



Case Report

The Effect of Early Language Intervention on Children with Developmental Language Disorders: A Case Study

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ABSTRACT

The first three years of life are a critical period for development. Environmental stimuli have positive effects on the development of speech and language. Language skills involve the development of expressive and receptive skills among children. Speech and language disorders during childhood have important negative outcomes in the life of the child. Therefore, early detection of children at risk in the preliminary phases of development and implementing early intervention for them are very important. In this case study, the effects of early language intervention in children with a developmental language disorder (DLD) was investigated. A twenty-seven-month-old child diagnosed with an autism spectrum disorder (ASD) was evaluated in this case study. Occupation and speech therapy was performed for him. Results showed that the early intervention was essential for improving the child's communication, and proper environmental stimuli could prevent possible problems in the future. In addition, the results revealed that child professionals should not adopt a "wait and see" attitude for improving development.

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Introduction

Because language plays a central role in child development, valid identification, prevention, and intervention of language disorders are essential. Developmental language disorder (DLD) is one of the most common causes of concern in young children. DLD can be a clear indicator of difficulty with language development or autism spectrum disorders [1]. Language development is characterized by individual differences such as gender, birth weight, birth order, maternal age and education, income, and so on [2]. A review of studies in communication sciences and disorders revealed that causal factors affecting child language development in the

first three years of life are genetic (11%), environmental (83%), and mixed (6%). The interventions, linguistic input, and quality of the family/caregiver are the environmental influences on language development [3].

Early intervention is a term that refers to a series of activities designed to improve a young child's development [4]. Speech and language pathologists, teachers, and parents participate in early language intervention and use strategies to enhance speech and language development [5]. Early intervention is similar to secondary prevention [6]. The approaches used for children with developmental language disorder may enhance a child's language and intellectual skills and reduce parental concern. Furthermore, early intervention can improve communication skills, identify more supportive environments, increase social communication developments, achieve a higher social communication score, and increase speech intelligibility later [7]. Rauh

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et al., Bleile and Miller, and Blair and Ramey reported that low-birth-weight babies who receive intervention show benefits over untreated groups in terms of IQ [8-10]. Researchers reported that preterm infants who were given early intervention performed better than their untreated peers through preschool age. They performed long-term follow-up and suggested that children with birth weights above 2000 grams gain the most benefit from early intervention [11].

Neural networks are most flexible and could change with intervention. Over time, the neural network becomes increasingly difficult to change [12], so early intervention is essential. Children and toddlers with known and unknown risk factors might need early intervention [1]. The present case study investigated the effects of early language intervention on a child with a developmental language disorder.

Case Report

Participant

RK was a 27-month-old boy who participated in early language intervention. He received twenty therapy sessions (three times a week) for two months and two times a week for four months, and two sessions for follow-up after one year.

The family history revealed no developmental disorders. Both parents had bachelor of science degrees. RK lived with his parents and grandparents. The prenatal, natal, and post-natal medical history was normal, and there was no history of hospitalization or medication consumption. RK's parent supplied written informed consent before the study.

RK did not speak during the first session. According to his parents, he had limited attention. His eye contact in communication was impaired. He did not play any targeted games. He had repeated behaviors (hand flapping and circling) and restricted behaviors (paying attention to a pencil and watching the television).

Assessment Procedures

At first, the pediatrician at the Comprehensive Center for Child Development assessed the child in medical and developmental areas and referred him to a child psychiatrist. The early diagnosis of the pediatrician and the child psychiatrist was autism spectrum disorders. The child psychiatrist prescribed risperidone, but his parents refused to use it. The pediatrician screened the child using the Modified Checklist for Autism in Toddlers, Revised (M-CHAT-R/F). M-CHAT-R/F, a screener that asks a series of 20 questions about the child's behavior. It is intended for toddlers between 16 and 30 months of age. The results will indicate whether further evaluation may be needed. The results can be discussed by parents and the child's healthcare provider [13]. RK scored 10 on the M-CHAT-R/F. It was acceptable to bypass the follow-up and refer him immediately for diagnostic and eligibility evaluation for early intervention.

RK's parents completed the ASQ test periodically. The ASQ looks at children's skills in the five developmental areas of communication, fine motor skills, gross motor

skills, problem-solving, and personal-social skills. This developmental check-up is available for children 2-60 months. Research has revealed that ASQ has strong test characteristics for detecting developmental delays in children, especially in high-risk cases. It is widely and easily used for developmental screening [14]. In the current case, the ASQ test showed that RK's scores in communication skills, problem-solving, and personal-social skills were lower than the average. Table 1 shows RK's first and last ASQ.

After testing, RK was referred to an occupational therapist and a speech and language therapist for professional assessment (informal) of motor, cognition, and language skills. These informal assessments showed impairment in all areas.

Generally, the comprehensive assessments (M-CHAT-R/F, ASQ checklist, and the informal tests) determined that RK was developmentally delayed in fine motor, speech and language, and communication skills. In addition, he showed a cognitive deficit and behavioral problems, such as repetitive behaviors, restricted interests, selective attention, non-purposeful play, and poor eye contact.

Occupation and speech therapy was begun for the child. Speech therapy focused on pre-linguistic skills, oral function, receptive and expressive language, and social interaction. A child-centered approach was used in interventions for receptive and expressive language skills. The first early intervention was parent-implemented language intervention. The goal of this program is to promote interaction between parents and children. Modifying the interaction can affect pre-linguistic aspects of communication in children, such as joint attention/action, intentional communication acts, vocabulary, and early word combinations. This type of intervention focuses on intensive communication intervention as early as possible in children with ASD [15]. Speech therapist training of parents to support language skills is an essential part of effective remediation of young children's communication deficits. RK's mother attended treatment sessions and learned the practices. His mother also learned responsiveness to child communication by following her child's lead in play. The relationship between the mother and her child was corrected by responding to the child's play actions, joining and expanding the child's play schemes, and talking about the child's focus of interest by using self-talk and parallel-talk methods. In addition, watching television was forbidden. Surprisingly, after five sessions, the child paid attention to his mother emotionally. Reassessment (each month) showed the positive effects of parent-implemented language interventions on RK's language and communication.

After one month (12 sessions), the following signs of progress were achieved: eye contact during play with toys (about 5 seconds) and targeted games appeared, repeated behaviors such as hand flapping and circling decreased because of RK's increased attention, and RK paid attention to receptive language practice. His restricted behaviors (paying attention to a pencil and watching the television) decreased. The child started to speak with

Table 1: Ages and Stages Questionnaire (ASQ) checklist scores pre/post early language intervention

	Communication	Gross motor	Fine motor	Problem solving	Personal-social
Pre-intervention	ASQ* < -2SD*	-1SD > ASQ	-1SD > ASQ	-1SD < ASQ < -2SD	ASQ < -2SD
Post-intervention	-1SD > ASQ	-1SD > ASQ	-1SD > ASQ	-1SD > ASQ	-1SD > ASQ

*Ages and Stages Questionnaire: ASQ; *Standard deviation: SD

Table 2: Results of informal assessment

Dimensions of assessment	Pre-intervention (Initial assessment)	Post-intervention (Reassessment)
Eye contact	Rarely, under two seconds	Normal eye contact
Play	Nonpurposeful play	Purposeful play
Auditory attention	No attention to any stimuli	Attention to auditory stimuli
Visual attention	No attention to any stimuli	Attention to all visual stimuli
Answer to his name	None	Answers to his name normally
Receptive language	No answer to assessment	Receptive language is in a normal range
Expressive language	Three words (/toup/, /maman/, /?ab/ in repetition)	Semantics: uses the words of all categories MLU*: 3 up to 4 Grammar: uses grammar structures such as negative form, Wh questions, etc. Pragmatics: uses suitable sentences in context
Oral assessment (structural and functional)	Structural: Normal (Range of movement was not sufficient) Functional: chews only soft foods Does not drink from a glass or a straw	Structural: Normal Functional Chewing all food types Drinks from a glass or straw

* Mean Length of Utterance: MLU

Table 3: The mean scores (SD*) of the Bayley III test (after one year)

Scores of Bayley III	Cognitive subscale	Receptive Language Subscale	Expressive Language Subscale	Fine Motor Subscale	Gross Motor Subscale
Mean Score of Bayley III in 37-month-old child	70.79 (7.80)	38.24 (4.42)	41.41 (4.76)	50.33 (50.33)	63 (4.45)
Mean Score of Bayley III in this child	68	35	37	45	62

*Standard deviations (SD)

simple words immediately. During the two months, his progress was acceptable. The mean length of utterance was two words, and he expressed “what” and “who” questions. Finally, after six months, RK’s language skills were age appropriate; although he sometimes repeated questions, these repetitions decreased gradually.

When RK began to pay attention to his therapist, oral exercises were begun. After four months, RK achieved the chewing ability, and he could drink from a glass. The results of informal assessment pre/post treatment are shown in Table 2.

After two months of speech therapy, the pediatrician at the Comprehensive Center for Child Development followed up with RK. In this follow-up, they performed the Bayley-III test, which is a comprehensive developmental assessment for children ages one to 42 months. In this test, three subscales were administered (cognitive, receptive and expressive language, and motor skills). This test also shows possible developmental delays and determines specific areas of strength or weakness when planning a comprehensive intervention and monitoring a child’s development progress [16]. RK did not cooperate for testing and did not understand its structures. Finally, after one year of follow-up, we performed a re-assessment of the child. His receptive and expressive language and oral function were age appropriate. The Bayley III test was done in three sessions. Results are shown in Table 3.

Discussion

This article is a case study of the effects of primary language intervention on children. The results showed that early intervention improves communication and social skills.

Parent-implemented language interventions have a positive early language intervention strategy for both expressive and receptive language skills. Buschmann et al. examined the effectiveness of early parent-based language intervention with a randomized control trial (RCT) study and reported that this intervention is effective. In addition, these interventions modify parental behavior in several ways to enhance a child’s language learning [17]. Therefore, it can be concluded that modifying parent-child interactions is an essential consideration in the initial phase.

In the present study, the direct language intervention and improving the parent-child interaction and responsiveness to child communication increased the amount and quality of the child’s linguistic input. Roberts and Kaiser reported that parent-implemented language interventions significantly improve expressive and receptive language skills in children with language impairment [18].

During the intervention, RK’s parents reported that his behavioral problems decreased, and his eye contact during communication and his expression of emotions became normal. Chow revealed a stable, negative correlation

between language skills and problem behaviors [19]. In addition, Benasich, Curtiss, and Tallal; Qi and Kaiser; and Hollo, Wehby, and Oliver suggested that children with DLD exhibit some behavioral problems, and improving the language difficulties could resolve some of them [20-22]. Therefore, early language intervention may reduce the signs of behavioral disorders, because some behavioral problems are the result of communication disabilities.

The involvement of RK's parents in the intervention in this case was significantly helpful. The child could communicate with his mother within the first month. These findings support previous evidence that mothers may optimize the language intervention of late-talking toddlers [17, 23].

Periodically, the parents completed the ASQ checklist for their child. At first, RK's score was lower than the normal range in all subscales except those of gross and fine motor skills. At the end of the intervention, his ASQ score was within the normal range, and no signs of autism spectrum disorders were observed. Therefore, we can conclude that despite the initial diagnosis of ASD, the early intensive intervention, especially modification of the child's interactive environment, eliminated suspicious symptoms, and the child achieved the natural development of speech, language, and communication.

The results of the present study have important clinical implications for providing support for children with language and communication disorders. One of the limitations is that, according to the case conditions, we cannot design a single-subject study, because it would require a lot of assessment, and RK does not have enough cooperation.

In conclusion, the results of the therapeutic progress of a sample cannot be generalized to the whole community, but we can recommend to the parent that the "wait and see" approach is not good advice and wastes the child's developmental time. In addition, such studies are essential for informing physicians and healthcare providers that timely referral of children for rehabilitation is important so as not to lose the golden time of development.

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References

- Dale PS, Patterson JL. Early identification of language delay. Encyclopedia on early childhood development. published online. 2009.
- Bornstein MH, Hahn CS, Putnick DL, Pearson RM. Stability of core language skill from infancy to adolescence in typical and atypical development. *Sci Adv*. 2018;4(11).
- Rogers CR, Nulty KL, Betancourt MA, DeThorne LS. Causal effects on child language development: A review of studies in communication sciences and disorders. *J Commun Disord*. 2015; 57:3-15.
- Ramey CT, Ramey SL. Early intervention and early experience. *American psychologist*. 1998; 53 (2): 109-120.
- Sinno D, Sharafoddin L, Mikati M. Enhancing early child development: a handbook for clinicians: translate by Tavassoli M, Monzavi MM, Zafari F, Heidarabadi S. Andishe mandegar publisher. 2013.
- Ellis EM, Thal DJ. Early language delay and risk for language impairment. *Perspectives on Language Learning and Education*. 2008; 15 (3): 93-100.
- Robertson SB, Weismer SE. effects of treatment on linguistic and social skills in toddlers with delayed language development. *Speech Lang Hear*. 1999; 42 (5): 1234-1248.
- Rauh VA, Achenbach TM, Nurcombe B, Howell CT, Teti DM. Minimizing adverse effects of low birthweight: four-year results of an early intervention program. *Child development*. 1988; 59: 544-553.
- Bleile K, Miller S. infants and toddlers. Articulatory and phonological disorders in special population. New York: Thieme. 1993.
- Blair C, Ramey CT. Early intervention for low birth weight infants and the path to second-generation research. The effectiveness early intervention. Baltimore, Paul Brooks. 1997; 77-97.
- McCormick MC, Brooks-Gunn J, Buka SL, Goldman J, Yu J. Early intervention in low birth weight premature infants: results at 18 years of age for the infant health and development program. *Pediatrics*. 2006; 117(3): 771-780.
- Bzoch K, League R. Receptive-Expressive Emergent language scale. Gainesville: The three of life press, Inc. 1971.
- Robins DL, Casagrande K, Barton M, Chen CM, Dumont-Mathieu T, Fein D. Validation of the modified checklist for autism in toddlers, revised with follow-up (M-CHAT-R/F). *Pediatrics*. 2014; 133(1):37-45.
- Schonhaut L, Armijo I, Schönstedt M, Alvarez J, Cordero M. Validity of the ages and stages questionnaires in term and preterm infants. *Pediatrics*. 2013; 131(5):e1468-e74.
- McCauley RJ, Fey ME, Gillam RB, editors. Treatment of language disorders in children. Paul H. Brookes Pub.; 2006.
- Soleimani F, Azari N, Kraskian-Mojembari A, Vameghi R, Shahshahani-Pour S, Sajedi F. Developing of the Persian version of Bayley scales of infant and toddler's development screening test and determine its validity and reliability. *Archives of Rehabilitation*. 2014; 14 (6): 18-29.
- Buschmann A, Jooss B, Rupp A, Feldhusen F, Pietz J, Philippi H. Parent based language intervention for 2-year-old children with specific expressive language delay: a randomised controlled trial. *Arch Dis Child*. 2009; 94 (2): 110-116.
- Roberts MY, Kaiser AP. The effectiveness of parent-implemented language interventions: A meta-analysis. *Am J Speech Lang Pathol*. 2011; 20(3): 180-199.
- Chow JC, Wehby JH. Associations between language and problem behavior: A systematic review and correlational meta-analysis. *Educational psychology review*. 2018; 30 (1): 61-82.
- Benasich AA, Curtiss S, Tallal P. Language, learning, and behavioral disturbances in childhood: A longitudinal perspective. *J Am Acad Child Adolesc Psychiatry*. 1993; 32(3):585-94.
- Qi C.H, Kaiser AP. Problem behaviors of low-income children with language delays. *J Speech Lang Hear Res*. 2004; 47 (3): 595.
- Hollo A, Wehby JH, Oliver RM. Unidentified language deficits in children with emotional and behavioral disorders: A meta-analysis. *Exceptional children*. 2014; 80 (2): 169-186.
- Girolametto LE, Pearce PS, Weitzman E. Interactive focused stimulation for toddlers with expressive vocabulary delays. *J Speech Lang Hear Res* 1996; 39: 1274-84.