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The impact of the Picture Exchange Communication System on requesting and speech development in preschoolers with autism spectrum disorders and similar characteristics

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Abstract

By definition children with autism spectrum disorders (ASD) experience difficulty understanding and using language. Accordingly, visual and picture-based strategies such as the Picture Exchange Communication System (PECS) show promise in ameliorating speech and language deficits. This study reports the results of a multiple baseline across participants investigating the implementation of the PECS with three preschool children with characteristics of ASD. The first four phases of PECS were taught to the participants: basic picture exchange, increasing distance use of PECS, discriminating among a variety of pictures, and communicating in sentences composed of pictures. Relative to the impact of PECS's implementation in providing the participants with a functional communication system, word approximations, and intelligible word and phrase use, results indicated that two of the three participants mastered PECS. However, participants did not significantly increase in use of word approximations and intelligible words.

Keywords: Autism; Autism spectrum disorders; Picture Exchange Communication System; PECS; Augmentative and alternative communication; AAC; Communication

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The Picture Exchange Communication System (PECS), an augmentative and alternative communication (AAC) system primarily designed for children with ASD (Frost & Bondy, 2002), is a widely used tool with individuals who experience language deficits and who have difficulty speaking due to a physical or cognitive disability (Mirenda, 2001). Unlike unaided systems such as sign language that require no external equipment, PECS relies on laminated drawings and a binder containing pictures. PECS is a low-tech system, requiring no electronic devices such as computer-based voice output communication aids (VOCAs).

According to its developers, PECS addresses a number of disadvantages of other AAC systems and approaches to teaching language to learners with ASD (Bondy & Frost, 2001). Traditional verbal imitation approaches often result in prompt dependent and non-spontaneous speech (Schreibman, 2006). Similarly, traditional sign language instruction requires face-to-face modeling, which may lead to use of signs only in the presence of visual models. AAC systems that rely heavily on picture stimuli may also lead to learners becoming overly dependent on adult cues and prompts (e.g., child only responds when prompted ''Tell me what you want'') and children who experience difficulties with fine motor control may be unable to effectively use signs. In contrast, PECS relies on child-initiated communication and systematic fading of physical prompts to minimize prompt dependence. Moreover, traditional language instruction wherein students are taught to label or comment on objects and to describe communicative functions often holds limited motivation for children with ASD (Charlop-Christy & LeBlanc, 2001).

Clearly, many children with ASD are more motivated to engage in communication that permits them to obtain preferred items than to socially interact (Charlop-Christy, Carpenter, Le, LeBlanc, & Kellet, 2002). Thus, PECS instruction that is designed to teach children to request desired items often results in impressive learning patterns (Bondy & Frost, 1994). Furthermore, unlike sign language or speech that requires complex, abstract and varied oral and fine motor movements, PECS provides concrete visual reminders and requires that learners use only a small number of simple motor movements to request a variety of items. Finally, PECS requires few prerequisite skills (e.g., eye contact, attention, fine motor, oral motor). Without a doubt, PECS is well suited for individuals with ASD.

PECS is implemented over six main phases (Frost & Bondy, 2002). Phase 1 instruction involves teaching learners to exchange a picture or line drawing with a communicative partner for a preferred item (e.g., food or toy). In Phase 2, students are taught to make picture exchanges with a variety of communicative partners and across expanding distances. Phase 3 instructions include discrimination training, wherein students learn to distinguish between several visual images, preferred and non-preferred items and eventually between numerous preferred items. In Phase 4, students are taught to form sentences using PECS pictures to make requests (e.g., ''I WANT POPCORN.''). Phase 5 instruction involves answering, ''What do you want?'' and Phase 6 involves expansion on previously learned skills, such as answering, ''What do you see?'' The communicative partner provides a verbal model of the words printed on the pictures the student exchanges throughout each phase of training, Phases 1–4, which were implemented in the current study, are described more thoroughly in Table 1.

The majority of research on PECS has involved small group ($N \leq 5$) efficacy studies (e.g., Ganz, Cook, Corbin-Newsome, Bourgeois, & Flores, 2005; Ganz & Simpson, 2004; Stoner et al., 2006) along with a few large group investigations (Bondy & Frost, 1994; Magiati & Howlin, 2003; Schwartz, Garfinkle, & Bauer, 1998; Yoder & Stone, 2006a, 2006b). Results of these studies have revealed that PECS is effective with participants across a variety of ages, including preschoolers (Ganz et al., 2005; Yoder & Stone, 2006a, 2006b), elementary-aged children