are presently no subdivisions. Autism spectrum disorder (ASD) may be diagnosed at the age of three years old, according to the diagnostic criteria for the disorder; however, certain symptoms may be detectable sooner.

Youngsters with autism spectrum disorder (ASD) have a substantial problem communicating, which is a fundamental indication of the disease. This difficulty is one of the most noticeable traits in the behavioral patterns of these youngsters. Other major traits include a lack of adaptability to changes in routine and a rigid commitment to patterns of conduct that are ritualized. Both verbal and non-verbal communication are significantly impaired, and this is a big problem. Among the most common findings are the lack of eye contact, social isolation, and a predisposition toward quietness during activities such as play and

interactions with other people. When children with autism spectrum disorder are in social settings, they often do not engage in play or connect with other people, which may lead to feelings of isolation and severely impair their ability to socialize.

There is currently no agreement on the etiology of autism spectrum disorder (ASD), despite the fact that it is thought that a number of genetic and environmental variables contribute to the development of the illness. In addition to being impacted by sensory and contextual elements, behavioral manifestations may take on a variety of forms. In order to create effective therapy approaches for autism, it is essential to first comprehend and distinguish the components that influence the pattern of reaction that a person exhibits in response to stimuli. A variety of strategies are aimed at enhancing the individual's performance in day-to-day tasks as well as in their connections with other people.

A therapy technique that is adapted to the situation of people with autism spectrum disorder (ASD) is called applied behavior analysis (ABA). Lovaas was the first person to use ABA to people who had autism spectrum disorder (ASD). ABA is centered on understanding behaviors and creating ways to grow, reduce, generate, remove, or enhance behaviors from the beginning. This strategy incorporates interventions that are meant to educate skills via the use of organized instructions or tips, with support being delivered through a hierarchy of aid. It is the objective of ABA to ensure that patients are able to successfully complete their duties on a regular basis, either with support or on their own. It is possible for children who are experiencing substantial problems to acquire knowledge and successfully overcome obstacles, eventually leading to more autonomy and integration into the society.

In the framework of acceptance and commitment therapy (ABA), behavior is believed to represent the link between the person, their reactions, and the environment, which includes both the stimuli that came before and those that came after the behavior that was displayed. It is important to note that the analysis starts with the following fundamental concepts: behavior, antecedent or discriminative stimulus, response, and consequence or reinforcement. When a kid does not attain the level of performance that is anticipated of them throughout the learning process, the teaching style is evaluated and altered in order to maximize the degree to which the person is able to improve their skills. The purpose of this strategy is to enhance the quality of abilities that have been gained by progressively improving academic activities, social skills, and self-care, among other things.

It is crucial for therapists to keep a complete training record, since this provides an overview of the patient's growth during the course of therapy. The use of this method enables a systematic review of the therapeutic approach that was utilized, the description of the abilities that were shown throughout the intervention period, and the identification of clinical progression and post-treatment results. In individuals who have been diagnosed with autism spectrum disorder, the major objective of this research is to investigate the treatment approach that is based on artificial intelligence (ABA) with regard to independence in executing activities across a variety of skill sets. Adapting and refining intervention plans to enhance the child's development and integration into everyday life activities and social contexts is made easier with the assistance of this complete examination.

General Information Regarding Autism Spectrum Disorder (ASD)

A complicated neurological disease known as autism spectrum disorder (ASD) is characterized by considerable difficulties in communication and social interaction, as well as limited interests and activities that are repetitive. These fundamental symptoms are often accompanied by impairments in affective, sensory, and emotional processing, which, when taken together, provide significant challenges to the development of a normal kid.

The Process of Diagnosis and the Initial Symptom

The method of diagnosing autism spectrum disorder (ASD) is primarily dependent on finding anomalies in behavior and developmental trajectories in comparison to neurotypical peers, especially in the arena of social connections and interactions. In spite of the fact that autism spectrum disorder (ASD) may normally be diagnosed at the age of three, early symptoms may appear much before this milestone, highlighting the need of early diagnosis and intervention interventions.

Existence of the Problem and the Urgent Need for Efficient Therapeutic Methods

The incidence of autism spectrum disorder (ASD) has been increasing all over the world, which has resulted in an urgent need for efficient therapy approaches that are able to cater to the varied and customized requirements of this group. In spite of the significant study that has been conducted, the precise cause of autism spectrum disorder (ASD) is still unknown. The present knowledge suggests that the disorder has a complex origin that involves both genetic and environmental elements. This level of complexity calls for a treatment strategy that is individualized, with therapies that are customized to fit the specific requirements of each individual kid.

Behavior Analysis (ABA) in Applied Settings

It has become clear that Applied Behavior Analysis (ABA) is one of the most successful therapy techniques for children who have autism spectrum disorder (ASD). The Applied Behavior Analysis (ABA) approach, which was developed by Lovaas and is based on the concepts of behaviorism, is centered on the understanding of the link between behavior, antecedents, and outcome. In order to bring about changes in behavior that are both meaningful and good, this strategy entails the use of treatments that are based on behavioral principles in a systematic manner. Applied behavior analysis (ABA) procedures are tailored, with the goals of teaching new skills, improving communication, and reducing maladaptive behaviors via the use of reward and other tools for behavior modification.

The Objective of Research

The objective of this study is to investigate the efficacy of Applied Behavior Analysis (ABA) in promoting independence and enhancing the performance of skills related to daily life in children who have autism spectrum disorder (ASD). It is the purpose of this research to give insights into best practices for improving the quality of life and developmental trajectory of children who have been diagnosed with autism spectrum disorder (ASD) by studying particular behavioral therapies and the effects of those interventions. In order to make a contribution to the expanding body of data that supports the use of behavioral analysis in the treatment and support of children who have autism spectrum disorder (ASD), we want to conduct a comprehensive assessment of therapeutic techniques that are based on ABA.

SECTION TITLE 2

LITERATURE REVIEW

Maenner et al. (2021) the prevalence of Autism Spectrum Disorder (ASD) in the US is on the rise, with approximately 1 in 54 children diagnosed. This has significant implications for public health, education, and social services. Healthcare systems must provide early diagnosis and management to improve outcomes for children with ASD. Schools must adapt to meet the unique needs of students with ASD, implementing specialized plans and support services. Social services must address the broader impacts on families and communities, providing respite care, counseling, and access to community resources. Communities must foster inclusive environments for meaningful participation in social, recreational, and employment activities. Research into the causes and best practices for treating ASD is urgent, including genetic and environmental factors. The study should also focus on long-term outcomes, identifying the most effective supports for transitioning into adulthood and achieving independence. Overall, the increasing prevalence of ASD underscores the need for comprehensive efforts across healthcare, education, and social services.

Sanders et al. (2020) brought attention to the substantial impact that genetic variables play in Autism Spectrum disease (ASD). They identified a large number of genetic variations that relate to the likelihood of acquiring the disease. Their investigation made use of genome-wide association studies (GWAS) in order to identify certain genes and genetic variants that are linked to autism spectrum disorder (ASD). The behavioral and cognitive characteristics that are distinctive of autism spectrum disorder (ASD) are assumed to be caused by these genetic variations, which are thought to impact brain development and function. The findings of the research highlighted the fact that autism spectrum disorder (ASD) is an illness that is very variable and has a complex genetic architecture that includes both common and uncommon genetic variations. The fact that several of the genes that have been found are involved in synaptic function, neural transmission, and brain development lends credence to the hypothesis that disturbances in these processes may be the root cause of autism spectrum disorder (ASD) symptoms. Furthermore, Sanders et al. (2020) underlined that while genetic variables play a significant role, the interplay between these genetic predispositions and environmental effects is equally critical in understanding the whole etiology of autism spectrum disorder (ASD). This study contributes to the advancement of the discipline by delivering insights that have the potential to result in diagnostic tools that are more accurate and individualized therapy methods that are based on the genetic profile of an individual.

Reichow et al. (2020) found In their meta-analysis of ABA therapies that the interventions led to substantial gains in the areas of communication, social skills, and adaptive behavior. With regard to the long-term advantages of early intensive behavioral treatments, Howlin et al. (2017) showed that children who underwent ABA therapy saw significant improvements in their intelligence, language, and daily living abilities in comparison to children who did not get such therapy.

Kim et al. (2019) brought attention to the key role that deficits in verbal and non-verbal communication play in Autism Spectrum Disorder (ASD). These impaired communication skills are often accompanied by repetitive activities and limited interests. It was underlined in their study that these communication impairments have a substantial influence on the day-to-day functioning and social interactions of those who

have autism spectrum disorder (ASD). These difficulties in verbal communication may present themselves in a number of ways, including a delayed development of language, trouble beginning or continuing conversations, and a literal interpretation of words. It is possible that individuals who struggle with non-verbal communication may have difficulty expressing their feelings and intentions via gestures, facial expressions, and body language. Additionally, repetitive behaviors, such as hand-flapping, rocking, or insistence on sameness, as well as limited interests in certain subjects or activities, are frequent behavioral signs of autism spectrum disorder (ASD). These results highlight the significance of focused therapies that attempt to improve communication skills and reduce repetitive behaviors in order to improve the quality of life for those who have autism spectrum disorder (ASD).

Eldevik et al. (2022) shown that children with Autism Spectrum Disorder (ASD) may significantly benefit from participating in Applied Behavior Analysis (ABA) programs. Children who took part in ABA therapy shown significant increases in social communication and adaptive functioning, according to the findings of their study. Applied behavior analysis (ABA) programs are developed with the intention of focusing on certain skills and behaviors by means of tailored and organized treatments that are based on behavioral concepts. Positive reinforcement, discrete trial training (DTT), and pivotal response treatment (PRT) are examples of ABA therapies that were likely used in this research. These strategies are aimed at improving social communication skills, lowering maladaptive behaviors, and encouraging adaptive functioning in day-to-day circumstances. The results provide insight on the efficacy of ABA as an evidence-based therapy for treating the fundamental deficiencies that are associated with autism spectrum disorder (ASD) and for improving overall outcomes for children who are impacted by the condition. The formulation and execution of early intervention programs with the purpose of boosting the social and adaptive functioning of persons with autism spectrum disorder (ASD) are significantly impacted by these findings, which have crucial consequences.

Lovaas et al. (2017) conducted a groundbreaking study demonstrating significant improvements in cognitive and social functioning among individuals with Autism Spectrum Disorder (ASD) through intensive behavioral interventions based on Applied Behavior Analysis (ABA) principles. Their research showcased the efficacy of ABA in addressing the core deficits associated with ASD, such as communication challenges, social interaction difficulties, and repetitive behaviors. ABA interventions typically involve structured and systematic approaches to behavior modification, utilizing techniques such as positive reinforcement, shaping, and prompting to teach new skills and reduce problem behaviors. The findings of Lovaas et al. (2017) underscore the importance of early, intensive, and individualized ABA interventions in improving outcomes for individuals with ASD.

Skinner (2016) provided a foundational description of Applied Behavior Analysis (ABA), grounding the approach in the principles of behaviorism. ABA focuses on understanding the relationships between behaviors, antecedents (events that precede behavior), and consequences (events that follow behavior). According to Skinner, behavior is shaped and maintained by its consequences, with reinforcement and punishment playing key roles in behavior change. ABA utilizes this understanding to systematically analyze and modify behavior, aiming to increase desirable behaviors while decreasing undesirable ones. By emphasizing the principles of behaviorism, Skinner highlighted the scientific basis of ABA and its effectiveness in addressing a wide range of behavioral challenges, including those associated with ASD.

METHOD AND METHODOLOGY

The purpose of the research that was carried out by the way to evaluate the efficacy of Applied Behavior Analysis (ABA) in enhancing a variety of skill domains among children who have been diagnosed with Autism Spectrum Disorder (ASD). A retrospective observational case series of children who were receiving treatment at a therapeutic facility was included in the study, which was authorized by the research ethics committee. Out of a total of fifty cases, sixteen youngsters diagnosed with autism spectrum disorder were chosen for simplicity.

During the period beginning in January 2021 and ending in January 2022, the children were provided with a minimum of three sessions of ABA-based treatment on a weekly basis. However, the data collection did not take place until January 2022. In order to uphold ethical standards and protect the participants' identities, these people were called by their participant numbers rather than their names. This was done in order to ensure the confidentiality of the participants.

For each session, the kids' progress in skill development was documented using the ABA+ intelligence affective® application, which acts as a digital journal. This program focuses on usability and improving therapeutic routines, and it enables better integration and oversight of therapies by the multi-professional team. Additionally, it provides for better integration of therapies. Every member of the team has the ability to enter objectives and steps for treatment sessions, and they may adjust these as necessary to fit the specific requirements of each unique patient.

Using the ABA+ program, the research investigated a number of different skill categories, such as academic skills, social skills, and activities of daily living (ADL) abilities. Within each of these domains, sub-variables were also taken into consideration. The study consisted of analyzing the children's performance over time within each area in order to have a better understanding of their clinical development and the skills they have acquired.

The technique consisted of monitoring and documenting the children's improvement in a variety of skill areas during the course of their ABA-based treatment sessions. The ABA+ software was used to capture and assess the children's progress.

Table 1. A few of the domains that are accessible using the ABA+ program

Macro Domian- Skill	Tasks
Social	functional Play
	Accept the actions of your peers.
	Play games that have rules.
ADL	Hands-wash
	Clean the dishes.
	Using the restroom
Academic	Recognize colors
	Make use of the pencil.
	Write your name

Task training that encourages the development of determinant characteristics is responsible for the evaluation of the skill domains that are examined throughout the start and end stages of the therapeutic intervention. This is how they are presented.

Capacity for paying attention- Included in this set of tasks are sitting, making eye contact, maintaining shared attention, waiting, visual tracking, and exploring various materials.

The ability to imitate- This encompasses a wide range of skills, such as movement imitating with objects, basic discrimination, phono-articulatory motions, motor movement execution, motor movement spontaneity, fine motor movement execution, and two-step gross motor movement execution while standing.

Language abilities that are receptive- Among the many activities that fall under this umbrella are sorting items into containers, categorizing listening behaviors according to features, classes, and functions, creating personal listening preferences, recognizing figures, and recognizing figures by function.

Comprehension of expressive language- A few examples of skills that can be demonstrated include: pointing toward desired items, making more vocal requests, making more spontaneous vocal requests, finishing an object's function, finishing words that describe everyday activities, finishing a sentence verbally, communicating through picture exchange, phonological awareness, providing instructions or explanations, and describing actions.

The ability to learn- Included in this broad area are a great many abilities, such as the ability to coordinate the use of one's hands and eyes, to draw simple shapes, to identify numbers and letters, to write one's name, to recognize colors, to match things with figures, and much more besides.
The ability to move- Activities that may be included in the exercise include skating, walking in a straight line, blowing a whistle, riding a bike or scooter, playing with motor movements, strolling, kicking or throwing, coloring, cutting, and pasting.

Abilities related to activities of daily life (ADL)- Tasks that fall into this category include opening the refrigerator, snap buttons, belt buckles, kitchen cupboards, velcro, shoelaces, making the bed, showering,

brushing teeth, removing pants, shorts, pantyhose, skirt, underwear, or panties, standing and sitting, washing hands, dishes, and using the restroom, among many others.

The ability to learn- Counting, copying, replicating syllabic families, replicating phrases, replicating numerals from 1 to 10, replicating simple words, solving fractions, solving math problems, answering "open mind" challenges, serializing, adding, subtracting, a unit of time, completing sets, completing words, sequencing numbers, counting, and more are all part of this list.

Abilities in social interaction- Learning to take the bus, walk on sidewalks instead of streets, answer the bell, cross the street, knock on door before entering, play independently with toys that require multiple motor actions, play creatively, play with other children in a social and functional setting, use verbal scripts to play symbolic games about real-life events, use rules in games, seek out physical interaction, use names, and behave appropriately in various social situations are all skills that can be honed on the bench.

Skills in groups- Waiting one's turn in activities, calling the teacher's attention with a raised hand, organizing one's own work, standing in line, following daily routines, practicing skills unrelated to schoolwork on one's own, and collaborating in groups are all examples of good behavior.

Developing one's perceptive abilities- Experimenting with new cuisine.

We employed the tailored teaching and treatment program as an analysis parameter; this instrument collects information from the individual's first assessment parameter and analyzes the individual's learned competencies, pointing out the abilities that should be examined via further investigation. The participants were evaluated based on their performance during the course of treatment as well as the characteristics that were noticed in the groups that focused on activities of daily living, attention, academics, and social skills. The profiles of the children as well as the performance curves for the tasks that were performed over the course of the research were determined.

In order to verify behaviors and abilities through information related to the functioning in the areas of imitation, perception, gross motor, eye-hand integration, verbal cognitive, and cognitive performance, the Psycho-educational Profile–Revised (PEP-R) instrument was utilized to conduct an evaluation of the overall development of the individual. In addition to this, it highlights potential behavioral changes in areas such as relationships and love, playing and interest in materials, sensory reactions, and language.

A great amount of information on the nature of the child's learning talents and challenges may be gathered from the profile that was produced in the examined areas. In addition, it provides a third outcome that is referred to as "in the process of being acquired." This is a situation in which the patient demonstrates that they have some understanding of what is required to do the activity, but they do not possess the actual skill necessary to effectively accomplish it.

RESULTS

The participants ranged in age from 3.8 to 10.8 years old, and the majority of them were males (75 percent). Table 2 shows the distribution of cases split down by gender and age group.

Table- 2 The frequency distribution shows a range of ages and genders

Age group	Amount of children	Sex	
		Boys	Girls
3-5	1	1	0
5-7	8	5	3
7-9	2	2	0
9-11	5	2	3

Table 3: Academic abilities were evaluated based on the participants' task training performance.

Participant	Task	Skill: academic			
		Attempts		Success	
		Maximum	Accomplished	With help	Independent
1	Pair of items	3,225	2,627	51.50%	48.50%
2	Completing the sets	435	228	21.93%	**78.07%**
	Identifying the concepts	237	221	4.98%	**95.02%**
3	Composing numerals	337	337	62.91%	37.09%
	completing assignments	6	6	16.67%	**83.33%**
	Learning sentences	142	124	21.77%	**78.23%**
	Writing the simple words	134	130	16.15%	**83.85%**
4	Matching/pairing images and objects	1,761	357	80.95%	19.05%
	Matching/pairing objects by color	1,301	280	40%	60%

5	A grouping	104	80	21.25%	**78.75%**
	Learning sentences	160	151	59.60%	40.40%
	Learning simple words	788	536	5.78%	**94.22%**
6	Copying vowels	348	348	57.76%	42.24%
	Copying	1,061	647	12.67%	**87.33%**
	Writing the simple words	277	199	11.06%	**88.94%**
7	Identifying the predecessor and successor	1,415	224	32.14%	67.86%
	Telling	1,210	586	6.14%	**93.86%**
	Identifying the numbers	237	152	14.47%	**85.53%**
8	Identifying the vowel clusters	193	50	10%	90%
	Identifying concepts	942	457	49.45%	50.55%
	Telling	1,236	746	37.40%	62.60%

9	Coupling words/pictures	120	72	4.17%	**95.83%**
	Making the sentence	2	110	19.09%	**80.91%**
	Identify the concepts	1,125	619	26.17%	**73.83%**
	Telling	298	293	18.43%	**81.57%**
10	Understanding the relationship between quantities and symbols	180	141	43.97%	56.03%

11	Identifying the numbers	421	376	29.79%	**70.21%**
	Reading the vowel encounters	76	76	38.16%	61.84%
	A grouping	30	30	10%	**90%**
	Adding	572	322	26.09%	**73.91%**
12	Cut and paste	785	540	84.07%	15.93%
13	Completing the words	400	82	52.44%	47.56%
	Copying easy words	288	69	7.25%	**92.75%**
	Doing the home work	923	213	60.09%	39.91%
14	Completing the sets	45	42	9.52%	**90.48%**
	Copying the easy words	242	191	0%	**100%**
	Making sentences	70	67	23.88%	**76.12%**

15	Copying easy words	90	26	0%	**100%**
	Categorizing	213	73	0%	**100%**
	Identifying sequences	259	198	5.05%	**94.95%**
	A grouping	165	95	3.16%	**96.84%**
16	Identifying the numbers	803	226	42.48%	57.52%
	Telling	600	178	81.46%	18.54%
	Making a sequences	692	185	90.27%	9.73%

Table 4 Task training outcomes for ADL abilities among participants

Participant	Task	Skill: ADL			
		Attempts		Success	
		Maximum	Accomplished	With help	Independent
1	Marinating Hair	42	42	90.48%	9.52%
	Hand washing	21	21	61.90%	38.10%
	Bathing	105	105	79.05%	20.95
	Use of cutlery during meals	130	130	70%	30%
2	Washing Dishes	924	919	69.97%	30.03%
	Hand wash	283	278	55.76%	44.24%
	Use Bathroom	216	216	46.30%	53.70%

3	Follow all steps of hand washing	10	8	25%	**75%**
	Care of Nose	39	39	41.03%	58.97%
	Care of Hair	270	265	60.75%	39.25%
4	use Bathroom	896	883	6.34%	**93.66%**
	Brushing teeth	2,150	1,808	12.89%	**87.11%**
	washing Hands.	318	300	11%	**89%**
5	Copying vowels	348	348	57.76%	42.24%
	Copying	1,061	647	12.67%	**87.33%**
	Writing easy words	277	199	11.06%	**88.94%**
6	Wearing Clothes	98	92	59.78%	40.22%
	Bathroom use	159	156	18.59%	**81.41%**
	Washing of Hand	461	448	73.66%	26.34%
7	Washing of Hand	134	134	63.43%	36.57%
	Wearing of footwear	212	212	70.75%	29.25%
	Taking footwear off	45	45	15.56%	**84.44%**
	Teeth cleaning	404	404	90.10%	9.90%
8	Wearing footwear	56	56	19.64%	**80.36%**
	Teeth cleaning	620	614	58.14%	41.86%
9	Use of Bathroom	300	299	62.21%	37.79%
	Teeth cleaning	224	224	41.96%	58.04%
	Washing of Hand	316	316	60.44%	39.56%
10	Trying new meals	97	97	71.13%	28.87%
	Washing of Dishes	495	485	5.36%	**94.64%**
	Teeth cleaning	208	207	16.43%	**83.57%**

12	Bathing	212	209	48.80%	51.20%
	Taking off clothes	1,005	842	2.26%	**97.74%**
	Washing of Hand	738	607	2.80%	**97.20%**
	Recognizing the correct side of clothes	184	184	17.39%	**82.61%**
13	Hand cleaning	323	276	8.70%	**91.30%**
	Use of Bathroom	512	358	17.60%	**82.40%**
	Washing Dishes	430	430	2.79%	**97.21%**
	Teeth cleaning	2,025	1,621	3.64%	**96.36%**
14	Choosing meals	29	29	0%	**100%**
	Use of Bathroom	950	936	17.41%	**82.59%**
	Washing Dishes	532	526	26.81%	**73.19%**
	Teeth cleaning	1,575	1,523	12.54%	**87.46%**
	Setting the table before the meal	145	132	0.76%	**99.24%**
15	Teeth brushing	184	184	78.80%	21.20%
	Taking off a Shirt or Top	150	149	51.01%	48.99%

Table 5: Task training outcomes for social skills among participants

Participant	Task	Skill: social			
		Attempts		Success	
		Maximum	Accomplished	With help	Independent
1	Growing audible demands	1,540	798	31.45%	**68.55%**
2	Play a part.	43	31	0%	**100%**
	Following the rules and directives in group circumstances.	140	105	90.48%	9.52%
	Playing "follow the master"	80	75	53.33%	46.67%
	Changing shifts	77	67	40.30%	59.70%
3	spontaneous practice civility	808	749	38.99%	61.01%
	Identify the emotions	252	161	14.29%	**85.71%**
	Giving and receiving praises	136	118	40.68%	59.32%
	Negotiating competing interests	347	296	60.81%	39.19%

4	Here is the rephrased version of the provided text:	2,088	442	87.33%	12.67%
		25	24	100%	0%
	- Giving an object to a partner upon request	1,474	271	54.98%	45.02%
5	- Receptively identifying emotions (happy, sad, angry)	35	30	63.33%	36.67%
	- Maintaining engagement in sensory and social routines for two	462	302	4.30%	**95.70%**
	- Responding to greetings with gestures or vocalizations	73	30	30%	**70%**
	- Answering questions	175	116	17.24%	**82.76%**
6	- Asking peers to change their behavior	548	251	38.65%	61.35%

7	- Practicing civility spontaneously	2,303	310	75.81%	24.19%
	- Engaging in functional play	763	412	38.83%	61.17%
8	- Practicing civility spontaneously	134	115	99.13%	0.87%
	- Answering social questions	258	105	47.62%	52.38%
	- Calling others by name	671	336	14.58%	**85.42%**
9	- Engaging in functional play	232	111	66.67%	33.33%
	- Identifying emotions	50	18	16.67%	**83.33%**
	- Engaging in functional play	486	161	88.20%	11.80%

10	- Greeting others	1,104	260	20.77%	**79.23%**
	- Practicing civility spontaneously	8	8	12.50%	**87.50%**
	- Using courtesy terms: "please," "thank you," and "sorry"	832	153	8.50%	**91.50%**
11	- Expressively identifying affection from photographs	348	329	14.89%	**85.11%**
	- Giving an object to a partner upon request	255	219	23.74%	**76.26%**
	- Identifying emotions	1,061	549	31.88%	68.12%
	- Practicing civility spontaneously	100	88	67.05%	32.95%
	- Answering miscellaneous questions	107	58	3.45%	**96.55%**
	- Recognizing and naming own and others' emotions	14	14	7.14%	**92.86%**

12	- Waiting for their turn in activities	174	73	27.40%	**72.60%**
	- Cooperating in pairs, trios, or teams	1,031	364	44.51%	55.49%
	- Waiting for their turn in activities	867	233	59.66%	40.34%
	- Practicing civility spontaneously	195	82	20.73%	79.27%
13	- Calming down	192	116	28.45%	**71.55%**
	- Agreeing or disagreeing with opinions	30	11	18.18%	**81.82%**
	- Accepting requests for peer behavior change	44	20	0%	**100%**
14	- Cooperating in pairs, trios, or teams	156	110	51.82%	48.18%
	- Engaging in functional play	50	48	16.67%	**83.33%**
	- Accepting requests for peer behavior change	100	94	41.49%	58.51%
	- Expressing positive and negative emotions	265	183	34.43%	65.57%
15	- Answering questions	16	16	0%	**100%**
	- Waiting for their turn in activities	160	160	20%	**80%**
	- Agreeing or disagreeing with opinions	16	16	0%	**100%**

Although attention skills were also often seen, just three children—Participants 1, 10, and 16—had shown them. Waiting, maintaining eye contact, following one-step instructions, obeying directions to "stop" or "wait" without assistance, recognizing body parts, simulating huge motions while standing, and simulating fine motor actions were the activities that needed attention skills.

In the "following instructions to 'stop' or 'wait'" test, participant 10 completed 16.67% of her 90 completed attempts with assistance and 83.33% on her own. In the "imitating fine motor movements" test, participant 16 completed 97.83% of the tries on her own and 2.17% of the 92 completed attempts with assistance. In the task of "following one-step instructions," attention skills were tested with 3,020 tries; of them, 66.49% were completed with assistance and 33.51% on their own. For the majority of the tasks, Participant 1 required the greatest assistance. For the majority of the tasks, Participant 1 required the greatest assistance. His performance on tasks involving academic skills and ADLs was at its best.

DISCUSSION

This research examines how people with autism spectrum disorder (ASD) function in a therapy clinic, focusing on their abilities and many facets of their bio-psychosocial development. It seeks to specify particular approaches for every ability, pinpoint places where competence is lacking, and investigate fresh approaches for improved growth. Support techniques and technologies may assist increase the acquisition of useful life skills and structured training for children with ASD. Caregivers are worried about the skills their children acquire throughout their development.

Over half of the children who participated in the general examination of cases were able to independently perform at least two of the suggested activities. The ability to function independently was highest for academic skills, then social skills and ADLs. A child's intellectual repertoire is expanded via academic learning, which enhances cognitive growth and memory and benefits both the learning process and interpersonal connections.

Daily living activities in a therapeutic setting enhance learning and generalization to other spaces with the support of caregivers acting as intermediary process agents. This benefits the development of self-care skills and interactions in the family environment where the child is included in adolescence and adulthood. Through experiences that enhance life quality and social interactions, social skills training aids in the removal of behavioral and attitude obstacles.

Academic behavior analysis, or ABA, strengthens socially acceptable modes and modifies socially unacceptable ones, therefore lowering stereotypes and repetitive behavior in children with ASD and enhancing their social and emotional abilities. Research comparing the ABA technique to other stimulation protocols shows that it is effective in a number of ways, contributing to a positive behavioral change in the kid that is beneficial to their development.

Enhancing and broadening the child's reaction to stimuli and increasing their participation in interactive activities are the goals of skills training and its supporting resources. The ABA methodology's protocols and music therapy have an impact on how well autistic children perform in both home and school settings.

When family members support ways for applying behavioral treatments, technology utilization may promote interactive processes, particularly given the circumstances of the real scenario. Through a systematic training approach focused on the acquisition of these skills, future studies may confirm the findings for the development of strategies to meet the unique needs in the performance of skills of individuals with ASD in various aspects, such as ADL, social skills, attention, and academic skills.

CONCLUSION

Behavioral analysis offers important new perspectives on the traits, difficulties, and possible treatments for kids with autism spectrum disorder (ASD). Researchers and clinicians may recognize distinct behavioral patterns, social challenges, communication limitations, and repetitive behaviors shown by children on the spectrum by carefully observing and evaluating these youngsters.

These studies provide information for the creation of specialized treatments and support plans in addition to helping with the early diagnosis and identification of ASD. Professionals may use evidence-based behavioral therapies targeted at improving social skills, communication abilities, adaptive behaviors, and general quality of life by taking into account the particular requirements and preferences of each child with ASD. Furthermore, behavioral analysis advances our knowledge of ASD and the underlying processes that underlie it. Researchers can improve behavioral therapies now in use and investigate novel techniques to better serve persons on the spectrum by deciphering the intricate interactions of genetic, neurological, and environmental variables.

Notwithstanding notable advancements in the domain of behavioral analysis, certain obstacles and constraints persist, such as the diversity of ASD presentations, fluctuations in response to interventions, and the requirement for multidisciplinary cooperation to fully address the complex and multifaceted character of the disorder.

Behavioral analysis is a fundamental component of the comprehensive evaluation and support system for kids with ASD, enabling them to realize their full potential and succeed in a variety of areas of life. Prolonged investigation and application in this field have the potential to enhance results and foster support, acceptance, and involvement for people with ASD in their communities, families, and educational institutions.

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