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Efficacy of the Picture Exchange Communication System in Children with Autism Spectrum Disorder
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Introduction
Autism Spectrum Disorder (ASD) is a neurological and developmental disorder that begins in early childhood and persists throughout a person’s life. ASD is characterized by persistent deficits in social communication and social interaction and restricted, repetitive patterns of behavior, interests, or activities. ASD is a spectrum disorder because symptoms can vary from one individual to another, ranging from mild to severe, and change as the child develops. Many families are affected by the disorder and must assess the best treatment options available for their child, ranging from behavioral, speech, language, social, and occupational therapies. This project will focus on the social communication deficits of these children and the language interventions available to help improve these skills in children with ASD.

While symptoms in each child may vary, most children with ASD have some type of social communication impairment. Research targeting the most efficient interventions is beneficial for families to optimize their child's social communication abilities. The Picture Exchange Communication System (PECS) is a picture-based augmentative and alternative communication (AAC) designed to aid communication in non-verbal children with ASD. Research has shown that PECS has led to increases in social-communicative skills as well as functional language in children with ASD. Other language interventions and therapies have also been shown to improve these skills.

The question proposed in this project is whether PECS is superior to other language interventions at improving these skills in children with ASD. Families of children with ASD must assess and begin implementing their treatment options quickly because early intervention is crucial to the development of the child. Therefore, the importance of this research is to establish which language interventions are the most effective at improving social communication and language so that families have information on the best options available.

Hypothesis
If a child diagnosed with Autism Spectrum Disorder (ASD) uses the Picture Exchange Communication System, then the child will have better social communication skills and functional language than a child diagnosed with ASD who uses conventional language interventions.

Key Definitions
Independent variables
- Autism Spectrum Disorder: a neurological and developmental disorder characterized by persistent deficits in social communication and social interaction and restricted, repetitive patterns of behavior, interests, or activities.
- Picture Exchange Communication System: a picture-based AAC that uses behavioral principles to teach children with ASD to use functional communication in a social interaction context.

Conventional language interventions: ASD interventions that focus attention on helping children with ASD acquire language, including augmentative and alternative communication.

Dependent variables
- Social-communication skills: include spontaneously seeking out a communication partner and initiating communication, requesting assistance, responding to questions, making social comments, initiating joint attention, generalized turn taking, cooperative play, and any social communication.
- Functional language: any speech or spoken language, word approximations, verbalizations, imitated verbalization and any related speech, words spoken or uttered, intentional communicative acts (ICA), mean length of verbal utterances (MLU) and any verbal communication.

Table Note
AAC= Augmentative and Alternative Communication; ASD= Autism Spectrum Disorder; CLT= Conventional Language Therapy; ESCS= Abridged – The Early Social Communication Scales-Abridged; PDD= Pervasive Developmental Disorder; PDD-NOS = Pervasive Developmental Spectrum Disorder; Not Otherwise Specified; PECS= Picture Exchange Communication System; RPMT= Responsive Education and Therapeutic Milieu Teaching; SGD = Speech-Generating Device; UPFE = Unstructured Free Play with Examiner; VABS= Vineland Adaptive Behavior Scale; VOCA= Voice Output Communication Aid

Efficacy of the Picture Exchange Communication System

Study/Relation to Hypothesis Sample Size Age(s) Sample Type Intervention Type Results

Results

Study/Relation to Hypothesis Sample Size Age(s) Sample Type Intervention Type Results

Discussion and Conclusions
The supporting articles provide evidence that PECS was effective in improving social communication skills and language in children compared to other language interventions. Refuting articles provide evidence that PECS did not have significant short-term effects on socialization skills or language compared to other language interventions and therapies. Mixed articles provide evidence that there may be skills that a child might possess prior to intervention that will increase the probability that the child will improve social communication skills or language.

The hypothesis was supported. A child diagnosed with ASD who uses PECS will experience improvements in social communication skills and functional language that are greater than experienced using other interventions. However, the effectiveness of PECS is modulated by the child’s current functioning. The possession of certain skills prior to treatment can increase the effectiveness of PECS. For example, children with weak imitation skills and little joint attention prior to intervention benefited more from PECS. Even in the refuting evidence, however, PECS was never associated with a decrease in social communication skills or language.

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The ecological impact of these findings involves providing clinicians and mental health professionals with information to assist families of children with ASD in choosing the most efficient intervention option to help improve their child’s social communication skills and language abilities. The translational impact of these findings are an increase in learning and socialization in children affected by ASD. Without functional language, children will have a difficult time learning and progressing in school.

Conclusion
Inclusion especially important for children with ASD, therefore identifying the interventions that will improve social communication skills can help facilitate socialization in children with ASD.

Future Study
A definitive study that would provide support for the hypothesis would include a comparison between PECS and another AAC, such as SGD or VOCA. The study would examine the effects of these AAC on social communication skills and language development. Participants in the study should include children diagnosed with ASD who fall on various ends of the spectrum in terms of symptomology. Prior to intervention, children should be assessed on functional language ability and various skills, such as joint attention, imitation, and requesting. Ideally, children that possess similar language and social-communication skills would be assigned to groups labeled as low functioning, moderate functioning, and high functioning, with the lowest functioning children possessing the lowest level of language and social skills. This would provide a more accurate investigation of the efficacy of PECS and another AAC on children with similar symptomology.

The difficulty in conducting such a study is finding a large sample size of children diagnosed with ASD with similar symptomologies. Even children with ASD who are classified as high functioning may possess different verbal abilities or social skills, making it difficult to assess the effects of an intervention. Studies on ASD often do not include a large sample size, so it is likely that participants will differ greatly in their abilities. Another difficulty with these studies is the differences in age of the AAC. Children may differ in their ability to master acquisition of the device.

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Key References