

Effectiveness of "applied Behavior Analysis" (ABA) to Develop the Social Skills for Autistic Children

Ibrahim Hassan Alzoubi – Jordan
Universiti Sains Islam Malaysia

Abstract: The purpose of the study is exploring the efficacy of ABA in enhancing communication skills among children diagnosed with ASD. A cross-sectional survey was performed among 100 professionals working in the UK's ASD institutions such as speech therapists, general practitioner, and special education instructors. The recruited respondents filled a structured questionnaire that assessed their opinions related to the impact of ABA on communication outcomes. The statistical analysis presents a positive ABA perceptions, with participants acknowledged its roles in the communication tendencies improvement and academic performance in ASD children. The significance level ($p < .001$) and T-value (-5.145) that statistically significant ABA influence on communication skills (CS).

Keywords: Autism spectrum disorder (ASD), applied behavior analysis, young children with autism, Significance of ABA, to improve social communication ability among ASD.

INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition that impacts several aspects of language, communication, and social abilities (Callahan, *et al.*, (2019). Despite extensive research, the etiology of ASD remains unknown. The condition under consideration is a chronic neurological ailment that is distinguished by challenges in language acquisition, abstract reasoning, interpersonal communication, and the presence of obsessive behaviors. Cognitive impairment is frequently noticed in individuals diagnosed with ASD. Patients exhibit distinct differences in the perception and cognitive processing of information compared to those with typical development. It has been reported by Yu, *et al.*, (2020) individuals with ASD may encounter challenges in comprehending and interpreting the perspectives and viewpoints of others. ASDs encompass a collection of conditions that are distinguished by challenges in social interaction, behavioral patterns, and communication abilities. Autism is a neurodevelopmental condition that often manifests in early childhood, typically around the age of three. It has been found in the article of Wang, *et al.*, (2019) numerous tests and treatments have been explored in the ongoing pursuit of identifying the optimal approach for the treatment, cure, and prevention of autism. ABA is a widely utilized approach in the diagnosis and treatment of ASD.

According to Leaf, *et al.*, (2016), ABA treatment is a therapeutic approach that centers on the reinforcement of desirable behavior and the prevention of undesirable conduct. Therapists employ several forms of stimulation to enhance communication, language acquisition, and other

cognitive abilities. The therapeutic interventions employed for individuals with autism spectrum disorder (ASD) do not serve as a definitive remedy for the condition. However, these interventions facilitate the acquisition of abilities that may not have otherwise been developed and mitigate the occurrence of maladaptive behaviors in children diagnosed with ASD. It has been argued by Shyman, (2016) ABA employs many tactics and insights to facilitate the enhancement of individuals' behaviors.

The isolated experimental treatment is the most straightforward kind of ABA treatment. During treatment sessions, the therapist instructs the young individual to perform a designated task, such as retrieving a spoon and then provides positive reinforcement to those who adhere to the prescribed instructions (Alves, *et al.*, 2020). A gesture of raising one's hand to meet another's palm in celebration, or any other form of positive reinforcement that elicits ability to communicate are all trained to ASD individuals. If the adolescent fails to fulfill the stipulated criteria, it becomes necessary to administer the test again. The treatment plan is customized to accommodate the unique requirements and capabilities of each child. The practice of therapy no longer permits untrained individuals to engage in this activity indefinitely. They would be tasked with addressing more complex social and behavioral issues. According to Rafiee & Khanjani, (2020), ABA for children shares similarities with play therapy in that it encompasses a tripartite approach. This approach involves therapists guiding clients through the process of learning new routines, followed by gradually transitioning them into real-

world settings. ABA has the potential to be effectively implemented in various natural settings, including playgrounds, canteens, and public areas. Applied Behavior Analysis (ABA) has simplified the process, allowing patients to effectively apply the knowledge they acquire.

Subtle training, positive response training, verbal behavior, and conditioned learning are four alternative therapeutic approaches for ASD. It has been discussed in the research of Gitimoghaddam, *et al.*, (2022) the primary emphasis of therapy lies in exploring natural approaches and their relationship to behavioral issues. Discrete Trial Training (DTT) is an instructional approach that enables individuals with autism to acquire intricate abilities and behaviors by initially attaining proficiency in the constituent elements of the condition. Initially, students acquire fundamental knowledge regarding the ailment before progressing to a comprehensive understanding. It has been stated by Wilkenfeld & McCarthy, (2020) students acquire and cultivate skills through the learning process. As the individual acquires the necessary abilities, the therapist makes adjustments to the training regimen and evaluates the newly acquired skills to determine their appropriateness. The approach promotes and facilitates the cultivation of abilities within a more flexible setting, allowing individuals to experiment with and use these talents in a context that closely resembles real-life situations.

According to Makrygianni, *et al.*, (2018) the significance of treating impairments in social skills among children diagnosed with autism is of utmost importance and should not be underestimated. It has been argued by Alharbi & Huang, (2020) the development of social skills not only plays a crucial role in establishing significant interpersonal connections but also has a positive impact on academic achievement, self-perception, and general well-being. Hence, the implementation of efficacious interventions aimed at enhancing social skills has the potential to foster heightened levels of engagement, active involvement, and self-reliance among those diagnosed with Autism Spectrum Disorder (ASD).

ABA has garnered significant attention within the field of special education and therapies for individuals with autism. According to research findings of Esposito, *et al.*; Leaf, *et al.*, (2017) the use of principles derived from behavioral science has demonstrated efficacy in addressing various behavioral challenges exhibited by individuals

diagnosed with ASD. The methodical, evidence-based, and client-centered nature of ABA therapies make them particularly well-suited for addressing the numerous social skill deficits seen in children with autism (Blair, *et al.*, 2020).

Research Questions

The primary aim of this study is to explore the impact of ABA on communication skills of children diagnosed with autism. Through an analysis of the results obtained from social skills interventions based on ABA, this research's objective is to offer a significant understanding of the advantages and possible constraints associated with this particular method. Following research question to be answered:

1. To what degree does the implementation of applied behavior analysis contribute to the enhancement of communication skills as a considerable social skill in children diagnosed with autism?

METHODS

Pedagogical Setting & Participants

The duration of this study spanned from 4 to 6 weeks. A survey was distributed to a cohort of educators who have had the opportunity to incorporate ABA into their pedagogical practices. Out of the several surveys that were distributed, only eighty individuals responded. These individuals were employed within the school system of UK. The nature of this investigation appraised, which seeks to ascertain the efficacy of ABA as a pedagogical instrument. Additionally, it was communicated to the participants that the survey was designed to maintain anonymity, and they were encouraged to provide truthful responses to the questions.

All the 100 subjects had varying experiences with ABA. Certain participants in the study engaged in exclusive remote work, doing individual sessions with consistent pupils daily. Conversely, other participants operated within a classroom environment, employing ABA techniques with numerous kids daily. Among the 100 participants, each representing distinct educational backgrounds, it is noteworthy that three of them are speech therapists who employ ABA as a method to facilitate language development in young children's. Among the participants, forty individuals possess the professional background of special education instructors. These participants have either incorporated ABA into their current instructional practices or have previously

employed ABA techniques while engaging with individuals diagnosed with autism.

Design of the Study

The research used a cross-sectional survey technique for assessing the perceived efficacy of ABA in improving communication skills in children with ASD. A use of structured questionnaire was administered to a sample of 100 participants, comprising professionals with different experience levels in ASD institutions. The questionnaire incorporated items measuring opinions about the impact of ABA on specific social and communication outcomes. In total, 15 questions have been asked using Likert Scale. 10 questions for ABA and 5 questions for communications skills.

Data Collection & Analysis

The primary objective of this research was to assess the efficacy of ABA as an instructional approach for children diagnosed with ASD. The data was only obtained via an anonymous computerized poll distributed via email. The participants were required to respond to a survey consisting of approximately ten items. The inquiry encompassed topics that centered on the efficacy of ABA as a pedagogical instrument in educational settings, both within the classroom and in domestic environments. For the analysis of the research findings, SPSS has been used that involve analysing data using descriptive statistics, regression analysis and Pearson correlations for evaluating the relationships and impacts of ABA on communication skills.

RESULTS

Table 1 Demographical analysis

Category	Sub-category	Frequency	Percent
Gender	Male	42	42%
	Female	58	58%
Age group	25-45 years old	42	42%
	45-65 years old	26	26%
	Above 65 years	32	32%
Level of Qualification	Graduate	56	56%
	Postgraduate	27	27%
	Consultant	17	17%
Experience in ASD Institutions	1 to 5 years	10	10%
	6 to 10 years	22	22%
	11 to 15 years	36	36%
	16 to 20 years	32	32%
Specialization	General Practitioners	72	72%
	Teachers	20	20%
	Assistants	8	8%

Table 1 provides a breakdown of demographics and professional characteristics among respondents. In terms of gender, 42% were male and 58% were female. Age distribution showed that 42% were aged between 25-45 years, 26% between 45-65 years, and 32% were above 65 years old. Regarding qualifications, 56% were graduates, 27% had postgraduate qualifications, and 17% were consultants. Experience in ASD (Autism Spectrum Disorder) institutions varied, with 10% having 1 to 5 years, 22% with 6 to 10

years, 36% with 11 to 15 years, and 32% with 16 to 20 years of experience. In terms of specialization, 72% were general practitioners, 20% were teachers, and 8% were assistants. This demographic and professional profile highlights a predominantly female workforce with a significant proportion in the younger age bracket and a majority holding graduate-level qualifications, primarily working as general practitioners in ASD institutions.

Table 2 Descriptive Summary

Scale	Cronbach's Alpha	Number of Items
APA	0.728	10
Social Communication Skill	0.898	5

Table 2 reliability analysis indicates that the APA scale has a Cronbach's Alpha of 0.728 with 10 items, suggesting acceptable internal consistency. The social communication skill scale shows a higher Cronbach's Alpha of 0.898 with 5 items,

indicating excellent internal consistency. These results suggest that both scales are reliable, with the social communication skill scale demonstrating a particularly high level of reliability.

Table 3 Descriptive Summary of each question

		n	M	S.D.
1	I believe ABA will improve social awkwardness among ASD children's	100	2.18	3.23
2	I do not believe that ABA is significant approach in improving social ability of ASD individuals.	100	3.36	1.37
3	To make ABA effective there must be trained staff and parents support	100	3.04	1.27
4	The intervention surge repetitive behavior that have positive impact on individual memory.	100	3.64	0.098
5	You think that student self-esteem increased through ABA?	100	4.08	0.800
6	ABA is most suitable tool for social skill development among ASD students	100	3.98	0.910
7	Drawbacks are more than advantages.	100	3.64	0.980
8	ABA is based on repetitive reinforcement , does that play role to analyses individual performance in terms of social activeness	100	4.00	0.829
9	Most of the children shows positive results	100	4.04	0.803
10	Academic results improved through ABA interventions	100	4.00	0.778
11	Learning how communication skills is an importance skill for children with ASD		4.04	0.777
12	My students gained adequate skills to improve communication skills by participating in the study	100	4.04	0.724
13	My students are now more confident in communication skills from participating in the study	100	4.04	0.777
14	The implementation of treatment did not cause any disruption to my students' daily routine	100	4.29	0.856
15	I believe ABA was solely responsible for my students learning communication skill.	100	4.08	0.800

The data reveal a generally positive perception of ABA among respondents regarding its impact on social and communication skills in children with Autism Spectrum Disorder (ASD). Most participants believe ABA significantly improves social awkwardness (M = 2.18, SD = 3.23) and social abilities (M = 3.36, SD = 1.37) when supported by trained staff and parents (M = 3.04, SD = 1.27). Repetitive behaviors encouraged by ABA are seen to positively impact memory (M = 3.64, SD = 0.098), with many agreeing that it

enhances student self-esteem (M = 4.08, SD = 0.800) and academic performance (M = 4.00, SD = 0.778). Additionally, respondents note improvements in communication skills (M = 4.04, SD = 0.777) and confidence (M = 4.29, SD = 0.856) among their students, attributing these gains directly to ABA interventions. Overall, the responses underscore ABA's effectiveness, though some believe it carries more drawbacks than advantages (M = 3.64, SD = 0.910).

Table 4 Correlations

		APA	CS
ABA	Pearson Correlation	1	.568**
	Sig. (2-tailed)		.000
	N	100	100
CS	Pearson Correlation	.568**	
	Sig. (2-tailed)	.000	
	N	100	

Table 4 shows Pearson correlation analysis presents a significant positive relationship between the ABA scale and the Communication Skill (CS) scale ($r = .568$, $p < .001$). This indicates that higher scores on the APA scale are associated with higher scores on the CS scale, suggesting that as

perceptions of the effectiveness of Applied Behavior Analysis (ABA) improve, so do the perceived social communication skills in children with ASD. The significance level of $p < .001$ confirms that this correlation is statistically significant.

Table 5 Regression Analysis

	Variable	M	SD	R	R Square	R Squ Change	t	Df ²	p
The effects of ABA on CS									
	ABA	3.5960	0.51716	0.568	0.323	-5.145	0.323	98	.000
	CS	4.0980	0.68454						
Regression Analysis									

Table 5 shows regression analysis investigated the effects of Applied Behavior Analysis (ABA) on social communication skills (CS). The mean (M) score for ABA was 3.60 with a standard deviation (SD) of 0.52, while the mean score for CS was 4.10 with an SD of 0.68. The Pearson correlation coefficient (R) was 0.568, indicating a moderate positive relationship between ABA and CS. The R square value of 0.323 suggests that approximately 32.3% of the variance in CS can be explained by ABA. The change in R square was significant with a t-value of -5.145 and a p-value of .000, indicating a statistically significant effect of ABA on CS. The degrees of freedom (df) for this analysis was 98.

DISCUSSION

Research done to determine the benefits of ABA as a method of improving communication as social skills for children with ASD has elicited mixed findings. Based on the outcomes of this research, the results show that there is high positive correlation between ABA and the enhancement of the governmental social communication skills which is at 32%. ABA interventions account for 3% of the variations in these skills. This accords with Nesterova, *et al.*, (2015) which showed that the ABA based interventions can result to great enhancement of communication and social habits among the learners with ASD. Thus, in a meta-analysis, Bordini's, *et al.*, (2024) study revealed

that ABA programs assist children on social, communication, and cognitive development if diagnosed with ASD. These studies demonstrate that there is a possibility of advancement in developmental milestones with ABA hence supporting the findings of the study.

However, some works offer a more complex and still optimistic standpoint portraying ABA as an effective method for developing communication skills provided that the amount of parental engagement plays a crucial role. For example, the Yu, *et al.*, (2020) study pointed out the significance of appropriate and stable application of ABA techniques in the child's environment, showing that inconsistency in the therapist background and compliance with ABA principles may affect the efficacy of the intervention. Moreover, Heath, *et al.*, (2021) claimed that though lots of children are helped by ABA, some of them would remain non-responsive and proposed to look for individual solutions. This variability is evident in this research findings presenting the perception of the UK's ASD teachers related to ABA; while the general consensus is positive there are small hints as to people's equivocal opinions towards the disadvantages and benefits of ABA.

However, there are critics of ABA that claimed that, due to its focus on behavioral change, the

approach does not always develop the child's intrinsic motivation or consider their emotional state. Based on the findings made by Chung (2021), the author identified the need to apply both developmental and relationship-based approaches in the management of children with ASD given their effectiveness in meeting the child's needs holistically. Also, other studies by Esposito, *et al.*, (2017) showed that though ABA makes enhanced exact behaviors, it is not very effective in generalization of these behaviors in other social settings. Such criticisms illustrate the need for recognizing other or additional models that aim at the child's development as a whole rather than on fixing the behaviors exhibited.

Besides, as mentioned in the contemporary and more recent studies, the researchers advocate for the prospection of a combined modality of the ABA with other therapies. The approach further supported by findings from Sambandam, *et al.*, (2020) who showed that the integration of developmental strategies with behavioral interventions can elevate social communication skills in an efficient manner using ABA alone. These research findings corroborate the idea that ABA is a useful tool; yet, its integration with other evidence-based approaches could yield effective results for children with ASD.

CONCLUSION

The objective of this research was to examine the efficacy of ABA as an instructional method for enhancing communication skills of children diagnosed with ASD. Conducting survey from teachers of ASD students from UK, this research findings indicated that ABA is effective in enhancing CS in children with ASD. The change in R square was significant with a t-value of -5.145 and a p-value of .000, indicating a statistically significant effect of ABA on CS. Nevertheless, the limitation of this study involves a relatively small sample size, insufficient longitudinal data, and significant bias in self-reported data for assessing prolonged effects of ABA. Research in the future must address these limitations by including larger and more diverse sample. Future research can focus on objective measures of other social skills and perform long-term follow-up studies to gain better insights related to the sustained influence of ABA interventions. More research is required the present the benefits of integrating ABA with other therapeutic techniques.

ACKNOWLEDGMENTS

Acknowledging contributions to this research article in the order that best represents the nature and importance of those contributions, such as intellectual assistance and funding support.

REFERENCES

1. Alharbi, M. and Huang, S. "An Augmentative System with Facial and Emotion Recognition for Improving Social Skills of Children with Autism Spectrum Disorders." *2020 IEEE International Systems Conference (SysCon)*, (2020, August): 1-6. IEEE.
2. Alves, F. J., De Carvalho, E. A., Aguilar, J., De Brito, L. L. & Bastos, G. S. "Applied Behavior Analysis for the Treatment of Autism: A Systematic Review of Assistive Technologies." *IEEE Access*, 8 (2020): 118664-118672.
3. Blair, B. J., Blanco, S., Ikombo-Deguenon, F. & Belcastro, A. "Sex/Gender Phenotypes and the Diagnosis and Treatment of Autism Spectrum Disorder: Implications for Applied Behavior Analysts." *Behavior Analysis in Practice*, 13.1 (2020): 263-269.
4. Bordini, D., Moya, A. C., Asevedo, G. R. D. C., Paula, C. S., Brunoni, D., Brentani, H., ... & Bagaiolo, L. "Exploring the Acquisition of Social Communication Skills in Children with Autism: Preliminary Findings from Applied Behavior Analysis (ABA), Parent Training, and Video Modeling." *Brain Sciences*, 14.2 (2024): 172.
5. Callahan, K., Foxx, R. M., Swierczynski, A., Aerts, X., Mehta, S., McComb, M. E., ... & Sharma, R. "Behavioral Artistry: Examining the Relationship Between the Interpersonal Skills and Effective Practice Repertoires of Applied Behavior Analysis Practitioners." *Journal of Autism and Developmental Disorders*, 49 (2019): 3557-3570.
6. Chung, E. Y. H. "Robot-Mediated Social Skill Intervention Programme for Children with Autism Spectrum Disorder: An ABA Time-Series Study." *International Journal of Social Robotics*, 13.5 (2021): 1095-1107.
7. Esposito, M., Sloan, J., Tancredi, A., Gerardi, G., Postiglione, P., Fotia, F., ... & Vicari, S. "Using Tablet Applications for Children with Autism to Increase Their Cognitive and Social Skills." *Journal of Special Education Technology*, 32.4 (2017): 199-209.
8. Gitimoghaddam, M., Chichkine, N., McArthur, L., Sangha, S. S. & Symington, V. "Applied Behavior Analysis in Children and

- Youth with Autism Spectrum Disorders: A Scoping Review." *Perspectives on Behavior Science*, 45.3 (2022): 521-557.
9. Heath, C. D., McDaniel, T., Venkateswara, H. & Panchanathan, S. "Improving Communication Skills of Children with Autism Through Support of Applied Behavioral Analysis Treatments Using Multimedia Computing: A Survey." *Universal Access in the Information Society*, 20.1 (2021): 13-30.
 10. Leaf, J. B., Cihon, J. H., Ferguson, J. L. & Weinkauff, S. M. "An Introduction to Applied Behavior Analysis." *Handbook of Childhood Psychopathology and Developmental Disabilities Treatment*, (2017): 25-42.
 11. Leaf, J. B., Leaf, R., McEachin, J., Taubman, M., Ala'i-Rosales, S., Ross, R. K., ... & Weiss, M. J. "Applied Behavior Analysis is a Science and, Therefore, Progressive." *Journal of Autism and Developmental Disorders*, 46 (2016): 720-731.
 12. Makrygianni, M. K., Gena, A., Katoudi, S. & Galanis, P. "The Effectiveness of Applied Behavior Analytic Interventions for Children with Autism Spectrum Disorder: A Meta-Analytic Study." *Research in Autism Spectrum Disorders*, 51 (2018): 18-31.
 13. Nesterova, A. A., Aysina, R. M. & Suslova, T. F. "Recent Technologies to Improving Social and Communication Skills in Children with ASD: Systematization of Approaches and Methods." *Modern Applied Science*, 9.11 (2015): 38.
 14. Rafiee, S. & Khanjani, Z. "The Effectiveness of Applied Behavior Analysis Therapy in Children with Autism Spectrum." *International Journal of Multicultural and Multireligious Understanding*, 6.6 (2020): 750-769.
 15. Sambandam, E., Warle, S. S. & Rangaswami, K. "Long-Term Effects of ABA-Based Intervention to Improve Social-Communication and Social Maturity for Children with Autism." *Journal of Indian Academy of Applied Psychology*, 57 (2020): 5-13.
 16. Shyman, E. "The Reinforcement of Ableism: Normality, the Medical Model of Disability, and Humanism in Applied Behavior Analysis and ASD." *Intellectual and Developmental Disabilities*, 54.5 (2016): 366-376.
 17. Wang, Y., Kang, S., Ramirez, J. & Tarbox, J. "Multilingual Diversity in the Field of Applied Behavior Analysis and Autism: A Brief Review and Discussion of Future Directions." *Behavior Analysis in Practice*, 12 (2019): 795-804.
 18. Wilkenfeld, D. A. & McCarthy, A. M. "Ethical Concerns with Applied Behavior Analysis for Autism Spectrum 'Disorder'." *Kennedy Institute of Ethics Journal*, 30.1 (2020): 31-69.
 19. Yu, Q., Li, E., Li, L. & Liang, W. "Efficacy of Interventions Based on Applied Behavior Analysis for Autism Spectrum Disorder: A Meta-Analysis." *Psychiatry Investigation*, 17.5 (2020): 432.

Source of support: Nil; **Conflict of interest:** Nil.

Cite this article as:

Alzoubi, I.H. "Effectiveness of 'applied Behavior Analysis' (ABA) to Develop the Social Skills for Autistic Children." *Sarcouncil journal of Arts humanities and social sciences* 3.8 (2024): pp 1-7.