

Research Paper

The Effects of a Developmental, Social–Pragmatic Language Intervention on the Production of Expressive Language Skills in Young Children with Autistic Spectrum Disorders

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ABSTRACT

The developmental, social–pragmatic model is a naturalistic strategy for teaching social-communication skills to young at-risk children and children with disabilities. Our aim was to assess the effect of a developmental, social–pragmatic language intervention on expressive language skills production in young children with autistic spectrum disorders. We used the experimental method in this study, we administered PLS-5 twice on two children, whose comprehension and expressive language ages were delayed associated with autism spectrum disorder as a baseline assessment and a post-treatment assessment. Our findings after comparing the baseline assessment scores and post-treatment assessment scores, there is a better improvement in auditory comprehension and expressive communication skills of both participants by using DSP language intervention strategies. We concluded that the child who takes language therapy using DSP language intervention will get better improvement in their language skills. Developmental social-pragmatic language intervention is more effective for children with autism than the other interventions.

Keywords: *Autism, Pre-Language Scale 5 Version, Developmental Socio-Pragmatic Language Intervention, Auditory Comprehension, Expressive Communication, Speech Language Therapy, Multidisciplinary Approach*

Developmental Language Disorder (DLD) is a common and heterogeneous neuro-developmental disorder that occurs during childhood and affects 3% to 7% of children. The term applies to significant difficulties in one or more language domains, in expressive and/or receptive language that affects communication and learning without an associated biomedical condition.

Autism spectrum disorder (ASD) is a neurological and developmental disorder that affects how people interact with others, communicate, learn, and behave. Although autism can be diagnosed at any age, it is described as a “developmental disorder” because symptoms generally appear in the first 2 years of life.

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Common types of behaviors in people diagnosed with ASD are Making little or inconsistent eye contact, Appearing not to look at or listen to people who are talking, Infrequently sharing interest, emotion, or enjoyment of objects or activities (including infrequent pointing at or showing things to others), Not responding or being slow to respond to one's name or to other verbal bids for attention, Having difficulties with the back and forth of conversation, Often talking at length about a favorite subject without noticing that others are not interested or without giving others a chance to respond, Displaying facial expressions, movements, and gestures that do not match what is being said, Repeating certain behaviors or having unusual behaviors, such as repeating words or phrases (a behavior called echolalia), Having a lasting intense interest in specific topics, such as numbers, details, or facts, Showing overly focused interests, such as with moving objects or parts of objects, Becoming upset by slight changes in a routine and having difficulty with transitions, etc. Not all people with ASD will have all behaviors, but most will have several of the behaviors.

Pragmatic language deficits are a core feature of ASD regardless of language level or age. Also, children with DLD may manifest difficulties in this language domain throughout childhood. These difficulties have a negative impact on learning, socialization, and mental health and may persist into adulthood. Therefore, early, effective, evidence-based interventions are crucial to minimizing the long-term impacts of pragmatic language impairments.

There are several intervention programs mentioned in the literature to improve children's pragmatic language. Some of these programs are Social Scripts, Social Stories, Comic Strip Conversations, Social Use of Language Program, Score Skills Strategy, Social Thinking, Social Communication Intervention Project (SCIP), Building Blocks Program, JASPER, Mind Reading, and Pragmatic Intervention Program.

The developmental, social–pragmatic model is a naturalistic strategy for teaching social communication skills to young at-risk children and children with disabilities (Prizant, Wetherby, & Rydell, 2000). This model has also been referred to as the interactive model (Tannock & Girolametto, 1992) or the child-oriented approach (Fey, 1986).

The **Developmental, social–pragmatic** (DSP) model is derived from research on typical child development that indicates a relationship between caregivers' responsivity and their child's level of social communication development (Bornstein, Tamis-LeMonda, & Haynes, 1999; Hoff-Ginsberg & Shatz, 1982; Mahoney & Perales, 2003; Prizant et al., 2000). The DSP model is based on the theory that language develops within strong, affection interactions between the child and the adult, and it emphasizes the function of the child's communication (i.e., requesting, protesting, sharing, commenting, etc.) over the form (i.e., eye gaze, gestures, vocalizations, facial expressions, body postures, language; Bates, 1976; Bates & Mac Whinney, 1979; Prizant & Wetherby, 1998; Prizant et al., 2000).

DSP interventions share several common characteristics (Prizant et al., 2000). **First**, teaching follows the child's lead or interest; the adult engages in child-initiated interactions that are based on the child's interests and attention. **Second**, the adult arranges the environment to encourage initiation from the child. Common strategies include playful obstruction (i.e., briefly interrupting an activity the child is doing), sabotage (i.e., omitting necessary items needed for an activity), violating familiar routines (i.e., changing the way a

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child likes to do things), and in sight–out of reach (i.e., displaying desired items so that the child cannot access them himself).

Third, all communicative attempts, including unconventional (e.g., jargon, echolalia, hand leading, nonverbal protests) and pre-intentional (e.g., reaching and grabbing, eye gaze, crying, facial expressions, body postures) communication, are responded to as if they were purposed. For example, if a child led the adult by the hand to the refrigerator and looked at the milk, the adult would infer that the child wanted milk and give it to the child. Similarly, if a child began to cry or throw a toy during an interaction, the adult might infer that the child wanted the adult to stop what he or she was doing and would respond by discontinuing the offending behavior.

Fourth, emotional expressions and affect sharing are emphasized by the adult. The adult exaggerates his or her affective gestures and facial expressions and labels the child's emotional response. For example, if the child is having a tantrum, the adult might respond by making a “mad” face and saying “You're mad” to describe the child's emotion.

Fifth, language and social input are adjusted to facilitate communicative growth. The adult uses simplified language around the child's attentional focus. Common indirect language stimulation strategies include vocal imitation, descriptive modeling, self-talk, parallel talk, and expansion.

In summary, controlled studies that support the effectiveness of DSP approaches for promoting language skills in children with language or developmental delays are lacking. Given the wide appeal of DSP approaches for use with young children with language impairments, it is important to empirically evaluate the efficacy of this approach. It is especially necessary to evaluate the efficacy of this approach for children with autism, as it has been suggested that this type of intervention may be least effective for children who exhibit unresponsive or passive interaction styles (Fey, 1986; Tannock & Girolametto, 1992), which are commonly seen in children with autism. This study examines whether a DSP approach increases the rate of expressive language with a therapist in young children with ASD and whether these skills generalize to interactions with the children's parents.

METHOD

Participants

In the present study, two children (Ajay & Deva- names were changed for this study) have participated. The children were diagnosed with an autistic spectrum disorder by a professional using **CARS (Childhood Autism Rating Scale)**. All participants were administered the standardized language assessment by a speech–language pathologist and a developmental assessment by a clinical psychologist associated with this research (see Table 1 for participant characteristics) and children were recruited randomly from a list of children who are undergoing speech–language therapy services at a **Blooming Buds Child Development Center (Banjara Hills Hyderabad)** which is specializing in intervention for children with communication disorders. Ajay was 4 years had a diagnosis with an autistic spectrum disorder. Initially, Ajay's language was delayed and it consisted of immediate echolalia, poor eye contact, jargon speech, stubborn behavior, and some basic concepts (colours, shapes, fruits, vegetables, animals, birds).

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Deva was 1 year nine months and had a diagnosis of autistic spectrum disorder. At intake Deva's language was age-inappropriate and unable to express his needs verbally (not even words) had poor eye contact, poor attention, poor social interaction with peers and other kids, was unresponsive towards name calls, and had jargon speech.

Throughout this study, two children were receiving other intervention services (Behavioral therapy, special education, Occupational therapy).

The therapist focused on increasing social interaction, general communication abilities (turn-taking, initiations), etc through specific language targets (goals) for all children in this study like in DSP intervention programs.

Procedure

The therapist was a board-certified speech-language pathologist. All baseline, treatment, and generalization sessions were conducted in a small treatment room at a center specializing in speech–language therapy. The structured observations were conducted in a larger treatment room containing a small table, cabinets, and reclining chairs.

Developmentally appropriate toys for each session were chosen based on the child's preference. Toys included pretend food, balls, balloons, cars, books, ball chutes, trains, puppets, figurines, pompoms, blocks, and so forth. In each session, several toys were made accessible to the child, while other toys were kept in a small cabinet and on a shelf in the child's view. The child could request items that were not accessible at any time.

A single-subject, single-baseline design was conducted across participants. Participants attended the center 5 days per week for 45 min sessions throughout baseline & treatment. A baseline was taken on the first session of treatment for all participants and after baseline, all participants received 8-10 weeks of language therapy using a DSP approach. The therapist administered a PLS-5 language scale to participants at baseline and after 2 months of treatment.

Baseline: Baseline sessions consisted of free play with a therapist. During baseline, the therapist sat facing the child and attended to the child's play. Every 30 s, on average, the therapist made a verbal or nonverbal initiation to the child. For verbal initiations, the therapist asked the child a question related to the activity in which the child was engaged. For example, if the child was pushing a car, the therapist might ask, "What color is your car?" For nonverbal initiations, the therapist modeled an action with a toy with which the child was engaged. For example, if the child was pushing a car, the therapist might model placing a "driver" in the car. The child was not required to respond to these initiations. The therapist complied with requests and acknowledged comments made by the child; however, she did not attempt to engage the child in additional interactions.

Treatment: The DSP intervention used in this study was adapted from published material on several well-known DSP approaches including floor time/DIR (Greenspan & Wieder, 1998), Hanen (Manolson, 1992), the SCERTS model (Prizant et al., 2000), and responsive teaching (Mahoney & Perales, 2003). Several main treatment components were selected for this intervention, including (a) following the child's lead, (b) setting up the environment to evoke initiations from the child, (c) treating all of the child's communicative attempts as purposeful, (d) emphasizing appropriate affect, and (e) using indirect language stimulation techniques. If the children engaged in challenging behavior such as throwing toys, the therapist

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acknowledged their emotion (e.g., “I see you are mad”) and redirected the child to another activity. Very few challenging behaviors occurred during baseline or treatment, and all children responded to redirection. This treatment was given for 2 months for each participant.

The following is an example of how the intervention components worked together. The therapist might place several preferred toys on the ground and other preferred toys on a shelf in the child’s view and then wait to see which toys he approached. The therapist would then follow his lead to that toy. For example, if the child started to play with a ball, the therapist might pick up another ball and imitate his play, playing with the ball beside his. In an attempt to evoke communication, the therapist might take his ball in front of the child to block his play. If the child attempted to move her hand so that he could continue playing, the therapist would respond to this communicative attempt by moving her ball and modeling a more sophisticated response, “Move the ball.” If the therapist did not move fast enough and the child expressed negative emotion, such as yelling, the therapist would acknowledge his frustration by emphasizing appropriate affect (“You’re mad”). Throughout the interaction, the therapist would use indirect language stimulation to describe the child’s play (e.g., “Throw the ball. Throw. Throw the ball. Throw the ball”).

Dependent Measures of the Study

- **Expressive communication** is a message to another person. It is how feelings, wants, likes, dislikes, comments, and intents are expressed. It can be thought of as the output. For effective communication, both expressive and receptive communication must occur.
- **Auditory comprehension** means understanding what we hear and what we are listening to. This is such an important skill for children to develop because it helps them to understand and follow directions, comprehend stories, and engage in conversations.

RESULTS

Results were obtained by comparing the scores of PLS-5 between baseline assessment and post-treatment assessment.

Baseline Assessment score results

During baseline assessment, Ajay's chronological age was 48 months and his auditory comprehension and expression communication ages were 22 months & 20 months, then his total language score was 20 months whereas Deva's chronological age was 21 months and his auditory comprehension and expression communication ages were 9 months & 3 months, and then his total language score was 5 months.

Participants’ characteristic at Baseline Assessment

Child	Chronological age	Auditory Comprehension age (a)	Expressive language age (a)	Total Language Score(a)
Ajay	48 months	22 months	20 months	20 months
Deva	21 months	9 months	3 months	5 months

Preschool Language Scale-5)

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Post-treatment assessment score results

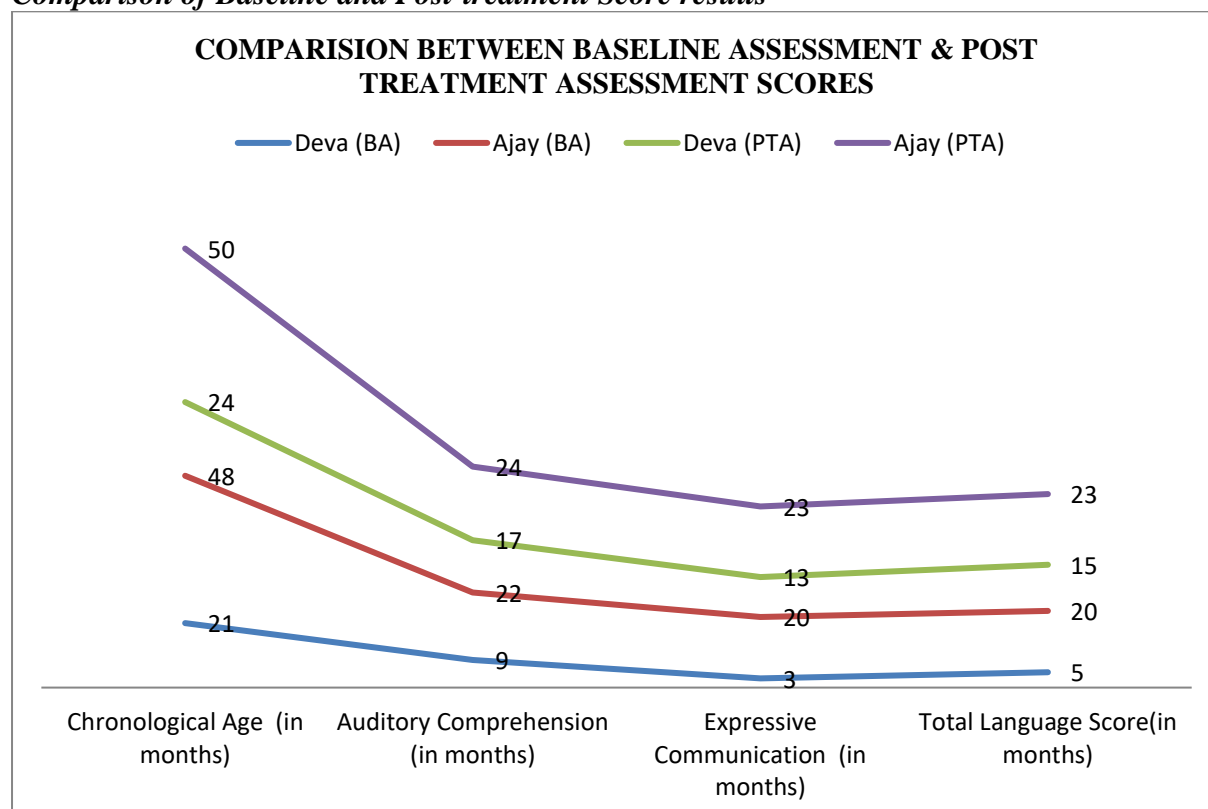
During the post-treatment (2 months of treatment using DSP approaches) assessment, Ajay's chronological age was 50 months and his auditory comprehension and expression communication ages were 24 months & 23 months, then his total language score was 23 months whereas Deva's chronological age was 24 months and his auditory comprehension and expression communication ages were 17 months & 13 months, and then his total language score was 15 months.

Participants' characteristic at Post-treatment Assessment

Child	Chronological age	Auditory Comprehension age (a)	Expressive language age (a)	Total Language Score
Ajay	50 months	24 months	23 months	23 months
Deva	24 months	17 months	13 months	15 months

Preschool Language Scale-5)

Comparison of Baseline and Post-treatment Score results



(BA- Baseline Assessment, PTA-Post-treatment Assessment)

By comparing the baseline and post-treatment assessment scores, the results show that there are 2 months and 3 months of language improvement in auditory comprehension and expressive communication for Ajay with 2 months of language therapy using DSP approaches.

For Deva, there are 8 months and 10 months of language improvement in auditory comprehension and expressive communication with 2 months of language therapy using DSP approaches.

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DISCUSSION

The results of this study showed that there is a better improvement in auditory comprehension and expression skills in both participants by taking speech-language therapy using DSP intervention strategies.

These results provide support for the effectiveness of a DSP language intervention for young children with ASD. In this study, two of the children had gains in their use of spontaneous language with the therapist that began at the onset of treatment.

Especially Deva, the nonverbal child, made gains in his use of language using this approach. Several researchers have suggested that children with autism who are nonverbal may require a more structured approach to learn prerequisite skills such as verbal imitation before receiving a less structured approach (e.g., Greenspan & Wieder, 1998). The nonverbal child in this study made gains in spontaneous language, which suggests that DSP interventions may be appropriate for nonverbal children with ASD.

One intervention may be more effective than the other, depending on the pre-treatment language age of the child. For example, Yoder et al. (1995) found that children at lower language levels responded better to milieu teaching, a naturalistic behavioral intervention, whereas children at higher language levels responded better to responsive interaction, a DSP intervention. Our data indicate that the two children achieved the highest rates of expressive language by the end of treatment.

Similar results were obtained by Brooke Ingersoll et al, whose study examines meaningful outcomes by assessing the use of spontaneous functional communication, as recommended by the National Research Council (2001).

In conclusion, this study offers preliminary support for a DSP approach as a therapist implemented language intervention for young children with autism spectrum disorders.

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Conflict of Interest

The author(s) declared no conflict of interest.

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