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ABSTRACT

This review of early intervention for preschool children with learning disabilities examines: (1) definitions of learning disabilities; (2) characteristics of learning-disabled children and children at risk; (3) identification of preschool children at risk; (4) efficacy of early intervention; (4) phases of an early intervention program, including identification, screening, diagnosis, implementation of intervention activities, and program evaluation; and (5) teaching methods. (25 references) (JDD)

EARLY INTERVENTION FOR PRESCHOOL CHILDREN WITH LEARNING DISABILITIES

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EARLY INTERVENTION FOR PRESCHOOL CHILDREN WITH LEARNING DISABILITIES

In the field of special education, there is currently a surge of interest in and respect for early intervention programs for preschool children with learning disabilities. At the present time, learning disabled youngsters are being provided with special education services at an earlier age. Many teachers of special education, school psychologists, and school administrators believe that, by identifying those preschool children with actual or potential learning disabilities, many intellectual, social, and emotional problems can be prevented or at least diminished in severity when these children enter the primary grades. At the basis of this belief is the conviction that the skills, concepts, and abilities which a child masters as a preschooler will have a direct influence on that child's chances of success when he begins first grade. Because special educators recognize that the young learning disabled child is more likely to experience difficulty in acquiring the skills and abilities necessary for a successful transition to the primary grades, early intervention special education programs are currently being researched, planned, and implemented. These programs are being developed as a result of information derived from case-finding and screening techniques designed to locate preschool children who have learning disabilities and from assessment procedures designed to identify the special needs, strengths, and weaknesses of the learning disabled child. In order to help compensate for the deficiencies which the learning disabled preschooler demonstrates, early intervention programs include curriculum content based on special needs and methods and materials of instruction which are best suited to the unique learning style of each child.

According to Cook, Tessier, and Armbruster (1987), a "specific learning disability" (p. 359) may be defined as a disturbance in one or more of the psychological processes which deal with the comprehension or use of spoken or written language. They explain that these disorders are directly related to attention deficits and an inability to think, speak, read, write, spell, or perform mathematical calculations at expected levels of achievement. Cook, Tessier, and Armbruster (1987) include as examples of "specific learning disability" (p. 359) difficulties involving perception, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. They exclude learning disorders involving visual, auditory, and motor processes, mental retardation, emotional difficulties, and deficits due to unfavorable cultural, economic, and environmental circumstances. In a discussion of disorders which are characteristic of the learning disabled preschool child, Kirk (1987) presents the concept of developmental learning disabilities. According to Kirk (1987), these disabilities involve perceptual impairments, problems which are orientational in nature, language deficits, and other difficulties which result from disturbances in development. He explains that, when a young child has a developmental learning disability, the achievement of skills and abilities necessary for success in academic subjects is likely to be negatively affected. For example, Kirk (1987) points out that children with developmental learning disabilities may not develop the eye-hand coordination, memory sequencing, and motor skills necessary for learning to write. He explains that these children may also fail to develop the visual and auditory perceptual skills which are prerequisites for learning to read and that they often exhibit behaviors which are symptomatic of an impaired ability to attend and perceive auditorily and visually. Moreover, they have difficulty in mastering skills involving memory, thinking, and learning (Kirk, 1987). Kirk (1987) concludes that, unless these learning disabilities are treated when the

child is young, they will most certainly contribute to difficulties in acquiring knowledge in the academic subjects later in the child's educational career. Moreover, Strain and Odom (1986) indicate that social skills disorders are prevalent in children with learning disabilities. They explain that in situations where handicapped youngsters are integrated with nonhandicapped youngsters a "positive social behavior change" (p. 543) invariably results. In a study to evaluate this type of social intervention strategy, these researchers found no detrimental effects on the nonhandicapped children and "increases in the social responding, social initiations, and length of exchanges for target children" (p. 543).

Lerner, Mardell-Czudnowski, and Goldenberg (1987) distinguish between established learning disabilities in school-age children and potential learning disabilities in high-risk preschoolers. These authors indicate that, although preschool children have not yet demonstrated failure in formal academic subjects, they often exhibit certain typical behaviors and developmental delays in the areas of motor and language skills and in the ability to attend which indicate that they are at-risk to have difficulties at higher levels of learning. Moreover, these authors indicate that there is often a marked inconsistency in the expectancy level of learning achievement and the actual performance level of these children. Lerner, Mardell-Czudnowski, and Goldenberg (1987) identify four characteristics of the learning disabled child. The first of these characteristics is neurological dysfunction which signifies that "for the child with learning disabilities, the nervous system is not processing information in a normal fashion" (p. 33). In addition, the authors assert that these children present attention deficit disorders in that they are hyperactive, unable to focus on a task, and are easily distracted. Furthermore, the authors explain that young learning disabled

children often exhibit uneven patterns of growth and development and, so, they may do very well in some areas and, at the same time, be markedly behind in other areas. Finally, these children usually demonstrate problems in motor and language skills and in perceptual abilities (Lerner, Mardell-Czudnowski, & Goldenberg, 1987).

Similarly, Peterson (1987) describes specific characteristics which learning disabled children exhibit. According to Peterson (1987), these children engage in "purposeless nonproductive" (p. 265) hyperactive behavior, have perceptual-motor impairments involving inability to discriminate and interpret visual and auditory symbols, and experience frequent emotional mood swings and inability to tolerate frustration. They are also characterized by poor physical coordination, attention deficits, disorders involving memory and thinking skills, and language problems involving both the receptive and expressive aspects of language (Peterson, 1987).

Tjossem (1976) elaborates upon the concept of an at-risk status for infants who, because of various components in their life histories, are more likely to present learning disabilities. In his book, Intervention Strategies for High Risk Infants and Young Children, Tjossem (1976) targets these preschool children for early intervention programs so that they may reach their potential academically, emotionally, and socially. The fist category of at-risk young children which Tjossem (1976) describes is children with an "established risk" (p. 4) for learning disabilities. According to Tjossem (1976), these children have medical problems which have been clinically diagnosed and which correlate with developmental disorders of a cognitive, emotional, and physical nature. The second of Tjossem's (1976) high risk categories includes children with an "environmental risk" (p. 5) to develop learning disabilities. These children are diagnosed as physically normal, but, because of their deprived experiential and environmental backgrounds,

they require compensatory early intervention instruction. The last of the high risk categories which Tjossem (1976) describes involves children who are at a "biological risk" (p. 5) to have learning disabilities. According to Tjossem (1976), the prenatal, perinatal, or postnatal histories of these young children indicates the likelihood that they will develop learning disorders. Lerner, Mardell-Czudnowski, and Goldenberg (1987) elaborate upon these biological risk factors. First of all, these authors explain that certain prenatal factors can determine the high risk status of infants. For example, the mother's health and physical condition during pregnancy have a profound effect on the developing fetus. Lerner, Mardell-Czudnowski, and Goldenberg (1987) enumerate adverse physical conditions of the mother, including malnutrition, lack of prenatal care, the disease of rubella, chronic anemia, diabetes, the use of drugs, tobacco, and alcohol, and venereal diseases. Moreover, these authors assert that the mother's emotional condition is also significant. They explain that maternal stress and tension "can cause hormonal or metabolic imbalances which can result in obstetrical complications" (p. 26). In addition, maternal age is an important prenatal factor which can influence the development of learning disabilities. Very young mothers, under sixteen years of age, and women over forty are more likely to give birth to at-risk infants. Finally, in addition to maternal physical and emotional health status, the authors explain that certain genetic factors are among the prenatal factors related to learning disabilities in children. Among the adverse perinatal factors which Lerner, Mardell-Czudnowski, and Goldenberg (1987) indicate may predispose the development of a young child's learning disabilities are premature birth and problems during the birth process. In each of these situations, these authors explain, the infant may suffer anoxia which involves a reduction or deprivation of the oxygen supply to the brain or other vital organs. Finally, among the

postnatal factors which Lerner, Mardell-Czudnowski, and Goldenberg (1987) believe to be influential in determining the high risk status of a young child are serious injuries of an accidental nature, serious illnesses (including meningitis and leukemia), the effects of treatment (including radiation and chemotherapy), and environmental conditions, such as child abuse, neglect, and the absence of home training and teaching.

Educators in the field of special education for preschool children have carefully studied and analyzed the importance of, effectiveness of, and benefits to be derived from early intervention programs for young children with a high risk for learning disabilities. In addition, numerous research studies have been conducted on the subject of the efficacy of early intervention strategies.

At this point, it might be noted that while many research studies support early intervention, there are some studies which question the efficacy of early identification and intervention strategies. In one such study, Weltner-Brunton, Serafica, and Friedt (1988) compared a group of earlier identified learning disabled children to a group of later identified learning disabled children on the Woodcock Reading Mastery Tests and the Wechsler Intelligency Scale for Children - Revised. The results of the study indicated that there is no definitive evidence to uphold the theory that earlier identified learning disabled children have less serious difficulties than later identified learning disabled children. In addition, these researchers found that the earlier identified group did not receive higher WISC-R or reading achievement test scores than those children who were later identified. Moreover, Weltner-Brunton, Serafica, and Friedt (1988) contend that there is no indication that earlier identified children experience less frustration or function below grade level less often than later identified students. In another study, Mastropieri (1987) tested the relationship

between the age at which a learning disabled child receives intervention services and the effectiveness of the intervention. Mastropieri (1987) tested the hypothesis that the earlier intervention is begun, the better the results of the intervention will be. Mastropieri's (1987) study indicated that the age at which intervention commences and the duration of the intervention have little correlation with the effectiveness of the treatment.

However, there are numerous reports and studies which support the concept of early intervention. For example, Peterson (1987) presents the following case for early intervention. First of all, she states that learning and behavior patterns which are established during the preschool years are critical to cognitive skill development in later years. In addition, according to Peterson (1987), research studies indicate that there are "critical periods" (p. 5) especially during the early childhood years, "when a child is most susceptible and responsive to learning experiences" (p. 6). Peterson (1987) emphasizes that intelligence is not determined only by heredity, but can also be modified through learning and environmental experiences. Furthermore, Peterson (1987) asserts that the basic factors which increase the likelihood of a child's being learning disabled are often detrimental to his future development and ability to learn, frequently increase the severity of learning disorders, and can cause additional disabilities. Moreover, Peterson (1987) explains that a young child's early experiences and environmental background affect the extent to which he realizes his full potential. She also points out that early intervention programs for the at-risk learning disabled preschooler yield more positive, productive results than remedial programs which are implemented after the child has actually experienced failure in the elementary grades. Peterson (1987) also emphasizes the importance of programs to educate parents of at-risk preschoolers about the essential care, stimulating sensory

experiences, and training which their children need "during the critical years when basic developmental skills should be acquired" (p. 6). Finally, Peterson (1987) concludes that, by providing early intervention programs, many future problems can be minimized or even prevented and, as a result, society will benefit economically and socially.

Similarly, Lerner (1985) emphasizes the importance of early intervention during the preschool years for the development of cognitive skills and for academic success. Lerner (1985) cites the conclusions of developmental psychologists such as Piaget, Bloom, and Kagan which indicate that, when a child's learning disability is not identified until the elementary grades, much time has already been wasted. In addition, Lerner (1985) cites Bloom's finding that, by the time a child is four years old, 50 percent of his cognitive growth has been established. For this reason, Lerner (1985) states that early intervention for at-risk and learning disabled young children allows for essential compensatory strategies during this critical period in a child's development. In addition, Lerner (1985) agrees with Peterson (1987) that, by means of early identification and intervention, many problems can be prevented or at least rendered more manageable. Lerner (1985) also concurs with Peterson (1987) that society will ultimately benefit because, as a result of early intervention programs, fewer children will need special education services later on. Moreover, Lerner (1985) also stresses the positive effects of environmental factors on the development of the young learning disabled child. She states that:

> The underlying philosophy of early childhood special education is that educational experiences do make a difference in terms of child growth and development. In the controversial issue of whether the rate of cognitive growth is due to heredity or environment, the viewpoint of early childhood special educators is that environmental or educational intervention has a tremendous payoff. (p. 225)

In support of this contention, Lerner (1985) asserts that research studies indicate that environment has a very significant influence on intelligence. Indeed, according to Lerner (1985), early intervention programs can improve cognitive skills, language abilities, and vocabulary development, and thus can have a positive effect on how the child functions in school.

Smith and Strain (1988) cite several reasons for intervening as early as possible with a learning disabled child. First of all, they point to research which indicates that a child learns and develops most quickly during the preschool years. These authors present the concept of most "teachable moments" (p. 1) or readiness stages during which learning a particular skill is most efficient and effective. Thus, Smith and Strain (1988) state that the timing of intervention strategies is especially significant in order to capitalize on those periods when the child is most ready to learn a particular skill. In addition, Smith and Strain (1988) believe that early intervention programs have an important effect on the family of a learning disabled child. As recipients of early intervention services, parents can be encouraged to develop positive feelings about themselves and their relationship to their child. They can also receive necessary information which will enable them to assume a vital role in the education of their child. Finally, Smith and Strain (1988) uphold that early intervention provides benefits for society as well. They state that, because of the developmental and educational

advantages the child gains from early intervention programs, he will be less likely to depend on social institutions in later life. Smith and Strain (1988) summarize their conclusions about the efficacy of early intervention:

> After nearly 50 years of research, there is evidence -- both quantitative (data-based) and qualitative (reports of parents, teachers) -- that early intervention increases the developmental/educational gains for the child, improves the functioning of the family, and reaps long-term benefits to society. Early intervention has been shown to result in the child: (a) needing fewer special education and other habilitative services later in life; (b) being retained in grade less often; and (c) in some cases being indistinguishable from non-handicapped classmates years after intervention. (ERIC Digest #455, 1988, p. 1)

In another report by Strain and Smith (1986), the value of early intervention is discussed further. Strain and Smith (1986) dispute the results of a study by Castro and Mastropieri (1986) which rejects the contention that earlier intervention yields greater benefits and which suggests that there is a low correlation between parental involvement and the effectiveness of a program of early intervention. Strain and Smith (1986) assert that educators who might not support early intervention programs or parental involvement because of the discussion by Castro and Mastropieri (1986) "would be making bad policy based on a biased and incomplete analysis and interpretation of the early intervention data base" (p. 206). According to Strain and Smith (1986), without early intervention programs and parental involvement, we risk the loss of valuable contributions to society which learning disabled people potentially have to offer.

Several additional reports and research studies support early intervention during the preschool years as a means of improving the educational, emotional, and developmental future of the learning disabled child. For example, Hagin (1984) studied the effects of an early intervention

program for learning disabled children on first grade promotion procedures. According to Hagin (1984), when a young child starts first grade, the school expects that he has mastered certain cognitive and emotional skills. In reality, Hagin (1984) asserts, this assumption is not always reasonable. She believes that all too often the school responds to a child's lack of readiness for and failure in first grade by having him repeat the grade. For this reason, she advocates early intervention programs which "attempt to close the gap between what children are when they come to school and what the educational system expects them to be" (p. 471). Hagin (1984) studied one program of early intervention which was operated by the Learning Disorders Unit of New York University Medical Center together with Community School District II in Manhattan. The children included in this program had been classified as learning disabled. Although they were of normal intelligence and of normal auditory and visual acuity, they had extensive learning problems in school. Because of academic failure, these children experienced anger, defeat, and frustration. The first step of the program was to identify those children who were at-risk for school failure and to determine the causes of their at-risk status. Based on the specific needs of the children, a program of intervention was planned to avert future academic failure experiences. The results of Hagin's (1984) study showed that, because of early intervention, there was a reduction in the in-grade retention rate to 5 percent or less. In the year prior to the study and in the early years of the study, the in-grade retention rate was as high as 12 percent. This rate declined to and was maintained at a rate of 1 to 3 percent after the early intervention program was completed (Hagin, 1984). Hagin (1984) concludes:

> The nonpromotion rates clearly support the program for the prevention of learning disabilities. There are probably less quantifiable effects that may be reflected in changes in teachers' attitudes toward children, in development of more enlightened administrative procedures, and in building positive parent support for schools. (p. 475)

Similarly, a study by Hawkins (1985) demonstrates the efficacy of early intervention programs for at-risk children who are about to enter first grade. Hawkins (1985) states that often children are not recommended for extra help in reading until they have completed third grade. By that time, she asserts, these children have already experienced a great deal of failure and frustration. Moreover, by then the original learning problem becomes complicated by problems of an emotional and motivational nature which are even more difficult to remediate (Hawkins, 1985). Hawkins (1985) cites Clay's (1979) statement in The Early Detection of Reading Difficulties that "when remedial help is delayed until third grade, the child has had more time to practice ineffective behaviors and will then have more to unlearn" (p. 93). Therefore, according to Hawkins (1985), educational intervention before first grade for children at-risk for reading difficulties can encourage the development of readiness skills which are essential for success in learning to read. Hawkins (1985) summarizes the advantages of early intervention by stating that "overcoming an established reading problem, especially if the child accepts the fact that he is a non-reader, is extremely difficult. It would be a better use of the school's resources to work with children before problems overwhelm them" (p. 197). A study by Gottesman, Croen, Cerullo, and Nathan (1983) reached a similar conclusion. These researchers determined that when learning disabled children are not identified until they reach the intermediate grades, they are more likely to develop serious learning and

emotional problems than those children who are identified during the preschool years. Mercer (1987) summarizes the importance of early intervention by citing an article by Lazar (1979) entitled "Does Prevention Pay Off?" which was published in The Communicator by the Council for Exceptional Children. In that article, Lazar (1979) concludes that "it is clear that a sensible program of early intervention can indeed prevent school failure and reduce the need for remedial programs" (Mercer, 1987, p. 259).

The initial phase of an early intervention program consists of identification and assessment. During this phase, preschool children who are learning disabled or at-risk for learning disabilities are identified by means formal and informal instruments, including standardized tests, criterion-referenced tests, interviews, checklists, and direct observation. In addition, using diagnostic instruments, each child's strengths and weaknesses are assessed. The results of the diagnostic procedures suggest the curriculum content, methodology, and materials to be used in initiating educational intervention. Moreover, continuous diagnosis during the entire program of intervention is used to indicate further modifications in curriculum, methodology, and materials necessary to suit the changing needs of the child. The progress of the child as well as the effectiveness of the program are continually evaluated.

A model of evaluation for special education programs for preschool children is presented by Peterson (1987). This evaluation model consists of six stages of assessment, including casefinding, screening, diagnosis, educational assessment, performance monitoring, and program evaluation. The objective of the casefinding stage is to locate preschool children who might require and benefit from early intervention. The "target population" (Peterson, 1987, p. 284) of children between the ages of three and five is assessed by means of informal procedures and referrals and recommendations are

sought out. The aim of casefinding is to encourage significant individuals, such as parents, nursery school teachers, day care personnel, doctors, and social workers, who have contact with children of this age group to make careful observations in order to identify children with special needs who are possible candidates for screening. According to Peterson (1987), there are three general categories of children to be identified during casefinding. First of all, children with clinically diagnosed disabilities should be identified. For these cases, the issue is to encourage the significant adults to understand and accept the desirability of early intervention (Peterson, 1987). During casefinding, these adults are urged to make the required referrals. The second group of children to be identified, according to Peterson (1987), includes children with "hidden handicaps" (p. 287). In these cases, the disorders are not outwardly expressed, but the significant adults may suspect that something is awry. These adults must be encouraged to make observations of "irregular or questionable behavior" (Peterson, 1987, p. 287) and then make referrals for screening. The third group of children to be identified, according to Peterson (1987), are those who are at-risk for learning disabilities. Although these children exhibit no obvious disorders, they may have an at-risk status because of medical, environmental, or biological factors.

Peterson (1987) enumerates and discusses four basic components of casefinding strategy. First of all, the general and educational community must be informed about the importance of early intervention and about the availability of screening programs and early intervention services. The help of significant adults, day care agencies, and nursery schools in making necessary referrals and recommendations must be sought out. Next, Peterson (1987) states that a system of referral must be established. According to Peterson (1987):

> The task is to (a) provide these persons or agencies with information on screening clinics and service programs for handicapped/high-risk children, (b) provide information and written literature on contact persons and procedures for making referrals, and (c) establish working relationships between referral agents and intake screening contact persons. (p. 288)

A third task of casefinding is to survey the community in a systematic way to locate preschool children who necessitate screening but who are not likely to be referred because their learning disabilities are mild or are not easily diagnosed (Peterson, 1987). Finally, according to Peterson (1987), casefinding aims to maintain effective communication with sources of referral by keeping them up-to-date about the current activities of the screening program and by presenting them with informative reports about the number of children who have been recommended for early intervention and the achievements of the screening program in obtaining early intervention services for these children.

In support of casefinding strategies, "Child Find," a section of Public Law 94-142, mandates that states actively seek out those handicapped youngsters who are either not receiving any intervention services at all or who are not receiving appropriate intervention services for their special needs (Lerner, 1985). In the "Child Find" program, special emphasis is placed on locating preschool children in need of early intervention. Cook, Tessier, and Armbruster (1987) explain that "Child Find" teams are organized within each state to inform the public about "the right to a free and appropriate education for all children" (p. 45) and to inform the educational community about the necessity of making referrals.

Screening is the second stage of a comprehensive assessment program. Screening techniques aim to extract from the total population of preschool children those who are potential candidates for early intervention programs. These are children who need to be studied more carefully because they are at-risk to develop learning disabilities or because they have already presented actual symptoms of learning disabilities.

According to Lerner, Mardell-Czudnowski, and Goldenberg (1987), a typical screening procedure for preschoolers should study the following areas: vision and hearing, cognition, speech and language, gross motor and fine motor skills, visual and auditory perception, self-help skills, and social and emotional status. To assess these areas, two types of screening instruments are available. There are comprehensive tests which evaluate several areas of development and special tests which evaluate specific areas of development. The Denver Developmental Screening Test - Revised (DDST-R), a comprehensive test, is probably the preschool screening test that is used most often (Lerner, Mardell-Czudnowski, & Goldenberg, 1987). Lerner, Mardell-Czudnowski, and Goldenberg (1987) explain that this developmental test is to be administered individually, is designed for use with children who are from two weeks to six years old, and includes 105 items which are grouped into four general areas of development. These areas include personal-social skills, fine motor adaptive skills, language skills, and gross motor skills (Lerner, Mardell-Czudnowski, & Goldenberg (1987). DIAL-R, Developmental Indicators for the Assessment of Learning - Revised, is another frequently used comprehensive preschool screening instrument. The twenty-four items on this test were designed to be administered to children who are from two to six years of age and correlate with school functioning behaviors (Lerner, Mardell-Czudnowski, & Goldenberg, 1987). According to Lerner (1985), the test takes about twenty to

thirty minutes to complete and is administered to children individually at various testing stations. When the child arrives at the testing area, basic information is obtained in a parent interview. Then, a photograph of the child is taken and the child proceeds to each of the different testing stations where he is assessed on a one-to-one basis in the areas of sensory acuity, motor development, concept development, language skills, and social and affective competencies (Lerner, 1985).

According to Lerner, Mardell-Czudnowski, and Goldenberg (1987), both the DDST-R and the DIAL-R are norm-referenced screening tests in which the child is compared with other children on whom the test was standardized. Miller and Sprong (1986) discuss criteria for choosing norm-referenced tests for preschool children. These considerations include "description of the normative sample, adequate sample size, item analysis, the reporting of measures of central tendency and variability, concurrent validity, predictive validity, test-retest reliability, and interexaminer reliability" (p. 480). Based on these criteria, Miller and Sprong (1986) compared four preschool screening tests, including the Denver Developmental Screening Test - Revised (DDST-R), the Developmental Indicators for the Assessment of Learning - Revised (DIAL-R), the Comprehensive Identification Process (CIP), and the Miller Assessment for Preschoolers (MAP). The results of Miller and Sprong's (1986) study showed that none of the tests fulfilled all the requirements. However, the DIAL-R and MAP met most of the criteria. Other comprehensive screening tests for preschool children are the Zeitlin Early Identification (ZEIS), which is designed to identify strengths and weaknesses in learning abilities of children who are four and five years of age, and the Slingerland Pre-Reading Screening Procedures, which is designed to screen for auditory, visual, and kinesthetic disorders and for academic skills which are necessary for success in first grade (MacCracken, 1986).

Other screening instruments test a specific area of development, such as physical health, abilities of a cognitive and perceptual nature, speech and language development, and social and emotional relationships (Lerner, Mardell-Czudnowski, & Goldenberg, 1987). In the area of physical development, vision screening tests are carried out to check for amblyopia, errors in refraction, strabismus, and various diseases of the eye (Lerner, Mardell-Czudnowski, & Goldenberg, 1987). In addition, according to these authors, auditory screening tests, such as the Verbal-Auditory Screening Test of Children and the Preschool Screening Audiometer, check auditory acuity including pure tone testing. Specific tests which assess perceptual development, such as the Motor-Free Visual Perception Test and the Developmental Test of Visual Motor Integration, include components which evaluate gross and fine motor skills, skills of visual and auditory perception and visual and auditory discrimination, and skills of visual-motor coordination (Lerner, Mardell-Czudnowski, & Goldenberg, 1987). Most preschool screening tests of cognitive development evaluate intelligence, concept formation, memory, thought processes, understanding of sequence, and ability to classify. According to Lerner, Mardell-Czudnowski, and Goldenberg (1987), the Boehm Test of Basic Concepts is frequently used to test cognitive development. This test, these authors explain, assesses a child's understanding of time, quantity, and spatial relationships, including location, direction, orientation, and dimension. In the area of speech and language development, the objective of the screening procedure is to identify children who demonstrate "frequent misunderstanding of speech, difficulty in expressing needs and wants, irrelevant responses to speech directed to the child, decreased sensitivity to sound stimuli, and difficulty in articulating speech sounds" (Lerner, Mardell-Czudnowski, & Goldenberg, 1987, p. 83). The

Peabody Picture Vocabulary Test - Revised and the Preschool Language Assessment Instrument, which measure receptive vocabulary, are examples of speech and language screening tests which can help locate children who present these symptoms (Lerner, Mardell-Czudnowski, & Goldenberg, 1987). In addition, Illerbrun, Haines, and Greenough (1985) found the Language Identification Screening Test for Kindergarten to be "highly valid, reliable, and efficient in identifying kindergarten children with language problems" (p. 280). Similarly, the Bankson Language Screening Test, Clinical Evaluation of Language Functions - Elementary Screening Test, and Fluharty Preschool Speech and Language Screening Test were also found to be highly valid and reliable by Illerbrun, Haines, and Greenough (1985). On the other hand, these researchers determined that the Kindergarten Language Screening Test was not particularly reliable in locating kindergarten children who had language problems. Finally, to assess social/emotional development, Lerner, Mardell-Czudnowski, and Goldenberg (1987) suggest observation in a natural setting. In addition, they cite inventories and checklists, such as the Preschool Behavior Rating Scale and the Revised Child Behavior Checklist.

The next phase of the assessment procedure is diagnosis during which a judgment is made about the nature and severity of a child's learning disability, his strengths as well as his weaknesses, and the type of early intervention services which are best suited for him. Heward and Orlansky (1988) suggest diagnosis in six areas. The first of these areas, cognitive development, encompasses attentiveness, perception, memory, concept learning, and verbal skills. In addition, motor development involving gross motor skills and fine motor skills is studied. Next, language development and verbal and non-verbal communication skills are evaluated. Finally, self-help skills, play skills, and personal-social skills are observed and diagnosed.

Diagnosis involves several components which are described in detail by Lerner, Mardell-Czudnowski, and Goldenberg (1987). First of all, a case history is developed which includes information about the child's history of development, such as pertinent data about the family, the pregnancy and birth, the child's health during the neonatal period, serious illnesses and medical conditions, ages at which developmental milestones were attained, and descriptions of the child's environmental and experiential background and social behaviors. Next, a parent interview is conducted to gather information about the child's past and recent activities and behaviors. During this interview, the examiner tries to discover information about parental attitudes, expectations, and concerns. In addition, the examiner may have the parent complete a rating scale from which to draw conclusions about behaviors which are typical for the child. Moreover, direct observation of the child is a valuable diagnostic technique. Information gained by observation can either support or challenge data derived from the screening procedures. Lerner, Mardell-Czudnowski, and Goldenberg (1987) assert that, to assure the validity of the information obtained by observation, "the observation should not interrupt the child's natural interactions, the procedure should be systematic, the situation should be appropriate, and the report of the behavior should be objective and concrete" (p. 96). These authors suggest both structured and relatively unstructured observation in a variety of settings, including at home where the child relates to parents and siblings, in a diagnostic setting where specific materials are presented in order to evoke a particular response, and in a diagnostic classroom milieu. A valuable observation technique which these authors describe is the anecdotal record. In preparing an anecdotal record, the observer presents an objective account of an incident. Observations should be noted and recorded on several days and

at different times in order to present descriptions of typical, characteristic behaviors and responses (Lerner, Mardell-Czudnowski, & Goldenberg, 1987). When recording an incident for the anecdotal record, the observer "should include a description of the setting in which the event occurred, the stimulus for the event, the child's reaction, and how the event ended" (Lerner, Mardell-Czudnowski, & Goldenberg, 1987, p. 96).

Another component of diagnosis involves the use of formal standardized diagnostic tests. The purpose of administering these tests is to obtain additional information about the nature of the child's learning disability, the severity of that learning disability, the child's strengths and weaknesses, his level of performance, and the type of intervention services best suited to the child's special needs (Lerner, Mardell-Czudnowski, & Goldenberg, 1987). Several kinds of diagnostic testing instruments are available which evaluate the child in specific developmental areas. Diagnosis of the child's medical and health status is carried out by specialists, such as pediatricians, neurologists, ophthalmologists, otologists, and endocrinologists. Diagnosis of the child's perceptual development is accomplished by administering tests such as the Goldman-Fristoe Woodcock Auditory Skills Test Battery and the Southern California Sensory - Integration Tests (Lerner, Mardell-Czudnowski, & Goldenberg, 1987). Diagnostic tests of perceptual development assess gross and fine motor coordination, laterality and directionality, perception of spatial relationships, figure-ground perception, auditory and visual discrimination, and lateral dominance (Lerner, Mardell-Czudnowski, & Goldenberg, 1987).

Moreover, there are numerous diagnostic instruments which test cognitive development. These tests assess intelligence, thought-processes, concept formation, auditory and visual memory, understanding of sequence of events, ability to classify, and creative attributes (Lerner, Mardell-Czudnowski, &

Goldenberg, 1987). Among the most widely used and carefully constructed diagnostic tests of cognitive development for preschool children which Lerner, Mardell-Czudnowski, and Goldenberg (1987) describe are the Kaufman Assessment Battery for Children (K-ABC), the McCarthy Scales of Children's Abilities (MSCA), and the Wechsler Preschool and Primary Scale of Intelligence (WPPSI). According to these authors, the Kaufman Assessment Battery for Children (K-ABC) is designed for use with children from two and a half to twelve and a half years of age and assesses problem solving ability, intelligence, and achievement. There is a nonverbal scale to be used for deaf, language impaired, and non-English speaking children (Lerner, Mardell-Czudnowski, & Goldenberg, 1987). Lyon and Smith (1987) conducted a study to evaluate the stability of the K-ABC for a group of preschoolers who had a high risk status for learning disabilities. They determined that "scores on the K-ABC for at-risk preschool children displayed adequate stability" (p. 111). The McCarthy Scales of Children's Abilities, designed for use with children who are two and a half to eight years old, evaluates general intelligence, verbal skills, perceptual-performance skills, quantitative understanding, general cognitive skills, memory, and motor skills (Lerner, Mardell-Czudnowski, & Goldenberg, 1987). Zucker and Copeland (1988) conducted a study to compare the Kaufman Assessment Battery for Children with the McCarthy Scales of Children's Abilities. In this study, both tests were administered to two groups of preschool children, namely, a group of at-risk preschool children and a group of normal preschool children. These researchers determined that there was a high correlation between the K-ABC Mental Processing Composite and the McCarthy General Cognitive Index for both groups of children and that the correlation was even greater for the at-risk preschool group. Zucker and Copeland (1988) also determined that the McCarthy General Cognitive Index provides "an accurate estimate of the at-risk child's typical classroom

performance" (p. 5). These researchers also concluded that, although the K-ABC Mental Processing Composite may provide an estimate of the "capacity for academic growth" (p. 5) of at-risk preschoolers, it may not be accurate in assessing important facets of these children's cognitive functioning. Another diagnostic test which assesses the cognitive development of preschool children is the Wechsler Preschool and Primary Scale of Intelligence (WPPSI). The WPPSI is designed for children who are four to six and a half years of age and provides a performance IQ, a verbal IQ, and a measure of general intelligence (Peterson, 1987). Badian (1984) conducted a study to determine the usefulness of the WPPSI in identifying preschool children who are at-risk to develop learning disabilities. In this study, the WPPSI was given to a group of seventy-two five year old preschoolers who seemed to be at high risk to develop learning disabilities. In a follow-up procedure, these children were studied three years later. At that time, thirty-two of the children were indeed poor readers while forty were good readers. It had been determined that both groups of children had average intelligence at the time the WPPSI was administered and both groups received similar special instruction in the interim. Based on this research study, Badian (1984) found that, although there was no difference in the scores of the good and the poor readers on the Full Scale IQ of the WPPSI, children who were poor readers had actually achieved significantly higher scores on three WPPSI Verbal subtests, namely Verbal IQ, Conceptual Knowledge, and Acquired Knowledge. Badian (1984) concluded that children with a high risk for learning disability may demonstrate "different patterns of strengths and weaknesses at age 5" (p. 587).

In addition to diagnostic tests of cognitive development, there are also diagnostic tests to evaluate speech and language skills and social and emotional attributes. Speech and language tests for preschoolers study "receptive and expressive language, rhythm, syntax (grammar), vocabulary, and

articulation" (Lerner, Mardell-Czudnowski, & Goldenberg, 1987, p. 100). Tests of social and emotional characteristics, such as the Vineland Adaptive Behavior Scales, evaluate "self-concept, motivation, adaptive behavior or coping style, social skills, level of maturity, degree of independence, aspiration level, and nervous tendencies" (Lerner, Mardell-Czudnowski, & Goldenberg, 1987, p. 100).

A final aspect of the diagnostic phase involves making specific recommendations for early intervention services, including the designation of which professionals will be in charge of each aspect of the course of remediation and treatment. According to Lerner, Mardell-Czudnowski, and Goldenberg (1987), once diagnostic evaluation has been completed using both formal and informal testing procedures, the data and information must be synthesized, brought together, and interpreted, so that "meaningful patterns" (p. 100) of needs, abilities and disabilities, and strengths and weaknesses may evolve. Based on these interpretations, evaluations, and conclusions, specific plans and recommendations for early intervention services are put forth. However, because there may be errors in the original diagnosis and because young children are maturing, growing, and developing so rapidly, Lerner, Mardell-Czudnowski, and Goldenberg (1987) suggest that diagnostic results and procedures be frequently re-evaluated. This process of determining and re-evaluating the child's specific skill and learning needs, abilities and disabilities, and strengths and weaknesses for the purpose of designing a suitable program of intervention is educational assessment (Peterson, 1987).

Once educational assessment has been carried out and a suitable program of intervention has been implemented, the performance of the child is carefully monitored. According to Peterson (1987), during performance monitoring, the child's progress is observed and noted over the course of

several weeks. Peterson (1987) distinguishes between educational assessment, which determines what a child's educational needs are, and performance monitoring, which evaluates a child's progress once intervention has begun. Performance monitoring checks on the progress that the child is making as a result of intervention services and the efficacy of the instructional methods being employed to help him develop needed skills and abilities (Peterson, 1987). Based on an evaluation of the child's performance and a re-evaluation of his needs, teaching methods are modified and adapted (Peterson, 1987). Peterson (1987) enumerates several effective measures which can be employed to collect information for monitoring a child's progress. These devices and methods include developmental checklists, behavior rating scales, collecting samples of a child's work, anecodotal recording and diaries, and collection of on-going performance data. In collecting ongoing performance data, several aspects of a child's behavior are studied. Behavior is evaluated in terms of frequency (the number of occurrences), percentage (the proportion of correct to incorrect responses), rate (how fast a child performs a given skill), and duration (how long the behavior lasts) (Peterson, 1987). In addition, behavior is evaluated in terms of latency (the time that passes before a child responds), interval recording (whether or not certain behaviors happen within designated time periods), and time sampling (observation at specified time periods to note the presence or absence of certain behaviors) (Peterson, 1987).

The final phase of a total assessment procedure involves program evaluation. According to Peterson (1987), the objective of program evaluation is "to measure the quality and impact of an intervention program on children and their families" (p. 310). The program is evaluated in three areas. Peterson (1987) explains that these areas include "(a) the efficiency and quality of program operations, including staff performance, (b) overall child outcomes, and (c) consumer satisfaction" (p. 310). There are several

important reasons for program evaluation, including the gathering of information so that program designers may judge the usefulness of their instructional strategies and the justification of requests for funding of the program based on evidence that children and their families are benefiting from the program (Peterson, 1987). Moreover, data and information derived from program evaluation provide the basis for modifying, adapting, and improving the curriculum, methodology, and materials of the program (Peterson, 1987).

Many different early intervention strategies have been developed and implemented for preschool children with learning disabilities. A great deal of research has been done to compare and evaluate the effectiveness of these programs. A nationwide survey by Esterly and Griffin (1987) confirms interest in and support for preschool programs for children with learning disabilities. Smith and Strain (1988) present several basic and essential features of an early intervention program. They assert that the sooner a preschooler with diagnosed learning disabilities receives intervention services, the more favorable the results of the program are likely to be. Moreover, Smith and Strain (1988) emphasize that parental involvement is essential to the success of an early intervention program. Similarly, Mercer (1987) agrees that "family involvement in early intervention appears crucial if children are to maintain long-term gains" (p. 262). Furthermore, Smith and Strain (1988) believe that, in order to be successful, an intervention program must be highly structured. They explain that research and reports indicate the importance of clearly stating program objectives and of frequently evaluating progress in relation to these objectives and the child's special needs. Moreover, Smith and Strain (1988) state that teaching methods and classroom activities designed to effect these objectives must be carefully identified. They advocate the use of "task analysis procedures" (p. 2) and modification of instruction based on frequent evaluation of progress. In

discussing other factors which relate to the success of an early intervention program, Smith and Strain (1988) consider the "intensity of the services" (p. 2) and individualization of instruction to suit the child's unique needs to be significant. They point out that instruction need not always be implemented in a one-to-one learning situation and that effective instruction can be planned for small groups of children with similar needs.

Lerner, Mardell-Czudnowski, and Goldenberg (1987) also put forth basic principles of an effective early intervention program. They encourage a balanced curriculum which teaches the "whole" child and which emphasizes the child's "general growth and development" (p. 144), including the social, emotional, cognitive, and language facets of development. In addition, they believe that the curriculum should consider the child's special needs, strengths and weaknesses, and the specific goals of the Individualized Education Plan which was developed for the child. Furthermore, these authors state that special attention should be given to the careful sequencing of concepts and skills into "teachable steps" (p. 145). They explain that each skill should be broken down into its basic components, or subskills, and that the teacher should require the child to demonstrate a good understanding of the more basic elements of a skill before she introduces the more advanced aspects. At each step in the teaching and learning process, curriculum content and methodology should be modified to suit the child's demonstrated needs. Moreover, Lerner, Mardell-Czudnowski, and Goldenberg (1987) advocate a variety of multi-sensory instructional approaches and a balance between active and quiet experiences and between structured activities and free play. Furthermore, according to Lerner, Mardell-Czudnowski, and Goldenberg (1987), the teacher should provide a great deal of encouragement and positive reinforcement for the child, even if total success has not been achieved.

They advocate a combination of verbal praise and tangible rewards. Finally, these authors emphasize the importance of parental involvement in the program and frequent communication with the child's family.

Cook, Tessier, and Armbruster (1987) present specific guidelines for teaching learning disabled preschool children. These authors advise teachers to use structure and consistency in classroom organization and "behavior management techniques" (p. 362). They urge teachers to present curriculum content in small manageable units of instruction using "a multisensory approach" (p. 362) and with a great deal of repetition and practice. In other words, teachers should analyze and break down developmental tasks into their basic components and subskills in order to increase the likelihood of success experiences. Moreover, according to Cook, Tessier, & Armbruster (1987), teachers should present useful and meaningful concepts using concrete manipulative materials, should provide a great deal of positive reinforcement, and should select those learning modalities which suit the child's strengths and the ways he learns best. Moreover, the teacher will need to exhibit patience since the child may require the presentation of new concepts many times and in a variety of ways, especially when he is expected to generalize and draw conclusions (Cook, Tessier, & Armbruster, 1987). Cook, Tessier, and Armbruster explain further that the teacher should continue to give very clear simple directions one step at a time until the child demonstrates that he is able to understand and easily execute more than one action. Finally, these authors encourage teachers to seek the services of specialists in the field of speech and language for advice and suggestions in planning the child's course of study and activities and stress the importance of communicating with parents about the exigency of providing many "multisensory experiences" (p. 362) and a great deal of positive reinforcement for small accomplishments.

Several curriculum models are used in early childhood programs for children with learning disabilities. These models include the enrichment curriculum, the direct skills instruction curriculum, and the cognitive development curriculum (Lerner, 1985). According to Lerner (1985), the enrichment curriculum upholds "a maturational view of child development" (p. 237). In this curriculum model, the "whole child" approach to teaching is applied to the physical, social, emotional, and cognitive aspects of a child's development (Lerner, 1985). Educators who use this curriculum approach aim to "enhance these natural growth processes with a learning environment that is enriching, encouraging, and nurturing" (Lerner, 1985, p. 238) and "capitalizes on occasions for incidental and informal learning" (Lerner, 1985, p. 238). The Head Start program is an example of an enrichment intervention model. The second type of curriculum model is direct skills instruction. Those early childhood educators who uphold this instructional approach identify certain academic skills and abilities which they want to develop and then carefully design and implement specific learning experiences to effect the acquisition of these skills and abilities (Lerner, 1985). Lerner (1985) adds that the educator determines the kinds of behaviors essential for the performance of an academic skill and then "teaches these behaviors directly to the child as early as possible" (p. 238). Similarly, Heilman, Blair, and Rupley (1986) discuss the academic preschool intervention program. These authors state that in this approach there is an emphasis on the "direct teaching of specific language and reading skills" (p. 549) involving the use of teaching methods in which specific stimuli are presented to the learner which are designed to bring about the desired responses. Heilman, Blair, and Rupley (1986) explain that there has been criticism of the academic preschool intervention program because of its "mechanistic, conditional response approach" (p. 53), but that studies have demonstrated the effectiveness of this program. The third model

for early intervention programs is the cognitive development curriculum in which the objective is to foster the development of a child's abilities in areas such as memory, problem-solving skills, concept formation, verbal ability, and comprehension (Lerner, 1985). The cognitive development approach differs from the direct skills instructional approach in that it does not seek to cultivate specific academic skills, but rather to foster the general development of a child's thought processes (Lerner, 1985). According to Lerner (1985), most early intervention programs for learning disabled preschoolers in existence use an eclectic approach and incorporate features of each of the three curriculum models discussed. Moreover, Lerner (1985) states that the curriculums of all early intervention programs include certain basic areas of skill development, including language and communication skills, motor skills, concept and cognitive development skills, and social and emotional skills.

The majority of early intervention programs currently in effect employ a "a developmentally based curriculum" (p. 537). In a developmentally based curriculum, "the typical gains made by nonhandicapped children in sensorimotor development, language, social skills, and academic readiness are used as a basis for sequencing instructional objectives and evaluating child progress" (Heward & Orlansky, 1988, p. 537). Heward and Orlansky (1988) explain that the objectives of a developmentally based early intervention program include remediation in order to compensate for delays in a child's maturation and instruction in "basic processes" (p. 537), such as perceptual skills, memory, sensorimotor skills, socialization, and verbal abilities. In addition, a developmentally based curriculum aims to teach "developmental tasks" (p. 537) in much the same order as they are learned by children who are not learning disabled (Heward & Orlansky, 1988). Finally, according to Heward and Orlansky

(1988), a developmentally based curriculum emphasizes the teaching of "psychological constructs" (p. 537), such as a healthy self-image, motivation, creativity, and cognitive abilities, and the attainment of "preacademic skills" (p. 537) in order to foster readiness for the transition to the primary grades.

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