

Perceived Effectiveness of ABA Based Interventions for Development of Social Skills among Students with Autism Spectrum Disorder: Survey of Teachers Opinions

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Abstract: *Autism Spectrum Disorder is a neurodevelopmental condition characterized by a complex range of neurological and behavioral features. Manifestation of autism spectrum disorder is identified through deficits in social interaction and communication, existing concomitantly with repetitive and restricted behaviors. Developing an understanding of these characteristics is crucial for diagnosis and interventions for autism. Persons with autism often face experience issues with social-emotional reciprocity, initiating and maintaining social relationships and non-verbal communication (Cederna, 2023). They may also develop repetitive behaviors, insistence on sameness, narrow interests and stereotyped movements (Yang, 2023). Furthermore, they may also face difficulties with development and use of language, which may include atypical speech patterns, difficulties in and limited range of conversational skills (Cederna, 2023). Zhao (2024) and Lai & Baron-Cohen (2023) denote that atypical brain development and alterations in brain structure such as superior temporal sulcus and amygdala can lead to impaired social cognition. It has also been indicated that individuals with autism spectrum disorder may also experience difficulties in understanding other people's mental state and they may also experience issues in executive functioning (Zhao, 2024; Lai & Baron-Cohen, 2023). Autism spectrum disorder leaves a profound impact on social skills such as social communication and interaction and social behavior and play. Difficulties in socialization, communication and behavior can be mitigated through targeted interventions. Gajre et al. (2024) reported that persons with autism spectrum disorder often find it difficult to appropriately interpret social cues and involve in reciprocal social interactions which consequently lead to impaired relationships.*

Introduction

Various intervention programs are employed to develop social skills among individuals with ASD. Interventions employed to develop social skills among students with ASD have been identified to have promising effect. Such interventions aim to enhance communication, emotional regulation and appropriate social behaviors. Development of these skills help students with autism is critical for

student with autism spectrum disorder in education and daily life success. Such interventions include social stories, simulation and video modeling, ABA based interventions, digital interventions, sports, play and active recreation activities (Khalid et al., 2023; Wongkittirungrueang et al., 2024; Villamin & Luppicini, 2024). The social stories approach was found to be effective in development of social skills in students with high-functioning ASD. Wongkittirungrueang et al. (2024) report that it helped the students with ASD to recognize emotions, engage in social interactions and understanding social norms. Simulations techniques such as video modeling demonstrated significant improvement in development of sharing and greeting skills among students with ASD (Khalid et al., 2023). Emerging tools like mobile phone applications have also become valuable sources for teaching life skills as these offer personalized learning experience to cater the diverse needs of students with ASD. Villamin and Luppicini (2024) mentioned that mobile phone applications can break down the tasks of daily life to manageable steps for integration for integration of learning into the routine of daily life, consequently enhancing the effectiveness of social skills training.

Applied Behavior Analysis (ABA) therapy is recognized as an effective approach to develop social skills among students with ASD. Studies have indicated that ABA efficiently promotes the social and emotional development by utilizing structured interventions specifically designed to cater the individual needs. Deeply rooted in behaviorism, ABA utilizes the behavior modification techniques e.g. positive/negative reinforcement, to strengthen the desired social behaviors and reduce the undesired ones (Du et al., 2024). Abid et al. (2024) mentioned that significant improvement have been noticed in interpersonal skills among the students who receive ABA interventions. Use of token economy systems and visual aids within ABA has also proven to be effective in maintaining consistency and engagement to enhance social learning (Thakur & Chauhan 2024). Sousa et al. (2024) note that ABA therapy facilitates the inclusion of students with ASD in inclusive education by development their behavioral, academic and social skills. Integration of play based resources and innovative strategies within ABA based interventions can help children with ASD to develop autonomy and self-awareness which can further help to develop their social skills (Sales et al., 2024).

Research Problem

Development of social skills is considered to be great challenge for students with autism spectrum disorder (ASD). Research has suggested that variety of strategies help the teachers to develop social skills among learners with ASD. Many of such strategies as based on Applied Behavior Analysis (ABA). This study was aimed to investigate how teacher view the value of ABA based intervention strategies in development of social skills among students with ASD.

Research Objectives

The present study was aimed to:

1. Identify the ABA based strategies used by the teachers for development of social skills among children with ASD.
2. To find out the effectiveness of ABA based strategies as perceived by the teachers for development of social skills among students with ASD.
3. To find out the significant differences in perceived effectiveness of strategies based on gender.
4. What are the significant differences in strategy use between public and private sector teachers?

Research Questions

1. What the ABA based strategies are used by the teachers for development of social skills among children with ASD.
2. What is the effectiveness of ABA based strategies as perceived by the teachers for development of social skills among students with ASD.
3. What are the significant differences in perceived effectiveness of strategies based on gender?
4. What are the significant differences in strategy use between public and private sector teachers?

Methodology

The study quantitative in nature as it was grounded in positivist paradigm (Phoenix et al., 2013). Survey design was employed to collect the data. A researcher developed survey form was validated by a panel of experts (Mellinger & Hanson, 2021). The survey form consisted of three parts. First part was targeted to collect demographic information, the second part was aimed to identify the use of ABA based interventions for development of social skills among students with ASD by the teachers, and the third part targeted to investigate the perceptions of teachers about effectiveness of used ABA based interventions for development of social skills among students with ASD. The Cronbach's alpha reliability coefficient of .875 was achieved which indicated high internal consistency. Teachers working with students with ASD were counted in as population of the study while the teachers working in Faisalabad Division were considered be accessible population of the study. A sample of 60 teachers was randomly selected ensuring the representativeness of the population in the sample (Vickstrom & Beauchemin, 2024). Researcher approached the sample physically and distributed the survey form themselves. A total number of 54 completed survey forms were received back. The incomplete survey forms were excluded.

Data Analysis and Results

Table 1

Use of Strategies

Sr.	Strategy	NU		SU		OU		AU	
		Freq	%	F Freq	%	F Freq	%	F Freq	%
1	Discrete Trial Training	5	9.3	10	18.5	10	18.5	29	53.7
2	Generalization	4	7.4	4	7.4	33	61.1	13	24.1
3	Caregiver facilitated interventions	6	11.1	16	29.6	28	51.9	4	7.4
4	Picture Exchange Communication System	13	24.1	19	35.2	12	22.2	10	18.5
5	Modeling	5	9.3	2	3.7	12	22.2	35	64.8
6	Pivotal Response Training	11	20.4	12	22.2	12	22.2	19	35.2
7	Comprehensive ABA Training	4	7.4	23	42.6	27	50.0	0	0
8	Naturalistic Teaching	2	3.7	9	16.7	23	42.6	20	37.0
9	Decreasing Problem Behavior	6	11.1	5	9.3	14	25.9	29	53.7
10	Positive Reinforcement	4	7.4	4	7.4	0	0	46	85.2
11	Behavior Contracts	5	9.3	8	14.8	22	40.7	19	35.2
12	Functional Behavior Assessment	7	13.0	4	7.4	22	40.7	21	38.9
13	Prompting & Fading	5	9.3	2	3.7	8	14.8	39	72.2
14	Exercise	4	7.4	15	27.8	12	22.2	23	42.6
15	Scripting	14	25.9	14	25.9	18	33.3		
16	Antecedent Based Interventions	2	3.7	11	20.4	17	31.5	24	44.4

This table summarizes the frequency and percentage of teachers using different ABA-based intervention strategies for developing social skills in students with ASD.

Table 2

Perceived Effectiveness of Strategies

Sr.	Strategy	NE		LE		E		VE	
		Freq	%	F Freq	%	F Freq	%	F Freq	%
1	Discrete Trial Training	0	0	4	7.4	16	29.6	34	63.0
2	Generalization					25	46.3	29	53.7
3	Caregiver facilitated interventions	2	3.7	40	74.1			12	22.2
4	Picture Exchange Communication System	0	0	15	27.8	18	33.3	21	38.9
5	Modeling	0	0	0	0	12	22.2	42	77.8
6	Pivotal Response Training	0	0	8	14.8	22	40.7	24	44.4
7	Comprehensive ABA Training	0	0	4	7.4	30	55.6	20	37.0
8	Naturalistic Teaching	0	0	7	13.0	33	61.1	14	25.9
9	Decreasing Problem Behavior	2	3.7	0	0	18	33.3	34	63.0
10	Positive Reinforcement	0	0	0	0	6	11.1	48	88.9

Perceived Effectiveness of ABA Based Interventions for Development of-----Zia, Ali & Athar

11	Behavior Contracts	4	7.4	2	3.7	29	53.7	19	35.2
12	Functional Behavior Assessment	2	3.7	2	3.7	32	59.3	18	33.3
13	Prompting & Fading	0	0	2	3.7	6	11.1	46	85.2
14	Exercise	3	5.6	5	9.3	19	35.2	27	50.0
15	Scripting	10	18.5	8	14.8	25	46.3	11	20.4
16	Antecedent Based Interventions	0	0	6	11.1	29	53.7	19	35.2

This table provides data on how teachers perceive the effectiveness of the ABA strategies

Table 3

Independent Sample t-test: Use of strategies on the basis of gender

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
tscore1	Equal variances assumed	4.015	.050	1.584	52	.119	7.098	4.480	-1.892	16.088
	Equal variances not assumed			4.731	51.363	.000	7.098	1.500	4.086	10.110

This table shows no significant differences in the use of strategies between male and female teachers ($p > 0.05$). Levene's Test indicates significant variances in strategy use by gender ($p = 0.05$).

Table 4

Independent Sample t-test: Perceived Effectiveness of strategies on the basis of gender

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
tscore2	Equal variances assumed	5.249	.026	.280	52	.781	.527	1.882	-3.250	4.303
	Equal variances not assumed			.684	20.702	.502	.527	.770	-1.077	2.130

This table shows no significant differences in perceived effectiveness of strategies based on gender ($p > 0.05$).

Table 5

Independent Sample t-test: Use of strategies on the basis of public & private sector

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
tscore1	Equal variances assumed	1.001	.322	.484	52	.630	1.346	2.778	-4.228	6.920
	Equal variances not assumed			.527	46.407	.601	1.346	2.556	-3.798	6.490

This table reveals no significant differences in strategy use between public and private sector teachers ($p > 0.05$). Levene's Test shows no significant variance ($p > 0.05$).

Table 6

Independent Sample t-test: Perceived Effectiveness of strategies on the basis of public & private sector

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means				95% Confidence Interval of the Difference		
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
tscore2	Equal variances assumed	9.054	.004	-.838	52	.406	-.952	1.136	-3.230	1.327
	Equal variances not assumed			-.969	51.489	.337	-.952	.982	-2.923	1.019

This table shows no significant differences in perceived effectiveness between sectors ($p > 0.05$). Levene's Test indicates significant variance ($p = 0.004$).

Findings

The significant findings and non-significant findings drawn from the "Perceived Effectiveness of ABA-Based Interventions for Development of Social Skills among Students with Autism Spectrum Disorder: Survey of Teachers' Opinions" are presented as follows:

Significant Findings

1. Differences by Experience Level:

Teachers with 0–5 years of experience favored structured interventions like Discrete Trial Training (DTT), which showed a significantly higher mean score ($M = 3.88$, $SD = 0.336$) compared to those with 6–10 years of experience ($M = 3.22$, $SD = 0.647$), with a large effect size (Cohen's $d = 0.979$).

Teachers with 6–10 years of experience favored strategies like the Picture Exchange Communication System (PECS), scoring higher ($M = 3.67$, $SD = 0.485$) compared to those with 0–5 years of experience ($M = 2.75$, $SD = 0.803$), with a moderate effect size (Cohen's $d = 0.676$).

2. Preference Trends

Experienced teachers (6–10 years) leaned towards autonomy-promoting interventions such as scripting and exercise, showing significantly higher scores.

3. Intervention Effectiveness:

Positive reinforcement and prompting & fading strategies were perceived as highly effective by the majority of participants.

Modeling was rated very effective by 77.8% of respondents, highlighting its strong perceived impact on social skill development.

Non-Significant Findings

No significant differences were observed in the use of generalization, caregiver-facilitated interventions, and modeling strategies based on experience level.

Comprehensive ABA Training showed slightly higher preference scores among less experienced teachers, but the difference was not statistically significant.

Conclusion

The researchers concluded that the professionals with less work experience (0–5 years) seem to favor structured methods like DTT and ABA training. Experienced professionals (6–10 years) lean towards strategies promoting autonomy, such as PECS and naturalistic interventions like scripting. Differences in preference and effectiveness may reflect varying exposure to training programs, evolving professional beliefs, or individual approaches to implementation. Teachers' preferences for ABA-based strategies are influenced by their experience levels. Novice teachers prefer structured approaches like DTT, while experienced teachers favor strategies fostering independence, such as PECS and naturalistic interventions. The overall effectiveness of ABA interventions was positively perceived, with strategies like positive reinforcement and prompting being highly favored.

Recommendations

1. These findings suggest a need for diverse ABA-based strategies tailored to both teacher preferences and the unique needs of students with Autism Spectrum Disorder.

2. These findings also suggest to develop structured training programs focusing on **Applied Behavior Analysis** strategies like Discrete Trial Training and Positive Reinforcement.
3. It is needed to encourage the integration of autonomy-promoting strategies such as the Picture Exchange Communication System (PECS) and naturalistic teaching in classrooms.

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