Programs Supporting Young Children's Language Development

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Introduction

Very young children with severe language delays, secondary to autism spectrum disorder (ASD) or other developmental disabilities (DD) will require effective early interventions to develop optimal language and social communication skills. Even very young children can acquire a means to communicate their needs, intentions and feelings. A number of well conducted early language intervention studies have increased our knowledge of approaches that enhance optimal language development for young children. There are also new technologies available to augment communication and to collect outcome data.

Subject

Early intervention is essential for young children with language delays to increase the rate of language development and reduce the risk of social, emotional and behavioural problems.[1,2] A variety of teaching procedures can be used to target imitation, turn-taking and joint attention as well as communication and language skills more directly.[3,4]

Prelinguistic milieu teaching (PMT) techniques help children who are not yet speaking transition from preintentional to intentional communication.[5,6] The adult uses questions or commands to initiate a teaching episode (e.g., a ball is on a shelf and the adult says, “What do you want?”), thus requiring a specific response from the child. Alternatively, the adult can wait for the child to initiate and then prompt a more complex response (e.g., the child reaches for the ball, and the adult says, “Can you say ball?”). As the child transitions to short sentences, recasting facilitates acquisition of new words and more complex grammar (e.g., the child says “ball” and the adult says “It’s a big ball”).[7]

Responsive teaching (RT) techniques include teaching caregivers to be highly responsive to the child’s

communication attempts by following the child's attentional lead, waiting for the child to initiate, responding by commenting on actions or toys of interest and modeling language.

Direct teaching is characterized by imitation based approaches that may include prompting, reinforcing, and immediate feedback on grammatical or vocabulary targets in structured sessions.

Augmentative and alternative communication (AAC) refers to non-speech modes of communicating (e.g., sign language, speech-generating devices, or picture exchange systems) used to enhance children's language, vocabulary, communicative turns and functions, and oral speech.[8]

Problems

Over 70% of children ages 3–5 years identified with a disability have delayed communication and language development,[9] and this is the single most common reason for special education referral.[10] The majority of preschool children with ASD are preverbal; although approximately 70% will learn to use spoken language by the start of kindergarten, 30% will remain nonverbal or minimally verbal.[11,12] Research to develop and test new early intervention approaches, with implementation at a young age, is key to improving long-term outcomes for these children.

Research Context

When a parent brings a child for therapy, the long-term goal is likely to be speech communication. In this time frame, the success of therapy can be observed in distal (far-reaching) measures such as broadly generalized increases in communication, language, or prosocial skills in non-treatment settings.[13] In the short term, the success of therapy can be observed in proximal measures (treatment targets) such as increased initiations, length of communicative turns, as well as comprehension and productive use of words expressed using speech or with AAC.[13,14,15,16] When the child initiates communication and takes turns more often, a transactional model would suggest that communication partners may respond in ways that provide additional opportunities for practice and development.[17] Therefore, effective therapy can change the child and the language environment at the same time supporting generalization and ongoing learning in the home and school environment.[17,18] Yoder and colleagues[19] suggested that if interventions lead to significant growth in both proximal and distal outcomes, one could be more confident in the efficacy of the intervention to impact social communication development in general.

Key Research Questions

Which treatment approaches are effective for children with DDs and/or ASD? Which child and family characteristics predict a treatment response? Do new technologies help minimally verbal children acquire intentional communication?

Recent Research Results

Over the years, a few general themes have emerged from milieu research. First, there is much research to support the significant role that parental responsivity plays in improving early communication and language development.[20,21,22] Specifically, children with highly responsive and more educated mothers benefited the most

from PMT whereas children with less responsive, less educated mothers benefited more from a focus on RT techniques in one study.[22] However, a higher level of responsivity is by itself not adequate to substantially improve the communication of young children with developmental disabilities because the modest impacts on social communication observed post-treatment may not be maintained.[23,24,25] Second, parents can be coached to be more responsive, but more research is needed to determine how to increase generalization and maintenance of responsivity.[26] Third, child characteristics may predict individual differences in response to early communication intervention.[23] In various studies and depending upon the treatment procedure or parameter, response to treatment has been associated with certain child characteristics such as diagnosis, level of play skills or amount of joint attention at intake.

Many single case studies have supported the effectiveness of early AAC interventions to improve communication and language development in young children with ASD.[8] Clear improvements have been reported in vocabulary, requesting behaviours, initiations and responses, social engagement, and for some, spoken communication.[27,28,29,30,31] Evidence is building on the benefits of embedding AAC interventions within milieu teaching techniques.[32,33] Promising innovations include the use of speech-generating devices[17,34] and the inclusion of peer-mediated approaches.[17,30,31] Benefits include improvements in communication, social engagement and reciprocal peer interactions, with generalization to routine preschool settings, and maintenance of gains.

Another use of technology is to automatically estimate child and adult communication patterns in naturalistic environments using automatic speech detection and analysis devices such as the Language Environment Analysis (LENA) system.[35,36] LENA research has revealed complex differences in the verbal interactions between parents and their children with Down syndrome[37] or ASD,[38] when compared to verbal interactions between parents and typically developing children. For example, vocal behaviours of children with Down syndrome remained low while increasing for typically developing children after 2 years of age,[37] and children with ASD produced fewer vocalizations and turns with their parents.[38] These data may inform the design of intervention programs. These outcomes along with other studies[39,40] demonstrate how this new technology can be used as a proximal outcome measure, and as a method to provide parent and caregiver feedback on enriching the child's language environment.

Research Gaps

Collectively, future research should:

1. conduct additional longitudinal, comparative analyses of the relative efficacy of different treatments in relation to specific treatment and learner characteristics, treatment goals and instructional contexts;
2. identify the optimum treatment intensity necessary to enhance communication and language development;
3. expand AAC intervention research to include different populations of children and teach a broader range of functional communication skills with a variety of partners.

Conclusions

Research has demonstrated that many variables influence treatment outcomes. Most importantly, child characteristics such as the cause of the language delay, level of play skills or joint attention, and other aspects of their cognitive profile may predict which teaching procedures are most appropriate and the intensity of intervention that may be required. Parent education and responsivity also play a role in the effectiveness of certain treatment procedures. It is necessary to train early interventionists to tailor treatment programs based on these factors. It is also important to attend to proximal and distal outcomes when selecting and measuring treatment goals and to document meaningful change across a broad range of communication and language skills. For children struggling to speak, interventions that ensure communication partners have the skills to support functional communication through AAC will enhance their opportunities for social participation and friendship development.[41] Early interventionists and speech-language pathologists need to stay current with emerging research in order to effectively tailor intervention components to the needs of specific children and their families.

Implications

Parents should be able to access effective early interventions that are individualized to meet their child's needs and that fully involve the family. Language intervention programs require interactive situations and contexts that set the stage for language learning within child-caregiver dyads, and that support maintenance, generalization and extension of new skills.[42]

Over the past 10 years, there has been an explosion of mobile technologies and multi-function devices such as touch screen phones and iPads with a variety of apps designed to support communication of individuals with IDD, including ASD. These new technologies should increase the accessibility and effectiveness of technology assisted communication given the growing body of research on optimum design and implementation.

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