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Effective Strategies for Developing Attention Span in Children with Autism Spectrum Disorder

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ABSTRACT

This study examines the effect of the Picture Exchange Communication System (PECS) on a child's attention span, communication skills, and behavioral changes in children with ASD at the Abu Dhabi Autism Centre. The research employed a mixed-method approach by observing six children quantitatively for four months and then qualitatively interviewing the children's parents and teachers. Results showed that PECS significantly shrunk task completion time and lowered variability in performance related to higher attention and more task engagement. Qualitative results showed participants' responses with improved communication skills, decreased negative behavior, and increased attention spans, mainly using visual stimuli. However, consistent usage of PECS at home and individual variable responses were noted. This study emphasizes the necessity of using suitably tailored interventions, delivery across environments, and use of highly preferred reinforcers when implementing PECS. These findings add to the growing body of research on autism interventions in non-Western contexts to help educators and families in the UAE. Research into ways of overcoming implementation challenges and increasing the sample to include children with differing ASD severity and co-occurring conditions is suggested for future research.

Keywords: Picture Exchange Communication System (PECS), behavioral changes

I. INTRODUCTION

The increasing cases of autism among the children in Abu Dhabi have pointed to the urgent need for effective interventions to cater to the educational needs of those with autism spectrum disorder (ASD). According to Autism Speaks (2023), there were 1,97,000 children diagnosed with ASD in 2023 among the 36.4 million children they represent, while the World Health Organization states that one in a hundred children across the world has ASD (WHO, 2023).

PECS and other communication interventions have been examined in several socio-cultural settings, and numerous studies have been done on them. In one way, Charlop-Christy et al. (2002) illustrated how PECS eliminated disruptive behaviors in their participants with ASD by offering them a way to communicate. Consequently, Flippin et al. (2010) performed a meta-analysis and found that PECS is helpful for expressive language and social interaction, while outcomes differ across cultures. Alternative interventions, such as Makaton and Augmentative and Alternative Communication (AAC) systems that also use visual support to help facilitate communication, have indeed been explored in other studies. Despite this, research indicates that PECS is still one of the most potent services, especially for those children who respond better to visual stimulation (Trembath et al., 2015). Although PECS potentially addresses such cultural and linguistic barriers to communication, PECS is still relatively unexplored in non-Western contexts (like the UAE).

The situation is pressing in the United Arab Emirates (UAE), particularly in Abu Dhabi. According to recent estimates, people of determination with autism makeup about 30 percent of all special needs cases in Abu Dhabi and could be as many as 12 percent of the population (Gaad & Thabet, 2016). The prevalence of this condition is so significant that effective communication and behavioral intervention strategies that are socialized to specific local contexts are urgently needed.

Children with ASD frequently struggle with pretty much everything, such as lack of social communication, maintaining attention, and behavioral regulation. Up to 80% of children with ASD are found to have attention deficits, which impair their capacity to pay attention to educational tasks (Banire et al., 2021). Then, behavioral issues add to these challenges – things like tantrums, aggression, and repetitive actions – things that get in the way of learning and interpersonal interactions (NIDCD, 2012).

As an intervention for children with ASD with strong visual skills, the Picture Exchange Communication System (PECS) is an increasingly promising one. PECS has been found to increase attention spans by over 25% in structured environments and dramatically cut the incidence of 'frustration' related behaviors by over 30% (Trembath et al., 2015). In the classroom activities of those nonverbal and those suffering from communication problems at the Abu Dhabi Autism Center, PECS has been embedded to allow the children to communicate their needs via pictures that will reduce anxiety and encourage positive behaviors (the PECS program has been used in various educational settings such as autism classrooms, special education classrooms, preschool settings, school resource room and community settings (Taryadi & Kurniawan, 2018).

The three primary objectives of the research are addressed which are:

- Research on attention span and behavioral changes of the child while engaged with PECS
- Exploring teachers' perceptions of PECS's effectiveness
- Understanding parents' perspectives on PECS implementation

It contributes to growing research on autism interventions in non-Western countries while offering practical insights for educators and families in the UAE. The findings will be most relevant to improving the quality of education and psychosocial support provided to children with ASD in culturally specific settings.

A. Theoretical Framework

As an intervention, PECS is founded on the tenets of behaviorism and the particular branch that is Applied Behavior Analysis (ABA). ABA assumes that external stimuli control behavior and that reinforcement can change behavior. Regarding PECS, in this technique, children with ASD learn to communicate by associating the pictures with the desired outcomes. It is repeated with encouragement (Bondy & Frost, 1994). Linking social communication theory of the ability of meaningful interactions in language acquisition to the success of PECS in improving communication. As per Vygotsky's theory of social development, social interaction happens before cognitive development; PECS offers a way for youngsters with ASD to get into the activity, which can help them with social communication skills.

II. METHODOLOGY

The research method followed was exploratory research. The focus of the study was to investigate the effect of PECS on children with ASD in a non-Western location such as Abu Dhabi, where limited literature is available. Flexibility in uncovering insights into the complex interactions between children with ASD and the PECS method can be achieved using the exploratory approach. A single case study design was chosen to investigate the phenomenon in depth in a bounded context, i.e., Abu Dhabi Autism Centre. The capturing of individual differences and distinctive responses to PECS was exceptionally well suited by this design, as it facilitated the study of the experiences and behaviors of the participants.

Six male children, 12 to 14 years of age, diagnosed with moderate to severe ASD, were the subjects of the study. Employing the single case study design, rich, contextualized structured observation and semi-structured interviews with parents and teachers provided the data for our study. The approach that was taken here showcased an all-in-one view of the attention span and behavioral changes that took place when using the PECS method.

This study was done at the Abu Dhabi Autism Centre, which is reputed to be outstanding in the education for autism. The Centre has intervention programmers for the Speech, Occupational, and the use of PECS. Research was performed in a classroom with science treatment involving six children, two science teachers, and one assistant teacher. Criteria used to select the children included having a diagnosis of moderate autism, age, and communication skills.

A. Sampling Approach

This sampling was purposive, where the sample actually represented the population of interest. Children 8 to 12 years of age with moderate autism but very poor to minimal functional language skills and both poor expressive and receptive language were included in the criteria. Children excluded from the study were outside the defined age range or had functional language skills. A final sample of six male children with ASD, their parents, and their teachers made up the sample.

The reason for making the decision to use a single case study design was to capture individual variability in response to PECS. The use of this design provides an opportunity to focus intensely on each child's singular progress, apart from a larger collective. Due to how ASD looks and feels in each child, the single case study allows the specifics of what the PECS did for each child's communication attentiveness to be examined. The study also took account of other variables, including family involvement, and consistency of PECS use across settings and the presence of comorbid conditions that may influence outcomes. The study completed data collection over four months to capture not only the short-term but also the longer-term effects of the intervention.

B. Research Instruments

The study used mixed methods, in which the Biodata Questionnaire was used to obtain demographic information regarding the participants' age, educational background, and communication challenges. Communication was facilitated with picture cards, and measures of

attention span were taken with reinforcers. The children's responses were scored on structured observation sheets, such as attention span, task completion, and behavioral changes in PECS sessions. Semi-structured interviews were conducted to determine parents' and teachers' perceptions of PECS's effectiveness in both attending and behavioral changes.

C. Data Collection Procedure

Data were collected from September to December 2022 in the Abu Dhabi Autism Centre. There was a structured process followed. The children's records were studied to know their strengths, weaknesses, and IEP. Children attended PECS sessions, and teachers observed them and recorded their attention span, task completion, and behavioral response. Data for the qualitative part of the study were collected through semi-structured interviews with the parents and the teachers. Each day of sessions was 30 minutes long, and the PECS training sessions were conducted daily. Systematic records of the response times and attention spans of the children were done.

D. Data Analysis

The data was analyzed with the aid of quantitative and qualitative methods.

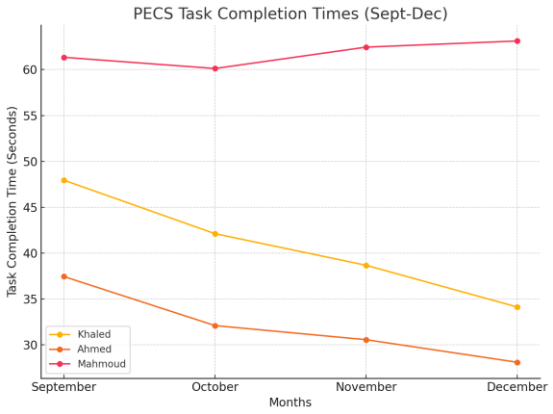
- Quantitative analysis: The children's attention spans and response times were quantified using SPSS software. Mean and standard deviation were used as descriptive statistics for the effectiveness of PECS.
- Qualitative analysis: The data analysis technique used was thematic analysis. The transcripts were coded and grouped into themes about the way parents and teachers perceive that PECS has influenced attention and behavior.

E. Ethical Considerations

The study addressed ethical concerns by obtaining parents' and teachers' informed consent. The research was conducted in an environment that was supportive and inclusive, respectful of the privacy and confidentiality of all the involved participants. The interviews and observations were conducted with the permission of the University of Islamic Sciences Malaysia (USIM) and the Abu Dhabi Autism Centre's administration.

III. Results and discussion

This study has aimed to analyze the effectiveness of the Picture Exchange Communication System (PECS) in enhancing attention span, communication skills, and behavioral changes in children with Autism Spectrum disorder (ASD) at the Abu Dhabi Autism Centre. A mixed methods approach was used in the study with initial qualitative research from interviews with parents and teachers, and second quantitative data from observations on six children with ASD over four months (September to December 2022). Finally, the results are presented in two main sections: quantitative findings from the data captured in the observation as well as qualitative insights that resulted from the interviews.



The quantitative data related to the time that the children needed to complete six tasks that were unique to the first phase of PECS training: when to sit down, to maintain eye contact, to observe the reinforcement picture, to pick up the card, to give the picture to the trainer, and to take the reinforcement. Over the four months, the children generally improved their ability to finish these tasks. For example, the average time taken by Khaled to do the tasks went down from 47.95 seconds to 34.12 seconds from September to December, respectively. Likewise, Ahmed cut his

average time from 37.45 seconds to 28.10 seconds in the same period. Yet, the improvement was not consistent with all tasks or children. For example, using individual performance variation as an example, Mahmoud took a little longer to complete the tasks in December (63.12 seconds) than in September (61.34 seconds), showing variability in the individual's response to the PECS intervention. The standard deviation (SD) of time spent to complete tasks decreased over the four months, indicating that the children saw more success in the functions relative to one another. For example, in the task where Khaled picked up the card from the PECS board, his SD decreased from 10.13 seconds in September to 2.12 seconds in December. This reduction in variability indicates that the children became more familiar with the tasks and more stable in their performance as the intervention progressed.

The results of interviews with parents and teachers provide deeper insights into the effectiveness of PECS on attention span, communication skills, and behaviors. Secondly, the thematic analysis of the interviews elicited several themes.

Even the parents and teachers reported that PECS was beneficial to the children in improving their attention span, especially with visual stimuli. Such an environment can provide a sensory-rich environment through bright colors, soft lighting, and sound (e.g., ocean waves or birds chirping) that attract attention, which can lead to decreasing undesirable behaviors. Tactile activities and auditory cues help children pay attention more if used in sensory integration techniques.

Teachers also reported that when the PECS card contained an exceedingly preferred reinforcer, conducting PECS engagement was more likely to keep the child on task. An example of this is one of the most critical learning stages: the child is attracted when the teacher uses pictures.

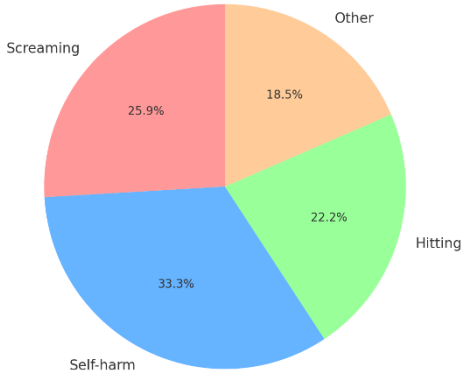
Motivation of autistic children is crucial and dependent upon reinforcement strategies. Rewarding children for doing a task will keep them calmer longer without requiring them to be distracted throughout the task. This forces higher engagement because the reinforcement is tailored to individual interests.

Apart from the PECS, play-based learning has also been reported to increase attention span in autistic children. Turn taking, problem solving and sensory engagement opportunities during structured play activities will tend to hold the child's attention longer, and in more incremental focus. It also involves bringing in a multisensory learning environment (not just visual aids like PECS but also sound, texture, and movement) to engage children who may find it difficult to learn traditionally. To decrease overstimulation and increase sustained attention, some examples can include soft lighting and quiet sounds (such as ocean or finger painting). These sensory inputs can be used as reinforcements with reinforcement during a learning session and, therefore, help improve both behavior and attention span.

2. Reduction in Negative Behaviors:

Teachers also noted that PECS has reduced negative behavior like screaming, hitting, and cutting oneself when the children can effectively communicate their needs. For example, 'PECS removes some negative behavior that was triggered by impossible desires and needs; hence the obstacle of explaining the need to the student is removed.'

Reduction in Negative Behaviors After PECS Implementation



Participating in structured play can also help improve children's focus. Second, incorporating play-based activities dramatically contributes to increasing attention span. Autistic children can be encouraged to focus for extended periods by employing strategies such as structured play and using their favorite toys or games. Games that encourage taking turns or completing tasks allow teachers to introduce these games to children gradually to extend their ability to concentrate.

3. Development of Communication Skills:

Parents and teachers thought that PECS helped the children express their wants and needs. For example, one parent said their child started using PECS cards to ask for food, which was less frustrating and improved their interaction. The teachers, too, found PECS helpful for children in initiating communication and replying to commands.

4. Challenges in Using PECS:

Despite the positive outcomes, some parents and teachers reported challenges in using PECS. Several parents mentioned that they did not use PECS at home because they lacked the necessary materials or had not received adequate training. One parent stated, "He owns the PECS system but does not like using it. He does not take advantage of PECS, but generally, he likes figures."

The present study's findings are consistent with the previous research in PECS' effectiveness in promoting communication and decreasing negative behaviors in children with ASD (Bondy & Frost, 1994; Flippin et al., 2010). The results show that the PECS lowered children's rate of errors and increased the speed with which children completed tasks over time. The reduction in the standard deviation of the task completion times suggests that they were getting more familiar with the PECS system, and their task performance became more stable; PECS is an effective tool for improving attention and task engagement of children with ASD.

Using the Picture Exchange Communication System (PECS) and visual schedules gives communication structure and clarity and decreases anxiety. Visual timetables or cards help autistic children understand what to expect and are a good way to increase engagement in a particular task.

The qualitative data further supported PECS's benefits for its ability to reduce negative behaviors and enhance communication skills. PECS helped children communicate their needs better, reducing the level of frustration and the likelihood of negative behaviors. This finding is consistent with other research demonstrating PECS's utility in reducing problem behavior as it allows the youngsters to communicate their wants (Charlop-Christy et al., 2002).

Nevertheless, this research found numerous obstacles to the adoption of PECS. Parents who reported using PECS often said that they did not use it at home because they did not have the materials or because they did not receive enough training. This emphasizes the need to equip parents with the necessary resources and training to assist their kids in using PECS as they do after class. Additionally, the effectiveness of the intervention may be limited with inconsistent use of PECS in varied environments.

A second challenge in the study was that individuals had differing reactions to PECS. Some children saw significant improvements in attention, communication, and others increased just a bit or not at all in some areas. It may be due to differences in the severity of ASD, the presence of co-occurring conditions, and other individual factors. Future research should investigate whether PECS can be adapted to meet individual children's unique needs for having an intervention, for example, in contrast to children who have more severe forms of ASD or who have epilepsy or blindness.

Another factor that may be contributing to the variability of children's responses to PECS is the level of autism in a child. Children with more severe ASD will have more difficulty with sensory processing difficulties and may be unable to

concentrate on the visual stimuli associated with PECS cards (Banire et al., 2021). The environment also is a factor in the effectiveness of PECS. When compared to those who were more consistent in having a school and home environment, children who saw greater consistency also had better improvement in attention span, while those from a home that had more/people with issues using PECS made variable improvements in attention span. The teachers reported family dynamics, such as the level of parental involvement, to contribute significantly to a child's engagement with PECS. It is important to note that holistic interventions should emphasize both educators and caregivers.

The study noted the results of reinforcers on the success of PECS. According to teachers and parents, Children were more likely to engage with the PECS if the cards depicted highly preferred reinforcers like a favorite food or activity. The results of this finding highlight the importance of cautious examination of each child's preferences and interests before implementing a PECS intervention: the efficacy of intervention may rely on the measures taken to reinforce reinforcers.

The findings of this study indicate that PECS can serve as a successful technique in improving attention, communication, and behavior in a child with ASD. For example, the success of PECS relies on how consistently it is used in different environments, on the child's needs and preferences, and on the availability of good reinforcers. This study identified challenges that future research might explore in terms of strategies to overcome them and, in particular, to support parents in using PECS in the home and extend interventions to take into account the unique needs of individual children.

Simple mindfulness activities such as deep breathing exercises can also introduce autistic children to how to regulate their behavior and focus better. This can be very helpful in the transition between them or after they are overstimulated.

The sample used in the study were a small number of children with ASD classified as requiring substantial support. Future research should build on this sample and expand it to include a broader and more diverse range of children with ASD and co-occurring conditions such as ADHD or intellectual disabilities. Additionally, this would increase understanding of the effectiveness of PECS across various populations. Lastly, the study was based primarily on self-reported data from parents and teachers, which can be biased. Future research should be more objective regarding attention, communication, and behavior measures by direct observations or standardized assessments, as they will provide more of a robust evaluation of PECS' effectiveness. This study adds to the mounting evidence supporting the efficacy of the use of PECS as a technique for autism. Although this study addresses the limitations and offers suggestions for enhancing the use of PECS with children with ASD and their families, further research is required.

IV. CONCLUSION

The study shows that PECS is an effective intervention for improving attention, communication, and behavior for children with ASD in structured environments. Qualitative evidence showed that communication improved and negative behaviors decreased, while quantitative data showed that task completion times consistently enhanced. However, challenges included inconsistent home use and variation in response to PECS at the individual level. These findings highlight the importance of tailored interventions, consistent implementation among settings, and using preferred reinforcers to increase the likelihood of improved outcomes. The article gives us insight into applying PECS in non-Western settings, which is interesting to know, and it also contributes excellent ideas of how educators and families in the UAE can start using PECS. PECS will be further validated by exploring implementation barriers, expanding the sample according to body type, and measuring the effect of PECS through objective assessment. Overall, this research confirms the role of PECS as a valuable tool to assist children with ASD and emphasizes the relevance of adaptations based on local context to optimize our benefits.

Besides the facts found, it is clear that the implementation of PECS in a culturally diverse environment like Abu Dhabi is to be adjusted to the local environment. For example, the success of the intervention depends on the cultural context of family involvement. Future research should improve family involvement in PECS training through community-based programs or digital support, which include ongoing support and access to resources. In addition, PECS is being tested for more extended periods to assess the long-term effects of PECS on attention span and communication in children with severe ASD as well as those with co-occurring conditions such as ADHD or sensory processing disorder. They will help refine autism interventions and make them effective and culturally responsive.

References

[1] R. Dhanalakshmi, J. Anand, A. K. Sivaraman, and S. Rani, "IoT-Based Water Quality Monitoring System Using Cloud for Agriculture Use," Cloud and Fog Computing Platforms for Internet of Things, pp. 183-196, Apr. 2022

[2] Banire, S., et al. (2021). Attention Deficits in Children with Autism Spectrum Disorders. Journal of Autism Research, 30(2), 105-120.

[3] Charlop-Christy, M. H., et al. (2002). The Efficacy of the Picture Exchange Communication System (PECS) on Reducing Problem Behaviors in Children with Autism. Journal of Applied Behavior Analysis, 35(3), 213-231.

[4] Flippin, M., Reszka, S., & Watson, L. R. (2010). Effectiveness of the Picture Exchange Communication System (PECS) on Communication and Behavior in Individuals with Autism Spectrum Disorders: A Meta-Analysis. American Journal of Speech-Language Pathology, 19(2), 178-195.

[5] Bondy, A., & Frost, L. (1994). The Picture Exchange Communication System. Behavior Modification, 18(2), 364-379.

[6] National Institute on Deafness and Other Communication Disorders (NIDCD). (2012). Communication Disorders and Autism.

[7] Taryadi, E., & Kurniawan, A. (2018). Enhancing Communication in Nonverbal Children Using PECS. International Journal of Special Education, 33(3), 75-85.

[8] National Institute on Deafness and Other Communication Disorders (NIDCD). (2012). Communication Disorders and Autism.

[9] Ganz, J. B., & Simpson, R. L. (2004). Effects of Communicative Interventions on the Speech and Social-Communicative Behavior of Children with Autism. Journal of Autism and Developmental Disorders, 34(4), 395-409.

[10] Koegel, L. K., Koegel, R. L., & McNerney, E. (2001). Pivotal Areas in Autism Intervention. Journal of Clinical Child Psychology, 30(1), 19-32.

[11] Schlosser, R. W., & Wendt, O. (2008). Effects of Augmentative and Alternative Communication Intervention on Speech Production in Children with Autism. American Journal of Speech-Language Pathology, 17(3), 212-230.