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AAAS

See AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

AAMD CLASSIFICATION SYSTEMS

The American Association on Mental Deficiency (AAMD) was founded in 1876 to support and promote the general welfare of people who are mentally retarded through professional programs, dissemination of research and program advances, and development of standards for services and facilities. The organization is comprised of approximately 10,000 professionals from many different disciplines who are concerned with the prevention and treatment of mental retardation. The association publishes two research journals, *Mental Retardation* and *American Journal of Mental Deficiency.* A national conference, along with many regional and state conferences, is held each year to give professionals the opportunity to share significant information regarding the education and welfare of children and adults with mental retardation.

The first diagnostic and classification system was published in 1921. It was reviewed and revised in 1933, 1941, 1957, 1959, 1973, 1977, and 1983. In each case, the manual was revised based on new developments in philosophy and knowledge of the field. To make the revisions and clarify important issues, input is culled from presentations at national and regional meetings of the AAMD, national and local hearings, and discussions with representatives of many professional, social, and political action groups. All revisions are made by the AAMD's Terminology and Classification Committee after a careful examination of the present classification system and the new data. Major revisions over the years have centered around the presentation of a dual classification system, medical and behavioral; clarification of the definitions of adaptive and measured intelligence; the addition of an extensive glossary; an illustration of levels of adaptive behavior; and procedures for diagnosing mental retardation in the behavioral system. With this last example, it is important that clinicians understand, in diagnosing mental retardation, the concept of standard error of measurement and its use in making a clinical determination of retardation and level of functioning.

The 1983 AAMD classification system developed by the AAMD's Terminology and Classification Committee has been written to reflect current thinking in the field. This latest edition has three distinct purposes. First, the 1983 edition was an attempt to provide an acceptable system to be used worldwide. It was developed in coordination with the International Classification of Diseases-9 (ICD-9) of the World Health Organization, the American Psychiatric Association's *Diagnostic and Statistical Manual-III* (DSM-III), and the American Association on Mental Deficiency's Classification in Mental Retardation.

The second purpose was to improve opportunities to gather and disseminate information regarding diagnosis, treatment, and research activities. The third purpose of this classification system was to provide opportunities for the identification of causes of mental retardation with implications for prevention.

The definition of mental retardation accepted by most authorities is the one used by the American Association on Mental Deficiency. The definition was presented first by Heber in 1961 and later revised by Grossman in 1973 to read: "Mental retardation refers to significantly subaverage general intellectual functioning resulting in or associated with concurrent impairments in adaptive behavior and manifested during the developmental period." Based on the definition, to be classified mentally retarded, the person must be below average in both measured intelligence and adaptive behavior.

The AAMD classification of the retarded has been useful to professionals as well because it is based on the severity of retardation. The terms used by the AAMD are mild, moderate, severe, and profound.

The AAMD causal classification scheme centers around nine general groupings for mental retardation. These groups include infections and intoxication, trauma or physical agent, metabolism or nutrition, gross brain disease, unknown prenatal influence, chromosomal anomalies, other conditions originating in the perinatal period following psychiatric disorder, and environmental influences.

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AAMD ADAPTIVE BEHAVIOR SCALES
MENTAL RETARDATION

AAMR ADAPTIVE BEHAVIOR SCALES–RESIDENTIAL AND COMMUNITY: SECOND EDITION (ABS–RC:2)

The *AAMR Adaptive Behavior Scales–Residential and Community: Second Edition* (ABS–RC:2) (Nihira, Leland, & Lambert, 1993) is the revision of the 1969 and 1974 *AAMD Adaptive Behavior Scales.* The latest version of the adaptive behavior scales is the product of a comprehensive review of the earlier versions of the rating scales relating to persons with mental retardation in the United States and other countries. The items of the ABS–RC:2 have undergone numerous modifications since the 1969 edition as a result of intensive item analyses over time, with different group results varying with respect to adaptive behavior levels. The scale items that survived this process were selected on the bases of their inter-rater reliability and their effectiveness in discriminating (a) among institutionalized persons with mental retardation and those in community settings who previously had been classified at different adaptive behavior levels according to the AAMD's Classification in Mental Retardation (Grossman, 1983) and (b) among adaptive behavior levels in public school populations. This scale is appropriate for individuals from ages 18 through 80.

Domain raw scores are converted to standard scores (M = 10, SD = 3) and percentiles. Factor raw scores are used to generate quotients (M = 100, SD = 15) and percentiles. The scale's normative sample consists of more than 4,000 persons from 43 states with developmental disabilities residing in the community or in residential settings. The test has been extensively examined regarding reliability and validity, and the evidence supporting the scale's technical adequacy is provided in the manual. Internal consistency reliabilities and stability for all scores exceed .8.

This scale was reviewed in *The Thirteenth Mental Measurements Yearbook* (Impara & Plake, 1998) by Carey (1998) and Harrison (1998). Carey stated that the scale is technically adequate for this type of assessment; Harrison reported that the ABS–RC:2 has many features that enhance the assessment of adults with developmental disabilities.

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AAMR ADAPTIVE BEHAVIOR SCALES–SCHOOL: SECOND EDITION (ABS–S:2)

The *AAMR Adaptive Behavior Scales–School: Second Edition* (ABS–S:2) (Lambert, Nihira, & Leland, 1993) is used for assessing the current adaptive functioning of children being evaluated for evidence of mental retardation, for evaluating adaptive behavior characteristics of children with autism, and for differentiating children with behavior disorders who require special education assistance. The scale is appropriate for children ages 3 years to 18 years 11 months.

This revision is divided into two parts. Part One focuses on personal independence; it is designed to evaluate coping skills considered important to independence and responsibility in daily living. The skills within Part One are grouped into nine behavior domains: Independent Functioning, Physical Development, Economic Activity, Language Development, Numbers and Time, Prevocational/Vocational Activity, Self-Direction, Responsibility, and Socialization. Part Two measures socially maladaptive behaviors. The behaviors assessed were identified through a

survey of the social expectations placed upon persons with mental retardation in public and special schools, public and private residential institutions, and a wide range of local rehabilitative and recreational services. The descriptions of those expectations were obtained from an analysis of a large number of critical incident reports provided by personnel in residential, community, and school settings. The behaviors in Part Two are assigned to seven domains, which are measures of those adaptive behaviors that relate to the manifestation of personality and behavior disorders: Social Behavior, Conformity, Trustworthiness, Stereotyped and Hyperactive Behavior, Self-Abusive Behavior, Social Engagement, and Disturbing Interpersonal Behavior. The domains in Part One and Part Two are combined into five factors: Personal Self-Sufficiency, Community Self-Sufficiency, Personal-Social Responsibility, Social Adjustment, and Personal Adjustment.

Domain raw scores are converted to standard scores (M = 10, SD = 3) and percentiles. Factor raw scores are used to generate quotients (M = 100, SD = 15) and percentiles. The scale's normative sample consists of more than 2,000 persons from 31 states with developmental disabilities attending public schools and more than 1,000 students who have no disabilities. The test has been examined extensively regarding reliability and validity. Internal consistency reliabilities and stability for all scores exceed .8.

In *The Thirteenth Mental Measurements Yearbook,* Stinnett (1998) reviewed the instrument and concluded that the scale's psychometric qualities are good; Harrington (1998) stated that the ABS–S:2 makes a contribution to the area of adaptive behavior assessment. Both reviewers felt the test was improved from previous editions.

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AAMD CLASSIFICATION SYSTEMS
ADAPTIVE BEHAVIOR

ABAB DESIGN

The ABAB design is one of the oldest and most widely used single-case designs developed in behavioral psychology. It was initially used in laboratory studies with animals (Sidman, 1960); however, as the applied behavior analysis movement got under way (Baer, Wolf, & Risley, 1968), it became a prototype for applied behavioral investigations conducted in the natural environment. Although the number of single-case designs has increased markedly since the early days of applied behavior analysis (e.g., Kazdin, 1980; Kratochwill, 1978), the ABAB design still occupies a prominent place in applied behavioral research. Moreover, because of the high degree of experimental control that it provides, it has been widely used with individuals manifesting various types of handicaps (Bergan, 1977). For example, the ABAB design has been particularly useful in studying environmental variables affecting language acquisition in retarded children (Bergan, 1977).

The ABAB design is intended to reveal a functional relationship between an experimental treatment and a behavior targeted for change. For example, it might be used to establish a functional relationship between the use of the plural form of a noun and a treatment such as praise following the occurrence of a plural noun. The demonstration of a functional relationship between praise and plural nouns would require an association between the frequency of plural-noun production and the occurrence of verbal praise. Given that a functional relationship were established, verbal praise could be assumed to function as a positive reinforcer increasing the probability of occurrence of plural nouns by the subject or subjects participating in the experiment.

The ABAB technique has often been referred to as a single-case design (e.g., Kratochwill, 1978). However, it may be applied with more than one subject. Thus, the term single case is a bit misleading. Glass, Wilson, and Gottman (1975) among others called attention to the fact that the ABAB design is a time-series design in that it reflects an effort to determine changes in behavior occurring across a series of points in time. Recognition of the ABAB design as a time-series design opened the way for linking the design to the statistical procedures associated with time-series analysis (see, for example, Glass, Wilson, & Gottman, 1975). Application of time-series analysis procedures affords a statistical test for hypotheses that may be investigated with the ABAB design. However, despite this advantage, time-series techniques have not been widely used in applied investigations involving the ABAB design. There are a variety of reasons for this. Among them is the fact that the graphing techniques suggested by behavioral psychologists (e.g., Parsonson & Baer, 1978) as an alternative to statistical analysis are easier to implement and to interpret than time-series statistics. Nonetheless, time-

series procedures constitute a potentially powerful tool for applied behavioral research and their use can be expected to increase in the future.

As the letters in its name suggest, the ABAB design includes four phases. The initial A phase is a baseline period that records behavior across a series of points in time in the absence of intervention. The length of the baseline period varies depending on the variability of the behavior being recorded. If the behavior is highly variable, a longer baseline is required than if the behavior is highly stable. More data are required to get a sense of the fluctuations that may be expected without intervention for a highly variable behavior than for a highly stable behavior. The second phase, denoted by the letter B, is a treatment phase. During this phase the treatment is introduced. The treatment may be implemented in accordance with a variety of different schedules. For example, treatment may be implemented with every occurrence of the target behavior. For instance, praise might be given following every occurrence of a plural noun. On the other hand, treatment might be implemented in accordance with one of the many available partial reinforcement schedules. Thus, praise might be given after every third occurrence of a plural noun. The third phase, also denoted by the letter A, constitutes a return to baseline. The return to baseline may be brought about by various means. One is to withdraw the treatment. For instance, praise might not be given following plural-noun utterances during the return-to-baseline phase. Another procedure is to introduce another treatment intended to bring the target behavior back to baseline level. For example, reinforcement of a behavior that is incompatible with the target behavior may be introduced during the return-to-baseline phase. The final phase in the ABAB design, denoted by the second occurrence of the letter B, is a second implementation of the treatment. The second implementation is intended to demonstrate treatment control over the target behavior by minimizing the possibility that environmental influences occurring coincidentally with the treatment could be responsible for the observed behavior change.

The major advantage of the ABAB design lies in the fact that it minimizes the likelihood of coincidental environmental influences on the target behavior. There are two potential disadvantages to the approach (Kazdin, 1973). One is that some behaviors are not easily reversed. For example, a skill that has been well-learned may not be easy to unlearn. The second disadvantage is that there are cases in which it may not be practical to carry out a return-to-baseline even if it is possible to do so. For instance, a teacher may not want to return a child's performance of an academic skill to baseline even for a short period of time. Despite these shortcomings, the ABAB design has been shown to be useful in establishing a functional relationship between a treatment and behavior in countless applications. It is truly a mainstay in applied behavioral research and will continue to be used widely.

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RESEARCH IN SPECIAL EDUCATION

ABECEDARIAN PROJECT

For the past quarter century, American education has been especially concerned with the academic performance of children from disadvantaged families. This special concern stems from the well-established fact that this group of children typically performs well below average on standardized tests of academic achievement. They also are overrepresented in special education classes. The root causes of this poor performance are not well understood but their consequences are costly, in terms both of economics and psychological dysfunction. Such consequences have frequently been called developmental retardation.

To ameliorate these costly consequences, a wide variety of special education programs have been investigated under the rubric of compensatory education. Most of these programs have concentrated on the so-called preschool and/or early elementary school years. The primary hypothesis has been that educational experiences that augment and/or supplement the educational experiences of the home will better prepare disadvantaged children for

academic accomplishment in the public schools. The Abecedarian project has been such an experiment. Abecedarian means one learning the rudiments of something (the alphabet).

The specific aims of the Abecedarian project have been:

To determine whether developmental retardation and school failure can be prevented in children from socially and economically high-risk families by means of educational day care.

To determine whether a follow-through program for early elementary school is necessary to maintain preschool intellectual gains in high-risk children.

To determine whether school-age intervention alone can significantly improve academic and/or intellectual performance in children who did not have preschool intervention.

To identify a sample of families at high risk for having a developmentally retarded child, a high-risk screening index (Ramey & Smith, 1977) was developed. This index included social, environmental, and psychological factors judged on the basis of the developmental literature to be associated with poor intellectual and scholastic progress. Each factor was assigned a weight based on professional consensus as to its likely importance in determining intellectual and scholastic outcomes. Thirteen factors were included; among them were paternal and maternal education; family income; father's absence; retardation among other family members; family disorganization; maladaptive or antisocial behavior within the family; and unstable job history.

Based on the high-risk index, families were judged to be at elevated risk and eligible for inclusion in the study. Characteristics of the 109 families (111 children) eventually enrolled in the study are given in the following Table. As may be seen in the Table, the families in the sample were predominantly black (98%), were headed by a single female (72%) who was young (20 years) and who had less than a high school education (10.23 years).

It is a special feature of the Abecedarian project that participants were assigned to the preschool experimental educational treatment or control condition at random. Fifty-seven children were randomly assigned to the preschool experimental group, 54 were preschool controls. Ninety-six children remained in the study to be randomly assigned to a school-age treatment group.

At public school entry, Abecedarian children within the two preschool groups were rank-ordered according to 48-month Stanford-Binet IQ's; each consecutive pair was randomly assigned to the school-age experimental or control groups. All families accepted their school-age assignment, but three children assigned to the preschool control-school-age experimental condition (CE) moved away and did not participate in the school-age phase.

Entry Level Demographic Data for Experimental and Control Families

Experimental Variable	Group		
	Control (N = 55)	Experimental (N = 54)	Total (N = 109)
1. Mean high risk index	20.08 (5.72)	21.41 (5.88)	20.75 (5.81)
2. Mean maternal age (years)	19.62 (3.87)	20.28 (5.77)	19.94 (4.89)
3. Mean maternal education (years)	10.46 (1.75)	10.00 (1.89)	10.23 (1.83)
4. Mean maternal IQ (WAIS full scale)	85.49 (12.34)	84.18 (10.78)	84.84 (11.61)
5. Percent female-headed family	78%	65%	72%
6. Percent black families	96%	100%	98%

Figure 1 gives the overall design of the Abecedarian study, including the preschool and school-age treatment programs and the number of children randomly assigned to each condition. The Abecedarian study can be conceptualized as a 2×2 factorial design. The factors are preschool educational treatment versus no preschool treatment and school-age educational treatment versus no school-age treatment. Thus, there were two preschool groups, the experimental (E) and control (C) groups, and four school-age conditions: preschool experimental school-age experimental (EE); preschool experimental school-age control (EC); preschool control school-age experimental (CE); and preschool control school-age control (CC). These groups varied in the intensity (defined as number of years) of intervention: 8 years for the EE group; 5 years for the EC group; 3 years for the CE group; none for the CC group.

The preschool program may be characterized as a comprehensive, whole child program. The aim was to create a rich, stimulating, yet orderly environment in which the children could grow and learn. The curriculum was designed to enhance cognitive and linguistic development and to provide the children with many opportunities for successful mastery experiences. The curriculum materials

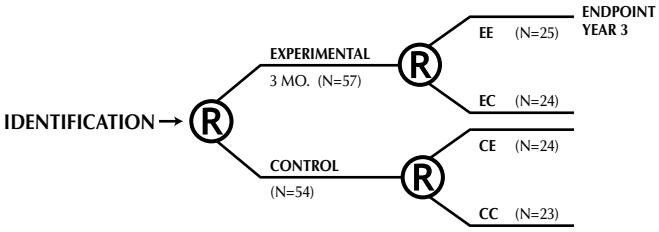

Figure 1. Research design of Carolina Abecedarian Project.

included those for infants and preschoolers developed by Sparling and Lewis (1979). In addition, there was an enriched language environment that was responsive to the children's needs and interests (Ramey, et al., 1982).

In many ways the program was not unlike other high-quality infant daycare and preschool programs. Child/caregiver ratios ranged from 1:3 for infants to 1:6 for four year olds. Teachers typically had early childhood education experience and participated in an extensive in-service education program. The children's experiences became increasingly more structured over the preschool years, eventually coming to include prephonics programs and science and math experiences in addition to an emphasis on language and linguistic development. The presumption was that when the child left the preschool, he or she would be able to enter kindergarten without experiencing an abrupt transition.

Children attended the preschool program beginning between 6 weeks and 3 months of age. Children attended the daycare program 5 days per week, 50 weeks per year. The center was open from 7:30 A.M. to 5:15 P.M. Free transportation to and from the center was provided for families who needed it. Almost all of the children were transported by center staff. This portion of the program has been described in more detail by Ramey, MacPhee, and Yeates (1982).

The school-age intervention program began in kindergarten. It consisted of providing a home/school resource teacher to each child and family in the two Abecedarian school-age experimental groups (EE and CE) shown in Figure 1. These teachers filled many roles: they were curriculum developers who prepared an individualized set of home activities to supplement the school's basic curriculum in reading and math; they taught parents how to use these activities with their children; they tutored children directly; they met regularly with classroom teachers to ensure that home activities matched the skills being taught in the classroom; they served as consultants for the classroom teacher when problems arose; and they advocated for the child and family within the school and community. Thus, they facilitated communication between teacher and parent, providing an important support for disadvantaged parents who frequently lacked the skills and confidence needed to advocate for their children within the school system, an institution seen by many as both monolithic and difficult to comprehend. Each home/school resource teacher had a caseload of approximately 12 families per year. The home/school resource teachers were experienced educators familiar with the local school system.

The supplemental curriculum delivered as home activities concentrated on two basic subjects: reading and math. These subjects were emphasized because it seemed likely that high-risk children might need extra reinforcement of these basic concepts to master and to remember them. The program sought to provide such reinforcement, presuming that scholastic performance would best be enhanced by direct teaching and practice of needed basic skills. The curriculum packets contained teaching activities that parents and children could share and enjoy. In addition, work sheets to give extra drill and practice were often included.

Home/school teachers made approximately 17 school visits per year for each child. During these visits they met with the classroom teacher to identify the skills currently being taught and to learn which areas needed extra work or review. A variety of specialists within the system were contacted, including special education resource personnel, reading teachers, and school counselors. Efforts were made to coordinate the child's program and to make sure the best available resources were being used.

The home component of the program was equally intense. Home visits were made about 15 times each school year. A typical visit lasted approximately 30 to 45 minutes, with the mother being the most likely participant. Teachers reviewed the classroom situation and showed the parent the materials in the activity packet, explaining the purpose and directions for each activity. The child was present and participated in about one-quarter of the home visits; this was often helpful because it allowed the teacher to demonstrate how an activity was to be carried out. Parents reported spending an average of 15 minutes a day working with their children on home activities. Parent response to the activities was very positive; very few reported that they failed to use the activities although direct verification was not possible.

Many forces other than intellectual ability and encouragement to learn can have an impact on a child's scholastic performance: emotional upset within the home, parental unemployment, the death of a family member, or instability of living arrangements, to name a few. Home/school resource teachers sometimes helped families deal with personal crises. Extra home visits occurred if and when the home/school teacher attempted to help the family solve such real-life problems. Home/school teachers also helped to provide the children with a variety of summer experiences, including summer activity packets, summer camp, trips to the public library, and, for some children, a six-week tutorial in reading.

The results to be included here cover the intellectual and academic outcomes for Abecedarian children through the first 2 years in public school. Many other results are available, but these have been chosen because they represent the primary outcome hypotheses under investigation.

Figure 2 gives the IQ results for Abecedarian children from infancy through age 6½ years (78 months). In Figure 2, the mean IQs are graphed by preschool group up to the age of 60 months and by the four school-age groups thereafter. The scores are Bayley Mental Developmental Indices at 3, 6, 9, 12, and 18 months, Binet IQs at 24, 36, and 48 months, and full-scale IQs on the Wechsler Preschool and Primary Scale of Intelligence at 60 months and the Wech-

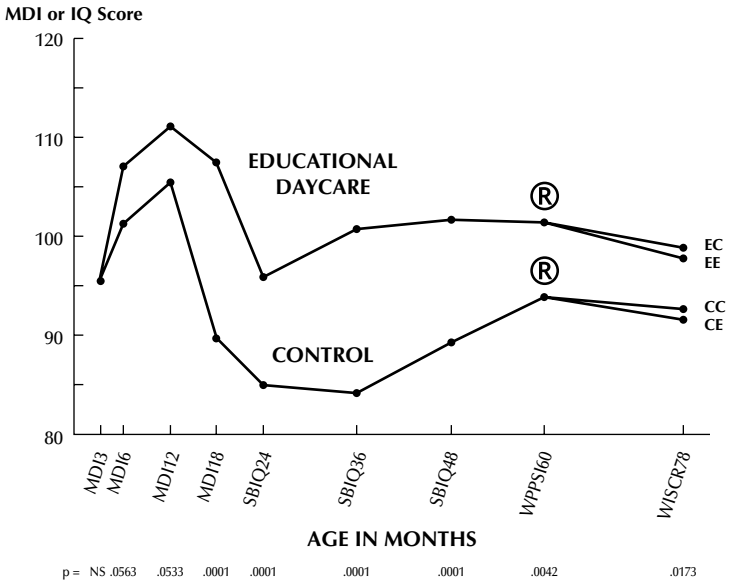

Figure 2. Mean mental development (MDI's) and IQ scores for randomly assigned high-risk children from 3 to 78 months of age in the Abecedarian Project.

sler Intelligence Scale for Children-Revised at 78 months.

The preschool intervention had a positive effect on intellectual development of the high-risk children in the experimental group, as may be seen in Figure 2. Throughout the preschool period, at every testing occasion after 12 months, significant mean differences on standardized test scores were found between the two Abecedarian preschool groups (Ramey & Campbell, 1984). The primary form of this effect was to reduce the drop in mental test scores evidenced by the control group. It is now apparent that this preschool effect persists up through 78 months (Ramey & Campbell, in press). There is no evidence, however, that the school-age intervention significantly impacted children's intellectual performance during the first year and half of public school. No significant effect of the school-age program was found at 78 months. Thus regardless of school-age intervention status, the two groups who had preschool intervention maintained their relative superiority in tested intelligence over children who were preschool controls.

Figure 3 from Ramey and Campbell (in press) contains the kindergarten and first grade Peabody Individual

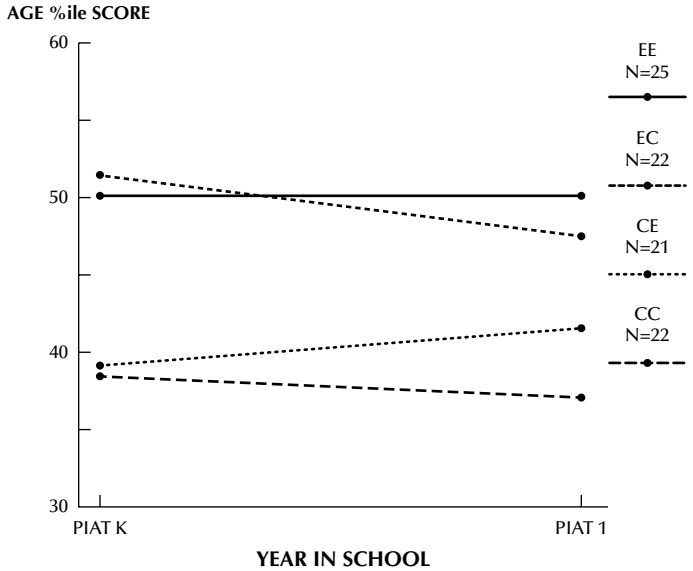

Figure 3. Mean age-referenced percentile scores on the Peabody Individual Achievement Test by year in school for the groups in the Abecedarian Project.

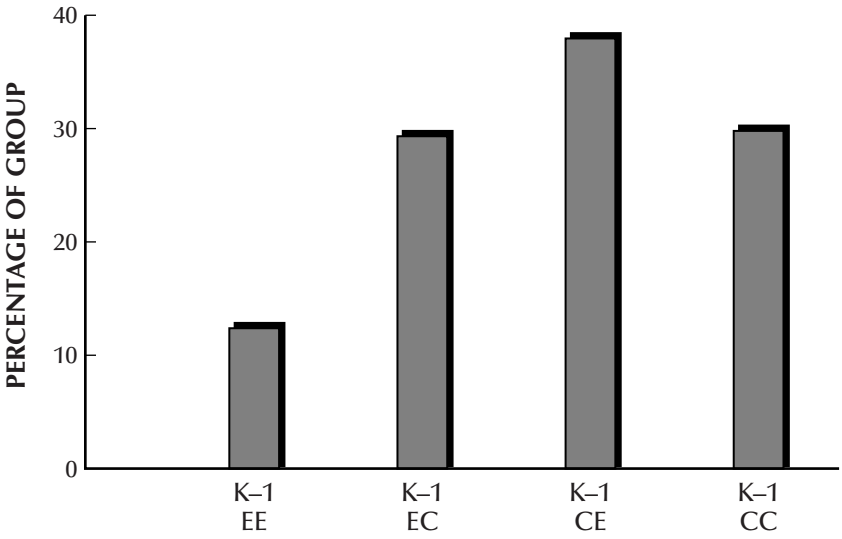

Figure 4. Percentage of high-risk children retained in grades as a function of experimental educational conditions.

Achievement Test results in terms of age-referenced percentile scores. Examination of this figure reveals that the preschool groups are near national average whereas the preschool control groups are below national average. Thus during the first 2 years in public school, positive preschool treatment effects on academic achievement were observed.

Figure 4 presents the percentage of children retained in either kindergarten or first grade for each of the four experimental conditions. One-eighth, or 12%, of the children in the EE group were retained in grade during the first 2 years of public school, compared with approximately one-third in the other three groups. Although it is very early in these children's public school careers, it is remarkable that the academic failure rate is so high in the groups that did not receive early and continuing supplemental education. The one-third grade retention rate is clearly costly and apparently reducible through intensive early education. Such a high retention rate also buttresses the initial judgment that these children were indeed at elevated risk for school failure.

Together, the data on IQs, academic achievement, and retention in grade suggest that preschool intervention exerts a positive influence on intelligence and school success in the first 2 years of public school. Preschool intervention supplemented by continued help in the early grades via a home/school resource teacher program shows promise for being the most effective intervention. This intensity of effort apparently enabled the high-risk children in this sample to maintain a level of achievement near the national average. In addition, the likelihood of being retained in grade was less by a factor of approximately three for children who had early and continued educational intervention.

We are currently in the process of analyzing data for the final year of the school-age intervention. When those analyses are completed and we have systematically examined the family, school, and child factors associated with academic performance, we hope to have a better understanding of the forces that are associated with the academic performance of children from disadvantaged families and the ability of educational intervention to ameliorate those forces.

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HIGH RISK
MENTAL RETARDATION

ABILITY TRAINING

Many educators believe that most academic and social learning is based on factors such as student aptitudes or abilities, instructional environment, and teaching methodology. While these three variables do not form a complete structure capable of containing all those factors contributing to learning, they certainly account for many of the variables educators would agree are important to success in school.

Learner aptitudes or abilities are those personological variables that frequently are called intelligence(s), traits, gifts, and characteristics. Frequently, educators will talk about a child's potential to learn, using the term ability as if it were a predetermined factor waiting to be drawn on at some point. The logic, then, is that if learning is a result of the presence and development of certain mental abilities, school failure (both academic and social) may be the result of disabilities, with disability implying an academic or social handicap.

If regular (elementary and secondary) educators teach to the abilities of students to learn, then special educators may direct more of their instruction to the disabilities that inhibit learning, hence the term and concept of ability training. How valid is this construct of ability training? A short response to that question is impossible. Any field involving relatively newly defined services to persons, especially children, in particular handicapped children, will generate professional controversy. Any field struggling with the pressures associated with economic, political, social, legislative, litigative, and basic human rights and values will face diversity. Any field that requires its many disciplines to unite in purpose will experience communicative stress. But, few professionals will purposely question their field's major methodology to the degree special and remedial educators have, for the period of time they have done so, and in the face of such a degree of controversy.

Some special educators believe avidly in ability training of all types; some reject it totally; but almost all, no matter what they believe, practice ability training. The truth in that observation is vividly displayed when we recognize that the value of ability training to handicapped persons has been questioned repeatedly for over the last 100 years. What then is in ability training that has caused the field of special education to tenaciously and steadfastly maintain its cause? Ability training is routed in the historic search for the structure and function of the mind. Educators, in particular special educators, have sought to diagnose specific abilities and provide remediation to those abilities, or disabilities as the case may be.

Mental ability (aptitude), concerns those components that are assumed to constitute the mind, and therefore explain learning. Mental-ability structures, in more scientific parlance, may be referred to as information-processing behaviors. Mental processes or information processes are those theoretical or conceptual acts (processes) by which information is transmitted from the peripheral (to the central nervous system) sensory organs (i.e., eyes, ears, fingers [tactile], muscles, [kinesthetic]) perceived, labeled, stored, provided mediated meaning, conceptually associated, and expressed as language or motoric responses. It is not unusual for practitioners to reference most psychological functions synonymously with mental abilities. Hence, the very definition of learning disabilities refers to "basic psychological processes."

The history of man, at least those aspects related to the structures of the mind, how it works, and therefore how these processes can be measured, begins with the early Greek philosophers. Pythagoras placed the "mind" in the brain in the sixth century BC. Most of the processes described then were hypotheoretical, related to this assumed function. Therefore, the names given these processes sometimes sound as if they had been isolated neurologically or psychoneurologically. The truth is that the majority of the commonly referenced mental processes, that is, perception and language, are not simple, easily explained constructs. They are complex concepts that may contain hundreds of component subparts. The major issues relating to ability training have been the long-standing arguments regarding the mind, its disabilities, and the habilitation or rehabilitation needed. A case in point is that while simple tests are designed to ascertain visual perceptual-motor development, visual perception is not a simple discriminate function. In a general sense, perception requires the discrimination of distinctive features, wherein a specific symbolic meaning can be assigned each distinct stimuli. Logically then, once perceptual information has been discriminated, it may be stored for some short-term reference, or it may be assigned a permanent symbolism, then converted to a language concept. Logically then, too, there may be both visual and auditory perception. These two processes may need to be coordinated when auditory and visual information is presented in an integrated manner. Perception, however, is not logically complex in contrast to the explanations of the structure and function of language.

A mental ability may also be referred to as a faculty. Mann (1979) credits Aristotle for establishing the basis for modern faculty psychology. The Romans further refined and added descriptors such as intellect, attention, and language. St. Thomas Aquinas, during the Middle Ages, although poorly credited, began to amplify and extend faculty psychology by dividing it into two parts: the *intellectus,* which carries out abstractions and functions of the possible intellect; and the *ratio,* which is directed toward understanding, judgment, and reasoning. The intellect is active and creative, the ratio, passive and receptive, i.e., sensory stimuli must be perceptually assigned symbolic meaning/value before they have intellectual meaning.

Faculty psychology, the theoretical basis for mental process, was soundly criticized by many of the seventeenth-, eighteenth-, and nineteenth-century scholars. Hobbes (1558–1679) displaced it with his theories of automotion in the brain set off by sensory stimulation. Locke (1632–1704) was a sensationalist, and an arch antifacilist. Hume (1715–1776), also a sensationalist in the British tradition, condemned faculties, basing mental response solely in sensory stimulation. By the mid-nineteenth century, the psychologist and educator Herbart attempted to destroy for all time the residual of faculty psychology.

One of the predominate figures in mental measurement, Spearman, writing in 1927, notes that faculty psychology seems to persist, no matter what the criticism.

> One curious feature about these formal faculties has yet to be mentioned. The doctrine loses every battle—so to speak—but always wins the war. It will bend to the slightest breath of criticism; but not the most violent storm can break it. The attacks made long ago by the Herbartians appeared to be irresistible; no serious defense was even attempted. Yet the sole permanent effect of these attacks was only to banish the word "faculty," leaving the doctrine represented by this word to escape scot free. (pp. 38–39)

However, other early forces in the field such as Thorndike continued to be critical. As a quote from Mann (1979) notes,

> The science of education should at once rid itself of its conception of the mind as a sort of machine, different parts of which sense, perceive, discriminate, imagine, remember, conceive, associate, reason about, desire, choose, form habits, attend to. . . . There is no power of sense discrimination to be delicate or coarse. . . . There are only the connections between separate sense stimuli and our separate senses and human judgments thereof. . . . There is no memory to hold in a uniformly tight and loose grip the experiences of the past. There are only the particular connections between particular mental events and others. (Klein, 1970, p. 662)

Though an out-and-out antifaculist, Thorndike, interestingly enough, could not shake the ingrained habit of his times of speaking about "faculties." Thus, he described his bonds as faculties in the 1903 edition of *Education Psychology* (p. 30) "the mind is a host of highly particularized and independent faculties" (Spearman, 1927, p. 36).

Yet, it is faculty psychology that provided the definition for twentieth-century mental measurement. On the basis of his inquiries, Galton described what, in essence, is a superfaculty, which he called "general ability," assigning to this faculty the name intelligence (a term popularized by Spencer). Galton distinguished this superfaculty from special aptitudes. He was more interested in the first, since he believed that general ability inevitably set a limit to accomplishment of any kind. He complained that most writers emphasized specific aptitudes or skill, that they

> lay too much stress upon apparent specialties, thinking that because a man is devoted to some particular pursuit, he could not have succeeded in anything else; they might as well say that, because a youth has fallen in love with a brunette, he could not possibly have fallen in love with a blonde. He may or may not have had any more natural liking for the former type of beauty than for the latter; but it is as probable as not that the affair was mainly or wholly due to a general amorousness. It is just the same with intellectual pursuits. (Burt, 1955, p. 85)

Galton most certainly did not deny the existence of special capacities or their potential importance. He cited instances in which memory, musical ability, and artistic and literary talent ran within several members of the same family. Home environment or family tradition could not explain all such cases, for example, "prodigies of memory." However, his studies in the main had convinced him "in how small a degree intellectual eminence can be considered as due to purely special powers" (Burt, 1955, p. 85).

As to the measurement of both general and special abilities, Galton suggested that individual differences in both are distributed in accordance with the normal curve, much as other human characteristics such as size or height are distributed. He printed a tabular classification of frequencies which he held "may apply to special just as truly as to general ability" (Burt, 1955, p. 85). Thus we see the beginnings of psychometric assessment of both general ability and specific abilities.

About 1880, the German psychiatrist Kraeplin, one of Wundt's students, began to use different tests to describe higher cognitive functions (Guilford, 1967). His testing interests were directed to such processes as general memory, specific memory, attention, and task-directed behaviors. However, it was James McKeen Cattell who first formulated the term "mental tests." Cattell's extension of Galton's simple tests began the modern practice of psychometrics as we know it today. Others such as DeSanctis attacked the realms of higher cognitive functioning. DeSanctis published a series of six tests including (1) memory for colors, (2) recognition of forms, (3) sustained attention,

(4) reasoning involving relations, (5) following instructions, and (6) thinking.

At the turn of the twentieth century, the French Minister of Public Instruction was still wrestling with an age-old problem: how to consistently identify the handicapped. Having agreed on the terminology to be used (idiot for the lowest level; imbecile for the intermediate level; and moron for the mildly mentally retarded), a psychologist, Alfred Binet, and physician, Theodore Simon, were commissioned to develop a consistent means of classifying children. Binet and Simon (1905, 1908) produced, through a standardized procedure of observation, a psychological classification of quantifiable differences in children's intellectual characteristics (traits). By 1905 Binet and Simon had developed 29 such tests designed to measure specific traits; by 1908 they had developed a classification of tests beginning at age three and continuing through age 13. Thus, the work preceding 1905 established human intelligence as a comprehensive integration of several traits including memory, attention, comprehension, muscular coordination, spatial relations, judgment, initiative, and ability to adapt. Further, the criteria for measurement of these traits were standardized at various chronological age levels. From this procedure the measurement of human performance took a great leap forward.

Binet carried his interest in higher processes into his work of developing mental tests for use in Paris schools. He and his associates criticized tests of the Galton type as being too simple, too sensory-motor, and too dependent on associationistic dogma. They expressed their own preference for the complex cognitive functions, proposing that 10 categories be explored by mental tests: (1) memory, (2) imagery, (3) imagination, (4) attention, (5) comprehension, (6) suggestibility, (7) aesthetic appreciation, (8) moral sentiment, (9) muscular force, force of will, and motor skill, and (10) judgment of visual space.

Modern psychoeducational assessment and remedial practices, indeed the very content of most perceptual, motor, language, vocational, and academic remedial curricula, are based on Binet's work. Two of the major issues are the specificity with which mental ability processes can reliably be ascertained and the desirability of remediating the specific perceptual or language processes in terms of their transferability and ultimate academic and social learning transfer.

But, it is clear that abilities had been identified by tests and that ability training was to become a crucial issue facing the twentieth century. The main philosophic question is, do mental abilities really exist in nature? The second question is, do they respond to specific training once they are described, measured, observed, and, in short, isolated as specific mental abilities? These two questions constitute the major issues facing special educators today. Since mental abilities are developmentally linked to chronological growth, culture, and experience, they may be encouraged by structured educational experiences. Conversely, when developmentally arrested, culturally neglected, or denied sequenced experiential practice, they may become deficient. Mental ability deficiencies may then be the principal characteristics associated with handicapping conditions such as learning and behavioral disorders. The entire nervous system develops only when each aspect or component necessary to successfully decode information (perceive its symbolic features) provides that symbol a language construct and a mechanism by which encoding of the mediated concept through motoric or verbal language permits communication. Therefore, specific reference is made in the definition of mental retardation and learning disabilities, two of the largest categories of handicapping conditions, to dysfunction of perceptual, perceptual-motor, or language abilities.

Philosophically, then, it appears that a leap in logic is *not* required to assume that if a disability exists, relative to causing a handicap, it should be corrected. That is exactly what ability training implies. It would appear that it was incorrectly named to begin with. It should be called disability training.

The history of ability training parallels that of the field of special education. The pioneers in ability training were the pioneers of the field. Itard, Howe, Sequin, Montessori, Binet, Wepman, Kirk, Strauss, Fernald, Frostig, and Cruickshank were all advocates of special education as it grew, and responsible for advancing ability training simultaneously. Tests used to describe a disability were followed by commercially prepared curricula to train the ability and remove the disability. The logic is obvious. The problem is in the scientific validation, or lack of it.

The early 1960s brought with it a concern for neurologically impaired children. The mid-1960s added the term learning disabled as a category of handicapping conditions. Both of these conditions required an increased emphasis on psychoneurological and psychoeducational assessment. Those that developed psychoeducational and psychoneurological tests to diagnose these conditions fueled the fire for ability training by describing conditions which, by their description, must exist.

Curricula designed to modify and treat patterns of disability were soon commercially available. Whole classes of children were exposed to Montessori, Frostig, and Fernald techniques, and administered Frostig, Kephart, and Delaccato assessment procedures. Tests such as the Illinois Test of Psycholinguistic Abilities became common place, much as the Woodcock-Johnson test batteries of today. The prevailing belief was that specific mental processes must be diagnosed in order for modification of a specific disability to result in quantum jumps in academic remedial achievement and potential normalization. Thus, the so-called diagnostic-prescriptive process is one form of ability training.

What then is the difficulty with visual and auditory per-

ceptual training, perceptual motor training, language training, and the other forms of sensory, motor, perceptual, and language ability training? The problem is that data arrived at through quasi-scientific means are controversial concerning the results of ability training. There are data to support ability training, if the objective to be achieved is a change in an ability, and that ability alone. There are relatively few data to support that transfer of training occurs between training of a perceptual or cognitive ability and an academic achievement skill, for instance reading.

It is not clear which age groups profit most; there are some data to suggest that perceptual motor training is most effective between 3 and 7 years of age, and language training, 18 months to 14 or 15 years of age. There is no clear pattern as to the intelligence level needed for a student to profit from ability training, since specific abilities constitute statements of global intelligence. Cultural and ethnic factors have been found: urban black children may need auditory perceptual training; Native Americans outperform age norms of Anglos on visual perceptual tests.

The overall interaction among these abilities being training and other abilities remains unknown, except it does seem that auditory perceptual training is related to language growth much more than visual perceptual training. Language training seemingly has the greatest transference to academic remediation. But even the search for generalities would produce only controversy. The fact is, ability training makes sense logically but has not been sufficiently researched devoid of other educational practices with school-age children to permit definitive statements. And yet, the practice does not only continue, it continues to thrive.

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DIAGNOSTIC-PRESCRIPTIVE TEACHING
FERNALD METHOD
ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES
INTELLIGENCE
REMEDIATION, DEFICIT-CENTERED MODELS

ABNORMALITIES, NEUROPHYSIOLOGICAL

The human nervous system consists of the brain, the spinal cord, and an intricate network of nerve fibers projecting from the brain and spinal cord. Structurally, the brain is differentiated into the two cerebral hemispheres, the brain stem and the cerebellum. The brain, together with the spinal cord, traditionally has been conceptualized as the central nervous system (CNS). The entire network of nerve fibers is then referred to as the peripheral nervous system (PNS). The brief discussion regarding normal neurological structure and function that follows is meant as an aid in the appreciation of neurophysiological disorders. The intent here is to offer an overview; for a more detailed account of the nervous system, the reader is referred to one of a number of neurophysiological texts (e.g., Bickerstaff, 1978; Lindsley & Holmes, 1984).

Peripheral nerves are referred to by the direction the impulses flow and the site of their termination. Specifically, the direction of the impulses carried in relation to the CNS, the originating structure, or final destination of the impulse, and the nature of the impulse itself, are used to classify peripheral nerves. For instance, the PNS contains sensory nerves that carry impulses from the sense organs (eyes, ears, nose, etc.) to the CNS. By way of contrast, the motor nerves travel from the CNS to the periphery, exciting both skeletal (voluntary) and smooth muscle (involuntary) muscle into movement. Included in PNS, the cranial nerves arise from or travel to the brain stem (connecting structure between spinal cord and cerebrum). Similarly, the spinal nerves travel to or from the spinal cord. The group of peripheral nerves that carry impulses to smooth muscle (causing involuntary movements of the intestines, heartbeat, constriction of the pupils, etc.) and those that incite the secretion of glands cause automatic changes in the body. These peripheral nerves are sometimes referred to collectively as the autonomic nervous system.

Functionally, the fundamental building block of the nervous system is the neuronal circuit. The simplest neuronal circuit contains only two interconnected nerve cells, involving an input and an output cell (e.g., simple knee jerk reflex). Local circuits exist at all levels of the nervous system and, in fact, such circuits in the spinal cord connect the cerebral cortex, brain stem, and cerebellum. These connections can function as modules in more complex circuits. Indeed, these integrated networks are capable of sustaining complex behavior (Gaddes, 1985; Kandel, Schwartz, & Jessell, 1991).

As an example, sensory impulses traveling from the

various sense organs to the brain are integrated, recorded, recognized, stored or remembered, as interpreted by the cerebral cortex. Moreover, skeletal movement may be affected by motor nerves traveling by way of the spinal cord. Generally, the entire system works to regulate and coordinate bodily responses to both internal and external changes in the environment (Taber, 1970). A malfunctioning neurological system results in an impaired capacity for responding adaptively to a changing environment.

Neurophysiological abnormality may occur by means of many agents and during various stages of the life process; some stages offer more vulnerability than others. Antenatal agents (occurring before birth) described by Nelson (1969) include genetic factors, chromosomal aberrations, placental disease, maternal complications, number of previous pregnancies, age of both mother and father, intrauterine infection, toxic agents (including certain drugs and alcohol), and radiation. Various organ systems begin and end their prenatal development at different times, therefore their sensitivity to agents varies with maturity of the fetus. The most vulnerable period for the brain is from 15 to 25 days of gestation but, clearly, damage can occur at any time during the development of the nervous system (Hetherington & Parke, 1979).

Perinatal (occurring just before or after birth) vulnerability to neurological insult is accentuated by premature birth. Inadequate oxygen during this stage, hemorrhage, trauma, and infection are the principal offenders (Nelson, 1969). Postnatal (occurring after birth) damage to the neurological system may include damage incurred after birth, during childhood, or throughout the various stages of adulthood. Infections, principally meningitis and encephalitis, injuries, and degenerative neurological disease have also been implicated (Nelson, 1969).

Weller, Swash, McLellan and Scholtz (1983) estimated that 40% of developmental malformations of the CNS arise from genetic abnormality. The most common genetic abnormality is Down's syndrome. This disorder is associated with a group of chromosomal aberrations involving the 21st chromosome pair. In the great majority of cases, a failure to join occurs during the meiosis process, resulting in a trisomy (additional chromosome) of the 21st chromosome pair. Translocation and mosaician represent less frequently occurring aberrations of the 21st chromosome pair, also associated with Down's syndrome (Kopp & Parmelee, 1979).

The incidence of Down's syndrome is between one and two per thousand live births for all races and ethnic groups (Gillberg, 1995; Norman, 1963). Although there is some variability in incidence, most researchers cite an increase in relation to maternal age (Benda, 1960; Lawrence, 1981; Weller et al., 1983). A gradual increase begins with maternal age of 35 and escalates drastically after 40. Metabolic or environmental factors in the mothers' ovaries have been suggested as causes for the syndrome (Benda, 1960; Lawrence, 1981; Nelson, 1969; Norman, 1963; Weller, Swash, McLellan, & Scholtz, 1983). Structural inspection of the Down's syndrome brain suggests impairment of both growth and differentiation (Benda, 1960). The brain is generally low in weight and the normal convolutional pattern of the brain is simplified. The density of the nerve cells in the cerebral cortex is reduced (Weller et al., 1983).

Rate of mental development is not only slower than normal but also deteriorates progressively with age in Down's syndrome (Cornwell & Birch, 1969; Dicks-Mireaux, 1972; Gillberg, 1995). Many explanations, including neurophysiologic changes, have been offered as explanation for this progressive deterioration. Weller et al. (1983) noted that the microscopic study of brain tissue of Down's syndrome victims during autopsy reveals patterns of neurofibrillary tangles, senile plaques, and granulovacular degeneration such as are found in Alzheimer's disease (deteriorative disease of the elderly involving degeneration of the smaller blood vessels of the brain). Kopp and Parmelee (1979) suggest that the severe limitations in higher level integrative abilities evident in Down's syndrome may cause deficits in information processing (e.g., use of language) that could have progressive detrimental effects on the child's intellectual development over time. The child's capacity for responding adaptively to changing stimulus conditions, a necessity for proper intellectual development, may be impaired directly by the nature of the syndrome. However, the nature of the environment in which these children find themselves, whether it is enriched or impoverished, also can affect development.

In contrast to Down's syndrome, which is genetically related, spina bifida seems to be more influenced by environmental factors. Although genetic factors are suggested by the higher incidence in infants born to parents with a family history of such lesions, it seems that racial, geographical, and even seasonal factors also may be implicated (Kopp & Parmelee, 1979; Weller et al., 1983). Clearly, the interaction of genetic and environmental factors has recently been given prominence. Genetic predisposition combined with certain environmental factors may be the causal condition for spina bifida occurrence (Carter, 1974).

Spina bifida represents a malformation of the nervous system that appears to be more localized and variable in effect than that of Down's syndrome. This defect occurs as a result of faulty prenatal development, in which the lower end of embryotic CNS fails to close. The contents of the spinal column (nerve fibers, meninges, and fluid) may protrude from the lower back in a sac (meningomyelocele). Individual defects vary depending on the extent of damage to the nerve fibers and the existence of other associated conditions (Kleinberg, 1982). The spinal cord is frequently abnormal above and below the level of the spina bifida (Weller et al., 1983). Hydrocephalus, abnormal accumulation of cerebral spinal fluid, frequently is associated with spina bifida. Untreated hydrocephalus creates severe en-

largement of the head, increased pressure, and subsequent damage to the brain (Kleinberg, 1982).

Intellectual levels of victims with spina bifida are variable, ranging from an IQ of 137 to severe subnormality (Gillberg, 1995; Hunt, 1981). More specifically, Spain (1974) associates mental retardation with protrusion of a portion of the brain (cranial meningocele and cephalocele), whereas infants with other forms are considered to have potentially normal intellect. Many individuals with spina bifida are incontinent of urine and feces, and have weakness of their legs with sensory loss below the level of the lesion (Kleinberg, 1982). Owing to the presence of the typical locomotor problems in spina bifida, it is unclear whether some deficits are due to neurological impairment or environmental influence. Spain's (1974) longitudinal spina bifida studies have revealed significant deficits in spatial and manipulative development. The fact that the disorder limits the individual's experience may, in fact, cause or influence the specific deficits in spatial and manipulative development. Among the educational problems noted are difficulties with arithmetic and perseveration in language, as well as emotionality and poor motivation (Kopp & Parmelee, 1979).

Primary disorders of the CNS, like Down's syndrome and spina bifida, represent a relatively small proportion of the neurological problems in infants (Horwitz, 1973). More frequently, the genetic programs for potentially normal neurological development are subverted by adverse prenatal or birthing conditions such as lack of oxygen (hypoxia). Cerebral hemorrhage often occurs during prolonged hypoxia. The accumulation of stagnate blood that follows circulatory collapse may cause bleeding and ultimate damage to brain tissue (Weller et al., 1983). Premature infants are especially vulnerable to hypoxia. Since the respiratory system is not fully perfected until the last four to six weeks of gestation, these infants are often born without an optimally functioning respiratory system. Postmortem studies on premature children show that the bleeding usually occurs within one of the cavities of the brain or the space below the arachnoid membrane that contains cerebrospinal fluid (subarachnoid space [Horwitz, 1973]). Later complications of such subarachnoid hemorrhage involve epilepsy, dementia, and hydrocephalus (Weller et al., 1983). Full-term infants are more likely to suffer from hemorrhage in the mid-brain stem (pons) and the posterior portion of the cerebral cortex (hippocampus). Cause for these differences are not, as yet, fully understood.

The location and size of brain lesions at or soon after birth are the primary determinants of the extent of nervous system impairment. The results may range from a gross alteration of brain organization to more minimal effects such as motor overactivity, shortened attention span, or slight muscle impairment (Pincus & Tucker, 1974; Teberg et al., 1982). Large injuries in infants tend to produce more widespread deficits in intellectual abilities than similar injuries in adults. Dulling of many areas of intellectual functioning, as opposed to having an effect in specific functioning (e.g., language development, visual-spatial relationship comprehension), is also a hallmark effect of the diffuse damage that follows hypoxia (Rapin, 1982).

Neurological deficiencies from early injury are difficult to predict. The nervous system of the newborn infant is extremely immature, functioning largely at brain stem and spinal cord level. The neurologic reflexes such as Moro, grasping, and stepping represent primitive neuronal function that is largely uninhibited by higher cerebral control. Changes in these reflexes are usually not helpful in localizing the lesion, and may occur with either cortical or subcortical dysfunction (Horwitz, 1973). Damage to the cerebral cortex, for instance, may not be evident until the age when behavior dependent on the damaged part makes its developmental appearance. Thus, pathology of fine motor coordination, speech, and cognition is unlikely to be diagnosed in infancy (Rapin, 1982). However, changes in reflexes and disorganized activity of the subcortical structures expressed as a movement disorder or spasticity continue to be used as indicators of neurological damage. In Teberg et al.'s study of low birth weight infants (1982), spastic quadiplegia did, in fact, emerge as the indicative diagnosis of neurological handicap. Churchill, Masland, Naylor, and Ashworth (1974) support this finding.

Turkewitz (1974) contended that the standard methods used for the early identification of neurologic handicaps are insensitive to many forms of neurological involvement. Infants who have had difficulties shortly before or during the birth process frequently appear to recover in a few days. However, abnormalities in motor, language, and intellectual functioning become apparent later in infancy and childhood. Studies using indicators of higher levels of neurological organization (e.g., left/right preference) are being investigated in an effort to identify infants who have experienced neurological damage that is normally not expressed until later in life. However, normative patterns of left/right preference for infants must be established first, before atypical patterns can be interpreted.

The possibilities for neurophysiological dysfunction are limitless; the pathologies presented should not be considered as inclusive by any means. However, it is hoped that an appreciation of the complexity of cerebral neural structure and the corresponding intricacies of impairment resulting from neurophysiological dysfunction will encourage the reader to treat each impaired patient as a unique individual, for heterogeneity of outcome is common (Gaddes, 1985; Goldstein & Reynolds, 1999; Kopp & Parmelee, 1979).

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ADAPTED PHYSICAL EDUCATION
HEALTH MAINTENANCE PROCEDURES
PHYSICAL ANOMALIES

ABPP

See AMERICAN BOARD OF PROFESSIONAL PSYCHOLOGY.

ABROMS, KIPPY I. (1942–)

Kippy I. Abroms received her BA in psychology from the University of New Hampshire in 1962, MEd in reading from Tulane University in 1973, and PhD in special education from the University of South Mississippi in 1977. Abroms also completed post doctoral training at the University of California, Riverside in 1977 where she worked with Jane Mercer on the System of Multiple Pluralistic Assessment (SOMPA). Abroms is presently an associate professor at Tulane University where she has been teaching since 1975. She has directed several projects for the Office of Special Education and Rehabilitation Services and the Bureau of Education for the Handicapped.

Abroms conducted research with J. W. Bennett (1981) that dispelled the well-entrenched notion of exclusive maternal etiology in Down's syndrome. Abroms and Bennett found that in a significant number of cases the extra #21 chromosome, the immediate cause of Down's syndrome, comes from the sperm. Thus there can be a maternal or paternal contribution to the etiology of Trisomy 21.

Her research has included a longitudinal study on the social development of preschool gifted children, and, as a member of the cranio-facial team at Tulane University Medical Center, she has been involved in investigations

Kippy I. Abroms

of the relationship between cognitive functioning, self-concept, and cranio-facial intervention. She has also become interested in how genetic disorders are manifested in children, and especially in facial deformities that are obvious in the classroom (Abroms, 1987).

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ABSENCE OF SPEECH

See speech, absence of.

ABSENCE SEIZURES

Absence seizures (also known as petit mal seizures) are a form of epilepsy characterized by brief losses of consciousness unaccompanied by large convulsive movements. Absence seizures are generalized; involving abnormal activity throughout the brain. They are characterized by lack of any aura (sensation that a seizure is to occur), brevity (absence seizures typically last 5–10 seconds [Menkes, 1985]), and abrupt termination. After an absence seizure has occurred, there is no postictal period, the individual does not complain of fatigue or the need to sleep, and he or she can resume the activity being engaged in prior to the seizure. Children with absence seizures often are unaware of their lapses of consciousness.

Although absence seizures are nonconvulsive during the seizure, some movement will be seen in about 70% of diagnosed children. When the seizure begins, an observer may notice a vacant look in the child's eyes. Minor motor movements such as lip smacking, eye blinking, or twitching of the eyelids or face sometimes occur. There may be a slight loss of body tone, with the child perhaps dropping something he or she is holding. Absence seizures often can be precipitated by sustained hyperventilation, and less frequently by photic stimulation.

Absence seizures are more common in girls, and onset is generally between 5 and 15 years of age. There frequently is a family history of a seizure disorder. Most often the neurologic exam and CAT scan is normal. The EEG shows a characteristic three-cycle per second spike and wave pattern during seizures. Generally IQs are reported to be within normal limits, though some studies suggest a mild depression when compared with siblings (Dreifuss, 1983). The most frequent school problem is difficulty in paying attention. There is some evidence that this is related to abnormal brain function (Mirsky, 1969). With frequent seizures, schoolwork often is disrupted.

The medications used in absence seizures include ethosuximide (Zarontin), valproate (Depakene), clonazepam (Clonopin), paramethadione (Paradione), and methsuximide (Celontin). There are other types of seizures that include staring, but these are not simple absence seizures.

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ELECTROENCEPHALOGRAPH
GRAND MAL SEIZURES
SEIZURE DISORDERS

ABSENTEEISM/ATTENDANCE OF HANDICAPPED CHILDREN

Compulsory school attendance laws have been enacted in all states. The scope of those laws was narrowed in most states by the introduction of exemption clauses. These clauses excuse children considered unfit or uneducable because of physical or mental handicaps from school attendance. Legal challenges by handicapped children for extension and protection of the right established under state law of equal access to educational opportunity ensued during the early 1970s. Those cases were followed by federal and state laws that mandate free appropriate public education to handicapped children and ensure their right to attend school regardless of the severity or type of their disability.

Under IDEA and Section 504 of the Rehabilitation Act of 1973, a handicapped child must be educated in the least restrictive environment his or her needs allow. Children with serious, often chronic, health impairments who require special education and related services may receive instruction in hospitals or in the home. Schools use various approaches, including home visitations, school-to-home telephone communication, and interactive television to connect a homebound or hospitalized student with the classroom. Federal law recognizes that there are instances when, because of the nature or severity of a child's handicap, the child must be educated in a setting other than the regular classroom. However, the least restrictive environment provisions prohibit placement of a child on homebound instruction or other exclusion from the regular educational environment solely because the child is handicapped. Homebound instruction may not be appropriate for the instructional needs of that child.

There have been few studies of program and school attendance as a factor in the achievement of handicapped students. There is some evidence that handicapped students attending regular schools are no more likely to be absent from school than nonhandicapped students (Sullivan & McDaniel, 1983). High rates of school attendance do not necessarily ensure high rates of program attendance or achievement. Sullivan and McDaniel (1983) concluded that handicapped children served in resource rooms may be receiving up to one-quarter less schooling time than is prescribed in their individualized education programs because of competing school activities and absences of either the resource room teacher or the student during a scheduled period. In various studies involving handicapped or nonhandicapped learners (Ivarie, Hogue, & Brulle, 1984; Rosenshine, 1979), investigators in the area of academic learning time as it relates to academic achievement have found a positive correlation between the learning of basic skills and the number of minutes students spend on academically relevant tasks. Researchers are continuing their study of increased active learning time as a powerful intervention technique for handicapped and nonhandicapped students.

Under the IDEA and Section 504, mandatory procedural safeguards exist that allow parents to challenge school disciplinary actions that would interrupt a handicapped child's education. Expulsions, suspensions, and transfers to settings outside a regular classroom or school are considered placement changes since such measures remove students from their current school program or curtail attendance (Simon, 1984). A series of court decisions on this sensitive area have provided important guidelines for determining when and for what length of time handicapped students may be expelled or suspended under federal law (Reschly & Bersoff, 1999; Simon, 1984).

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HOMEBOUND INSTRUCTION
INDIVIDUALS WITH DISABILITIES EDUCATION ACT
SUMMER SCHOOL FOR HANDICAPPED

ABSTRACTION, CAPACITY FOR

Abstract reasoning refers to the ability to identify common features of two or more concepts, and has been considered an essential component of intelligence (e.g., Thorndike, 1927). Abstract reasoning ability can be assessed through at least three types of tasks: those which require a person to identify a general concept common to several exemplars, e.g., sorting objects according to categories; to state com-

mon features among different concepts, e.g, the Similarities subtest of the Wechsler Intelligence Scale for Children-III or to state examples or features of a given concept (Burger, Blackman, Clark, & Reis, 1982).

While general abstraction ability varies across persons, ability to reason abstractly in specific tasks appears to vary with subject area expertise. For example, in studying the superior memory of chess masters for the configuration of briefly presented game arrangements, Chi, Glaser, and Rees (1981) suggest that experts form abstract, organized representations of the field of play, while novices retain only the surface features of the problem. Adelson (1984) found that novice computer programming students actually had better recall for the details of a briefly presented program than did expert programmers, but that the experts had better recall for what the programs were designed to do. Ability to make abstractions about information seems to improve with experience; as one gains more experience with an area of knowledge, one becomes familiar with the organization of it, and is able to integrate new information with greater success.

Burger, Blackman, Clark, and Reis (1982) found that educable mentally retarded (EMR) adolescents could be trained to improve their abstract reasoning abilities. Context and instructional support also influence the application of abstract thinking skills (Alexander & Murphy, 1999).

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EDUCABLE MENTALLY RETARDED INTELLIGENCE TESTING

ABSTRACT THINKING, IMPAIRMENT IN

Those who work with children having learning problems are interested in trying to understand their thinking processes. Three groups of children have been of particular interest—deaf, mentally retarded, and learning disabled. Children with these disorders have all exhibited difficulty acquiring academic skills. One hypothesis for their difficulty is that they may not be processing information normally. Some assert these children have deficiencies in abstract reasoning.

A theory of abstract reasoning hinges on the notion that human thinking is a process of conceptualization. Concept formation is the organization of data into categories. To know a concept is to know the characteristics of an entity that either include it or exclude it from a category. To know the concept of "dog" is to know that animals with four legs, hair, and the ability to bark belong together in a category. Some argue that forming a concept is a process of abstracting. To learn the concept of dog requires noticing common characteristics of different dogs, as well as noticing that cats have some characteristics that eliminate them from that category. However, not all concepts are created equally. Some are based on immediate, sensory experience. For example, a child may form a category of "doggy" by directly experiencing dogs and pictures of dogs. This is considered to be a concrete concept. On the other hand, there are concepts that are built from other concepts, for example, the notion of "mammal." A concept even further removed from direct experience is "democracy." The more removed the concept from direct experience, the more abstract it is. The term *abstract,* then, is used in two different ways. On the one hand, it is used to mean the process by which the salient characteristics of entities are identified in order to form concepts. On the other hand, it is used in contrast with the term *concrete* to indicate the role of direct experience.

Another factor related to abstract reasoning is the role of symbolization. Luria (1961) stated that the development of more abstract concepts was dependent on symbolization—more specifically the use of language. In fact, he felt that higher level concept formation was probably dependent on the mediation of language. For example, Luria would contend that a concept such as democracy more than likely requires language for acquisition.

Those dealing with children having difficulties with learning have tried to understand the role of conceptualization and symbolization in the development of abstract reasoning. Johnson and Myklebust (1967) were particularly interested in the conceptualization problems of learning-disabled children. They asserted that some have difficulties in the process of concept formation itself. They argued that any deficit in the processes of perception, imagery, symbolization, or abstracting could interfere with conceptualization. Others have difficulty not so much in

the process of conceptualization as in dealing with the more abstract concepts. As Johnson and Myklebust point out, an individual with disturbances in the processes of abstracting or conceptualizing may be identified as a concrete thinker.

Myers and Hammill (1982) note that children who cannot form abstract concepts are generally labeled as being mentally retarded rather than learning disabled. Nonetheless, learning-disabled children are often described as having "concrete behavior characterized by a dependence upon immediate experience as opposed to abstract behavior that transcends any given immediate experience and results in the formation of conceptual categories" (p. 39). Many would argue that the difficulty exhibited by learning-disabled children is caused by a developmental lag and is not a permanent problem. In the case of mentally retarded children, however, the conceptualization problem may be permanent. Further, a body of research has been dedicated to trying to determine whether the conceptual behavior of mentally retarded children represents simply a delay or difference (Zigler & Balla, 1982). To understand this problem researchers may, for example, look at how mentally retarded children use the role of language as a mediation device for concept formation (Field, 1977).

It is not uncommon for those working with hearing-impaired children to describe their cognitive behavior as being concrete (Johnson & Myklebust, 1967). There are several difficulties with this notion, however. Hearing-impaired children, because of their limited input, may simply not have had a sufficient experiential base to adequately form concepts that would be expected of hearing children. Another problem in understanding the hearing-impaired child's conceptualization is that these children live in a visual linguistic world. What may appear to be concrete behavior on the part of the child may simply be an artifact of one of the underlying rules of natural sign language systems. The rule is that the structure of an utterance cannot violate the visual world. For example, the word order of the structure "I finished my work, then watched television" is directly translatable into American Sign Language. "I watched television after I finished my work" is not, because it violates the visual sequence of events. Difficulties that hearing-impaired children have with the latter structure, when encountering it in English, are sometimes interpreted as evidence that the child is a concrete thinker. In truth, it may be simply that the child is having difficulty in dealing with a structure that violates the child's linguistic rules (also see Braden, 1994).

It is important to note that the relationship between sensory information, concept formation, and symbolization is not well understood. Research has given us only the most sketchy idea of what the relationship among the three might be. One field of philosophy, epistemology, has been dedicated to trying to understand these relationships. Introspection and logical reasoning remain the most powerful tools available to both psychology and philosophy for describing concept development and abstract reasoning.

In summary, the notion of abstract reasoning is used in two different ways. It can mean the process by which one identifies the salient characteristics in entities for purposes of categorization. Abstract reasoning can also be the process by which individuals deal with concepts that are based on other concepts, rather than concepts that are based on direct experience. Children with learning problems can have difficulties with either type of abstract reasoning. When difficulties are exhibited, the question arises as to whether the difference is simply developmental delay or a difference in cognitive processing. Some people working with learning-disabled children contend that they eventually outgrow problems in these areas. Mentally retarded children may not necessarily do so. Children who are hearing impaired have also been described as "concrete" learners. However, their difficulties may be a result of too little experience and their use of visually based linguistic rules.

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CONCRETE OPERATIONS
DEAF
LEARNING DISABILITIES

ABUSED CHILDREN

Today abused children are typically regarded as suffering from a primary illness (Quirk, 1980). A primary illness

refers to the notion that living with a certain circumstance for a prolonged period of time creates a situation in the victim requiring primary treatment. The primary illness of child abuse has identifiable symptoms and etiology along with an official diagnosis and prescribed treatments.

An orderly treatment for abused children and adults who were abused as children involves the ability of the clinician to identify and diagnose properly the dilemma and its ramifications and to facilitate the natural healing process from trauma. Thus the first step in treatment is proper identification of child abuse as the problem to be treated.

Children who have been abused relive their abuse over and over in clear or symbolic ways. They dream abusive dreams, remember abusive situations, and in adulthood go so far as to recreate abusive relationships. They manifest little positive affect in interpersonal relationships, and they lack intimacy and express difficulty in trusting others (Herman, 1981). They are depressed and have difficulty in developing meaningful relationships or experiences in their lives. Adults who were abused children are often defensive, suspicious, nervous, and overly alert. They seem to be preoccupied with their bodily functions and are frequently labeled hypochondriacs. Insomnia is another frequently reported symptom, even in the absence of distressing nightmares. Abused children are also guilt-ridden, and experience much shame and self-hatred. Concentrating and following a task through to its completion is another problem area for this population (APA, 1994; Mrazek & Kempe, 1981; Williams & Money, 1980).

Acting out the abuse in self-destructive ways such as drug abuse is frequently observed in this population, which is disproportionately represented in chemical dependency treatment facilities. As teenagers, abused children often become runaways and act out their rage in criminal behavior. Abused children are also disproportionately represented in facilities for delinquents. A disproportionately large group in this population may attempt suicide, hallucinate, manifest seizures, and ultimately be placed in psychiatric hospitals. While these obvious problematic behaviors will occur at high rates, another observed phenomena of this population is the frequency with which they become quiet, good children who then marry an abusive partner. Other compulsive behaviors are frequently manifested by these children and subsequently they will be found as adults in Al-anon, Alcoholics Anonymous, Narcotics Anonymous, Overeaters Anonymous, Gamblers Anonymous, and other self-help treatment programs.

Abused children as adults have difficulty with parenting. Appropriate discipline is difficult for them because it is too restimulating. Consequently, they will abdicate their parenting until the children eventually become abusive toward them (Justice & Justice, 1976). This promotes another likely place for adult abused children to reflect inadequacies—as parents of children in trouble. On the other hand, adult abused children may become abusive parents themselves. The inordinate numbers of child abusers that were themselves abused has been widely documented.

Because young and abused children live and grow with a wounded and fragmented personality, they often need intensive treatment efforts. The client who clings or annoys the clinician, reporting that something is missing from treatment, will often be a person who was abused. This person will often complain about the deficiencies of treatment and report that he or she has not been responded to reasonably. This type of reporting should be expected in view of the fact that abused children are wounded people who will have difficulty objectifying their relations: after all, their primary objects, mom or dad, abused them.

Treatment programs and clinicians should routinely be sensitive in recognizing and treating child abuse. When working with clients the following questions should be a routine part of the interview. What was your childhood like? How did your parents treat you? How were you disciplined? What were the punishments employed by your parents? Were you ever raped or seduced? Those who report having difficulty recalling all or crucial parts of their childhood should definitely be regarded as potentially having been abused. This self-induced amnesia is a primitive form of defense against the pain and discomfort resulting from recall of an abusive situation. Naturally, this needs to be dealt with in a sensitive manner by the clinician, and the client should not be prematurely pushed into acknowledging information or feelings they are not prepared to confront.

Abused children often feel at fault for their experience of child abuse. They live with much guilt, shame, self-blame, and self-loathing. Often their abusers told them it was their fault. Child molesters use guilt as a tool with their victims in order to keep the secret, while parents who physically beat their children do so in the name of discipline. Yet, abused children mentally make their parents correct and good. Generally, therapists should enjoy relationships with people, but it is even more important for therapists of abused children to like their clients: While one might think that all therapists would like their clients, fragile clients often find themselves disliked by their therapists. Since they do not grow as the therapist expects, they experience rejection in the context of the therapeutic relationship.

Adults who were abused in childhood have unusual difficulty in establishing trust with the therapist, identifying and discussing feelings, and cooperating with the therapeutic process. Because their tormentors were often people they trusted (e.g., parents), abused children may recoil at the need to trust the therapist. Therefore, an unusually long working-through process is frequently required. This is often difficult for the novice therapist, educator, or other

professional lacking information about child abuse and its symptoms.

Most children learn to cope by making decisions separate from the influence of their parents. Abused children have more to cope with, and fewer skills to do so. Reparenting applies here also. Regardless of age, abused children need to learn to live and cope in the real world, and come to recognize that not all people are as threatening as their abusive parents. Therefore, learning coping skills is essential to any successful treatment program. The following are examples of important coping skills to be addressed: learning to trust one's own instincts; learning to identify one's own needs; and learning to proceed to satisfy those needs. Another essential component to treatment is the development of an ability to identify and avoid close contact with abusive people.

Because abuse occurs in the context of an interpersonal relationship, the environment of a therapeutic group has proven itself a particularly helpful treatment modality. In view of the characteristics of this population, the following are important considerations for the leader of a group of abused children. The group should be initially supportive, gentle, homogeneous, and closed to new members after the group has begun. These elements are necessary to address the difficulty in trusting manifested by this population. The group needs to project an image of safety and members must be monitored from inappropriately expressing the rage some may possess. Confrontation must be kept well managed to further reduce regression that may be promoted by some of the more fragmented members. The group leader must monitor the development of any situation that may resemble the childhood abuse of any member in the group. A primary goal of the group is to develop understanding of the personal dynamics of abuse and coping skills that may prevent the development of similar abusive situations in the future.

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ACTING OUT
CHILD ABUSE
ETIOLOGY
NEGLECT

ACADEMICALLY TALENTED CHILDREN

Academically talented children usually possess superior intellectual ability or a specific subject matter aptitude. This point of view is supported by the continuing general acceptance of Witty's (1940) definition of giftedness as performance by a child that is consistently remarkable in a potentially valuable line of human activity. Included in the scope of Witty's definition are those who are academically talented, and, therefore, have the ability to do well in one or more academic subjects in school. This label distinguishes these children from those who may be talented in other areas designated by the U.S. Office of Education such as creative or productive thinking, leadership, visual and performing arts, and psychomotor activities (Renzulli, 1978).

Identification of academic ability can include the use of IQ tests, achievement test scores, evidence of academic achievement, and products successfully completed in an academic area. In addition, students who are academically talented are sometimes 2 to 8 years ahead of chronological age peers in academic subjects (Clark, 1983).

It must be noted that academic talent in one subject matter area does not always mean talent in another academic area. For example, children with a high mathematical aptitude may not perform equally well in other subject matter classes. Once identified, academically talented children require acceleration and/or enrichment in each area of strength.

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ACCELERATION OF GIFTED CHILDREN
GIFTED AND TALENTED CHILDREN
GIFTED CHILDREN

ACADEMIC ASSESSMENT

The global function of achievement testing is to assess a student's attainment of academic content areas. Reading, written language, and mathematical functioning are the major domains under the rubric of academic achievement. Anastasi (1982) notes that traditionally academic assessment has been differentiated from aptitude/ability testing by the degree to which a measure is designed to assess uniform versus diverse antecedent experiences. To be categorized as a measure of academic achievement, a measure is designed to test a fairly uniform previous experience (e.g., first grade instruction in reading). In contrast, an aptitude test would be designed to assess the impact of multiple or diverse antecedent experiences. Contemporary measurement specialists recognize that both achievement and aptitude tests assess acquired knowledge, but differ on the degree of specificity and abstraction.

Salvia and Ysseldyke (1981) have described four functions that achievement tests fulfill within the schools. They are used for screening students who may need more in-depth assessment to determine whether special services are appropriate; determining whether a child is eligible for placement in a special education class based on local criteria; assessing a child's strengths and weaknesses to facilitate decisions regarding his or her placement in an instructional sequence; and determining the impact of educational intervention on a class or group of students.

Achievement testing may be conceptualized along several lines: norm-referenced versus criterion referenced; individual versus group administered; and informal teacher-constructed versus standardized instruction. Each of these dimensions will be discussed to highlight the multifaceted construct of academic achievement assessment.

Norm-referenced testing (NRT) began to play a prominent role in American education after World War I. Army Alpha and Beta tests were used for the classification of recruits during the war. The Otis Group Intelligence Scale was published in 1918 by the World Book Company. This scale employed such advances as multiple choice questions, answer sheets, test booklets, and improved normative sampling procedures (Cunningham, 1986). These advances were adapted for the first norm-referenced, standardized measure of academic achievement, the Stanford Achievement Test, published in 1923.

The most salient characteristic of norm-referenced achievement tests is that an examinee's performance on the test is interpreted by comparing his or her relative standing to a given reference group. The reference group or standardization sample is usually composed of representative peers of the same chronological age, or peers in the same grade placement. Performance on a norm-referenced test is typically expressed in scores based on the normal curve such as stanines, T-scores, and/or standard scores (which usually have a mean of 100 and a standard deviation of 15, or sometimes 16). Performance on a norm-referenced test may also be expressed in percentiles, which tell a student's standing relative to a hypothetical group of 100 children. For instance, a score at the 86th percentile indicates that the examinee scored better than 86 out of 100 of his or her hypothetical same-aged peers.

The major norm-referenced group achievement tests include the California Achievement Test (CTB/McGraw-Hill, 1985); the Comprehensive Test of Basic Skills (CTB/McGraw-Hill, 1981); the Iowa Test of Basic Skills (Hieronymus, Lindquist, & Hoover, 1983); the Metropolitan Achievement Test (Barlow, Farr, Hogan, & Prescott, 1978); and the Stanford Achievement Test (Gardner, Rudman, Karlsen, & Merwin, 1982).

These group-administered tests have multiple levels, each designated for a specified grade range. For instance, the Stanford Achievement Test series has six levels: Primary Level 1 for grades 1.5–2.9; Primary Level 2 for 2.5–3.9; Primary Level 3 for 3.5–4.9; Intermediate Level 1 for 4.5–5.9; Intermediate Level 2 for 5.5–7.9; and Intermediate Level 3 for 7.0–9.9. Generally, these tests have gone through several revisions. The Stanford Achievement Test, for example, is in its seventh revision and has been in use in the public schools for over 60 years.

A primary difference between norm-referenced and criterion-referenced tests lies in the way they are interpreted. As noted, the norm-referenced achievement test is designed to give information on a given student's performance relative to a representative group of same-aged peers. In contrast, the criterion-referenced achievement test is designed to give information on a given student's performance in terms of whether he or she has learned a given concept or skill. Thus, the criterion-referenced measure is designed to tell what the student can and cannot do. For instance, the student can add single digit numerals with sums less than 10, but has not learned to regroup or perform simple subtraction problems. Since discrimination among students is not the purpose of a criterion-referenced test, the difficulty level of items and the power of items to separate students are not as important as they are in norm-referenced measures. The major issue in criterion-referenced measurement is whether items reflect a specified instructional domain. Most of the major group-administered achievement tests have been adapted to yield criterion-referenced information. The problem with adapting norm-referenced tests is that there are a multiplicity of instructional objectives (Cunningham, 1986). Since each objective requires several test items to achieve an adequate level of reliability, the length of the test becomes unmanageable.

Up to this point group-administered measures have been used to illustrate the norm- versus criterion-referenced dimensions of academic assessment. Academic achievement testing may also be examined from the viewpoint of the administration format, either individual or

group. While group achievement tests are usually given to a whole class by the regular education teacher, individual achievement measures are administered by specially trained personnel (special education teachers, educational diagnosticians, and school psychologists) to a child on a one-to-one basis. Typically, the child has been referred for testing because of academic or behavioral problems manifested in the regular classroom. A general distinction between group and individual measures relates to their use in the decision-making process. Group measures are designed to make decisions about groups, while individual tests are more appropriate for decisions concerning an individual. Therefore, caution must be exercised when attempting to interpret the results of a single child's performance on a group-administered measure. There are many variables that may influence a child's performance on a group-administered measure and result in an inaccurate portrayal of that child's academic skills. Misunderstanding instructions, fatigue, random guessing, class distractions, looking on a neighbor's response sheet, etc., may invalidate a child's scores. When a child is being considered for placement in a special education program, a poor performance on a group-administered measure should be followed up with an individual assessment.

Finally, the academic achievement test may be approached by examining the degree to which the directions to students are standardized. The standardized test is one where the instructions and test questions are presented in the same manner to all examinees. On the other hand, in the teacher-constructed test, there is unlimited latitude in the construction and administration of test items. Both standardized and informal teacher-made tests have advantages and disadvantages. However, they should share certain attributes, i.e., clear directions to students, careful development of items based on a table of specifications, and the type or format of test items.

Whether the directions to an achievement test are standardized or constructed by the teacher, building a table of specifications represents the first step in test construction. A table of specifications contains a listing of instructional objects as well as the relative emphasis to be assigned to each objective. For standardized measures of achievement, the table of specification is based on an examination of major textbook series used across the country. For instance, when reading subtests are constructed, the most widely used basal reading series are reviewed by the test developer. Note is taken at what point in the curricula various concepts are introduced. Invariably, decisions and compromises have to be made regarding content, because all basal reading series are not identical. As such, the consumer of both individual and group standardized achievement tests must examine the available measures, not just in terms of quality of standardization and reliability, but also with respect to the match between the concepts assessed by the test and those taught within the framework of the local curriculum. See Table 1 for selected objectives covered by Forms E and F of the California Achievement Test.

Table 1. Selected objectives from the California Achievement Tests, Forms E and F

Visual Recognition
1. Single letters
2. Upper, lowercase letters
3. Letter combinations
Sound Recognition
4. Initial consonant sounds
5. Final consonant sounds
6. Rhyming
Word Analysis
7. Single consonants/oral
8. Consonant clusters, diagraphs/oral
9. Consonant clusters
10. Variant consonant sounds
11. Long vowels/oral
12. Long vowels
13. Short vowels/oral
14. Short vowels
15. Diphthongs, variant vowel sounds
16. Sight words
17. Compound words
18. Root words/affixes
Reading Comprehension
Literal comprehension
32. Passage details
33. Stated main ideas
Inferential Comprehension
34. Passage analysis/oral
35. Character analysis
36. Central thought
37. Interpreting events
Critical Comprehension
38. Forms of writing
39. Writing techniques
Spelling
40. Vowel sounds
41. Consonant sounds
42. Structural units

A major difference between standardized and informal, teacher-developed tests is that the former usually represents many more hours of item development, refinement, empirical tryouts, and final selection of test items. In developing standardized achievement tests, considerable weight is placed on both content validity (the representativeness of the items to the domain being tested, and the

appropriateness of the format and wording of items relative to the age level of the prospective examinees), and the empirical tryout of the items in terms of reliability. The advantage of the standardized test lies in its documented reliability (presented in an accompanying technical manual), and its ability to compare a student's performance with that of a reference group or specified criterion. Whereas standardized tests measure content that is common to reading and mathematics programs from around the country, the teacher-constructed tests can be specifically targeted to the content of the local curriculum, or to a specific teacher's class.

In addition to defining informal assessment as the administration of a teacher-constructed measure, the term may also be applied to diagnostic processes. These include error analysis, behavioral observation, and the learner's relations to various instructional strategies (Sedlak, Sedlak, & Steppe-Jones, 1982). This last process is flexible and dynamic. A psychoeducational examiner presents tasks to the student in a branching manner similar to the operation of a branching computer-assisted instructional program. Information about the student's mastery of various skills is gleaned from analysis of his or her errors. Error analysis has been applied to reading, writing, mathematics, second language learning, and spelling (Bejar, 1984). The analysis is usually conducted within a "content" framework, such as an educational taxonomy.

Mathematical functioning is a key area where error analysis has been profitably employed (Brown & VanLehn, 1982). Ashlock (1976) offers useful exercises in a semiprogrammed text to help detect common error patterns in computation. See Table 2 for exemplars of common errors that give insight into the students' problems. Lankford (1974) demonstrated the value of having a student think aloud while solving arithmetic problems. Thus, when an error is made, the computation strategy used by the student becomes apparent. Roberts (1968) has noted four common error categories for arithmetic computation: selecting the wrong operation; erring in recalling a specific arithmetic fact; attempting the correct operation but using an inappropriate algorithm; and random responding that has no apparent relationship to the problem.

Another strategy that is being touted for assessment of academic skills is curriculum-based assessment (CBA). CBA attempts to link assessment more directly to classroom instruction and to provide a more direct assessment of a student's instructional needs (Shapiro & Elliott, 1999). Although touted as an alternative to traditional norm-referenced testing, CBA and NRT are seen best as complementary models, and not as competitive ones.

In summary, academic achievement assessment is used to make decisions about students. These decisions may be made from a normative perspective or in terms of students' mastery of a specified skill. Depending on the administration, format decisions can be made for an individual student or for groups of students. Norm-referenced achievement tests provide information about a student's relative standing compared with that of a reference group, while criterion-referenced tests and informal assessments may be used to make informed decisions about a student's future instructional needs. Specific achievement tests are described throughout this work.

Table 2 Samples of common arithmetic error patterns that give insight into the student's incorrect problem-solving strategy

Addition	
56 + 7 513	24 + 5 11 (Addition of all numerals without regard for place value)
Subtraction	
53 − 5 52 (Failure to group)	522 − 101 401 (Misunderstanding of zero as a subtrahend)
Multiplication	
34 × 3 122 (Addition of the regrouped number prior to multiplication)	93 × 8 101 (Use of inappropriate algorithm)
Division	
21 2)24 20 4 (A right to left recording pattern is employed)	5 3)18 (Basic fact mistake)

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ACHIEVEMENT TESTS
CRITERION-REFERENCED TESTING
NORM REFERENCED TESTING
See also SPECIFIC TEST NAMES.

ACADEMIC LANGUAGE

Academic language (instructional discourse, cognitive-academic language, or school language) is the way teachers and students organize their communication interactions within educational environments. The purpose is to transmit scientific or logically based knowledge and skills. In contrast, everyday discourse (conversation, social discourse, or basic interpersonal communication) has as its general purpose the regulation of social interaction or interpersonal functions (Chamot & O'Malley, 1994; Wallach & Butler, 1994; Wallach & Miller, 1988; Westby, 1985).

Comprehending and producing academic language requires more cognitive and linguistic complexity than using social language. The transition from oral communication to literate communication marks the need for increased cognitive and linguistic complexity in the teaching-learning process (Cummins, 1983; Larson & McKinley, 1995; Merritt & Culatta, 1998; Naremore, Densmore, & Harman, 1995; Nelson, 1998; Ripich & Creaghead, 1994; Westby, 1997, 1998). Major cognitive, linguistic, and contextual characteristics of academic language include:

Cognitive: abstract concepts; cognitively demanding tasks (critical thinking [analytical and creative], problem solving, decision making); language-thinking and executive functions that are stabilizing (Nelson, 1998; Wallach & Butler, 1994; Wallach & Miller, 1988; Westby, 1998).

Linguistic: complex morphological markers, syntactic transformations, and semantic relationships and networks with explicit vocabulary, resulting in increased oral and text cohesion and coherence; the ability to project, predict, and infer; increased demand for oral and text *form* (pronunciation, spelling, punctuation, organization), *content* (accuracy, synthesis cohesion, and coherence), and *style* (advanced narrative levels and expository genres) (Hedberg & Westby, 1993; Hughes, McGillivray, & Schmidek, 1997; Naremore et al., 1995; Nelson, 1998; Tough, 1979; Wallach & Butler, 1994; Wallach & Miller, 1988).

Contextual: reduced contextual clues; indeterminate audience diffuse in time and space; often physical and temporal separation between sender (writer, speaker) and receiver (listener, reader) (Merritt & Culatta, 1998; Nelson, 1998; Wallach & Butler, 1994; Wallach & Miller, 1988).

Academic communication-learning problems are associated with many developmental and acquired disorders. Academic language use and rules vary from culture to culture. However, the consensus is that to succeed in mainstream educational settings in the course of life students must be able to understand and use the cognitive, linguistic, and contextual conventions associated with academic language.

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DISCOURSE

ACADEMIC SKILLS

While to some individuals the definition of academic skills conjours up the three Rs, to others the delineation of the academic skills most important to the process of special education is a task that poses an awesome definitional problem. To the preschool special educator, for example, certain fine motor skills may be defined as important academic skills. On the other hand, for the special educator working at the secondary level, the ability to accept positive and negative feedback (social skills), driving skills, or home economics may be considered important academic skills that warrant inclusion in the secondary special education curriculum.

A recent comprehensive sourcebook on research on teaching presents detailed analyses of seven academic skill areas: written composition, reading, mathematics, natural sciences, arts and aesthetics, moral and values education, and social studies (Wittrock, 1986). At least a few of these areas would be considered by most individuals to be core or basic academic skills. The fact that these academic skill areas have entire chapters devoted to them also indicates that there is enough research, theory, or perhaps controversy regarding them as to allow them to be studied and discussed extensively.

Beyond the issue of defining academic skills are the related issues of the rise and fall of skills across generations (which is constantly addressed by the popular media), and equally important, the procedures by which these skills are taught and acquired by students in special education. Cartwright, Cartwright, and Ward (1981) list several approaches used by special education teachers to impart academic skills; these include the diagnostic teaching model, remedial and compensatory education models, direct instruction, task analysis, perceptual-motor training, inquiry, modeling, media-based instruction, education games, and computer-assisted and computer-managed instruction. Two additional instructional approaches that were popularized in the 1970s include mastery learning and cooperative learning (Stallings & Stipek, 1986).

With regard to learner characteristics that affect the acquisition of academic skills, Wittrock (1986) suggests the following broad categories for consideration: students' perceptions and expectations, attention, motivation, learning and memory, comprehension and knowledge acquisition, learning strategies, and metacognitive processes. In summary, special educators must first define the academic skills that their students must acquire and then consider instructional, student, and other variables in planning for the optimal acquisition of academic skills.

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MEMORY DISORDERS
METACOGNITION

ACADEMIC THERAPY

Academic Therapy was the first journal designed for specialists (special education teachers, educational diagnosticians, psychologists, resource room specialists, practitioners in speech, language, communication, vision, and hearing) who are in direct contact with children manifesting learning, language, and communication difficulties. Since 1965, it has established a reputation for easy-to-read and practical articles that focus on "what works" in the special clinical, therapeutic, or classroom setting. Contributors are teachers, professors, and specialists. Articles are short and are selected on the basis of their usefulness and ability to be put into immediate use by the journal reader. Each issue includes listings of new materials, current news on the national level, and ideas for home management. *Academic Therapy* is published five times during the year: September, November, January, March, and May.

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ACADEMIC THERAPY PUBLICATIONS

Since 1965, Academic Therapy Publications (ATP) has served specialists, diagnosticians, private clinics and schools, teachers in mainstream and self-contained classes, and others who work in special settings. It has a wide variety of publications designed to address to classroom aids, auditory learning, language, math, vocational/career, secondary/adult, professional texts, parent brochures, and reading programs. Academic Therapy Publications has a computer software division for students and professionals, and a test division which offers diagnostic instruments for assessing academic achievement. The *Directory of Facilities and Services for the Learning Disabled* was published every two years for 34 years. The 17th edition, published in 1997, marked the *Directory*'s last and final publication. High Noon Books, a division of Academic Therapy Publications, publishes high-interest low-level mystery novels, written on a first through third/fourth grade reading level for individuals ages 10 through adult who have reading difficulties or limited English proficiency. Activity workbooks are also available.

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ACALCULIA

Acalculia is defined by Hallahan, Kauffman, and Lloyd (1985) as "complete inability to use mathematic symbols and perform mathematical computations" (p. 267). Hallahan et al. distinguish acalculia from dyscalculia by stating that the term dyscalculia is "reserved for less severe problems in these areas" (p. 267).

One of the earliest uses of the term acalculia comes from the work of Henschen (Cohn, 1961). According to Cohn's description, Henschen used the term acalculia to include disturbances in number recognition as well as problems with specific arithmetic operations. This was reported by Henschen to be a manifestation of lesions in different regions of the brain, but primarily involved with the caudal portion of the left cerebral hemisphere (Cohn, 1961).

Strauss and Werner (1938) described acalculia as "deficiency in number operations" (p. 719) and provided evidence of the association between acalculia and finger agnosia (inability to recognize fingers on one's own hands), which was said to be caused by a lesion within an area around the angular gyrus. Strauss and Werner (1938) provided some evidence of a correlation between finger agnosia and acalculia.

According to Strauss and Lehtinen (1948), disturbance in visual perception was a major contributing factor to acalculia. They developed several principles for instruction based on organized perceptual experiences. Terms such as acalculia and dyscalculia have declined in popularity with the increasing attention given to more educationally relevant orientations. Generally, deficits in mathematical functioning have been remediated with the use of task-specific instructional strategies. Mercer (1979, chapter 8) provides an overview of some of these strategies. More recent nomenclature includes these disorders under the more general rubric of specific developmental disorders.

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ARITHMETIC REMEDIATION
DYSCALCULIA

ACCELERATION OF GIFTED CHILDREN

Acceleration is any process whereby a child makes educational progress faster than usual, whether measured by advancement in school grade or by actual achievement (Ward, 1980). Presently, there are numerous avenues for acceleration in schools for those students who exhibit general intellectual ability and/or outstanding aptitude in one or more subject areas.

For students who exhibit general intellectual ability, three of the existing options are telescoping, grade skipping, and early admission to formal schooling. Telescoping involves the completion of three years of schooling in two years or four years of schooling in three years (Fox, 1979). Those who skip grades are promoted two grade levels in one year. These children are usually given credit for the skipped year and are able to complete formal schooling in fewer years than usual. Early entrance to formal schooling occurs when children are allowed to enter kindergarten or first grade at an age lower than is usually allowed by the school or school system. These children may merit early entrance because of advanced scores on IQ or abilities tests.

For pupils with outstanding aptitude in one or more subject areas, six options exist: concurrent enrollment, correspondence courses, special schools or classes, independent study, tutorials, and credit by exam. Other options may be created within each individual class, school, or school system.

Concurrent enrollment for secondary school students occurs when high schools and universities cooperate to allow students to be concurrently enrolled both in a high school and in a college. These pupils receive college credit for courses taken on the college campus; in some cases they receive college credit for courses taught by a university faculty member on the high school campus. Correspondence courses provide another option for acceleration when secondary school students enroll through the continuing education division of participating universities. They receive lessons by mail, and, on completion of all requirements, receive a grade after taking a final examination graded by the same university professor who planned the lessons.

Another acceleration practice takes place in special schools or classes where students are allowed to complete more than one year of credit in a subject area class by working in a compacted curriculum and successfully passing examinations. One of the most well known of these special school and class arrangements is Julian Stanley's Study of Mathematically Precocious Youth, conducted at Johns Hopkins University (Stanley, 1977). Students who have qualified for participation in this program by scoring at least 550 on the Scholastic Aptitude Test in mathematics have the opportunity to study higher level mathematics in college classes during the summer and/or complete college correspondence courses during the school year. Since the inception of the program at Johns Hopkins, it has expanded to include students with high verbal aptitude, and subjects other than mathematics are offered. Two other programs have replicated Stanley's work: the Midwest Talent Search at Illinois' Northwestern University and the Talent Identification Program at North Carolina's Duke University.

Talented students may also do independent study or be provided with a special tutor to complete course requirements in an advanced curriculum area. Finally, other credit-by-examination options are available to students who wish to advance beyond their peers through acceleration. These include advanced placement in secondary schools in states that provide their own examinations to receive credit for high school classes, advanced placement in college courses through the Advanced Placement Program, and the College Level Examination Program that allows students to receive credit in 15 fields by taking exams at university testing centers.

In the early 1900s the most frequent accommodation for gifted and talented children was to allow rapid acceleration through the standard curriculum (Whitmore, 1980). The popular belief that acceleration is socially detrimental to the child later curbed much of this acceleration. There are conflicting views on this subject. Kulik and Kulik (1984) concluded that the research they reviewed offered no real answers to this debate, with some studies showing small positive effects and some showing small negative effects in affective areas. However, following the work pioneered by Julian Stanley and his colleagues, acceleration has become more acceptable again.

Although there are no clear answers concerning the effects of acceleration on social and emotional growth, there are answers to questions about whether acceleration is beneficial academically. In a meta-analysis of 26 controlled studies, evidence showed that examination performance of accelerates surpassed by nearly one grade level the performance of nonaccelerates of equivalent age and intelligence. Furthermore, the examination scores of accelerates were equivalent to those of same-grade, but older, talented nonaccelerates (Kulik & Kulik, 1984).

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ACADEMICALLY TALENTED CHILDREN
GIFTED AND TALENTED CHILDREN
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ACCESSIBILITY OF BUILDINGS

The accessible building is a structure that is readily usable by individuals possessing a wide range of physical disabilities or other limitations (such as sensory handicaps). Although estimates vary widely as to the number of citizens whose temporary or permanent impairments inhibit their mobility, the U.S. Department of Housing and Urban Development (1978) projects that at least 30 million people possess conditions that demand barrier-free facilities. A building or other site designed to accommodate ambulant or sensorily disabled persons is equally convenient and accessible to the nonhandicapped population. The design criteria used to meet the needs of handicapped populations are essentially no different from those of the general, nondisabled citizenry; they are only more pronounced.

The generally accepted minimum standards for ensuring the accessibility of buildings are incorporated in the American National Standards Institute (ANSI) specifications. Originally adopted in 1961 and subsequently revised and expanded during 1970s, the ANSI standards serve as a foundation for state laws and federal guidelines concerning building accessibility. A federal entity, the National Commission on Architectural Barriers (CAB), was created by an act of Congress to promote and evaluate voluntary and, in the case of federally owned or subsidized buildings, mandatory compliance with the ANSI standards.

The CAB's primary function has been to oversee the implementation of the Architectural Barriers Act of 1968 and related federal legislation designed to foster the accessibility of buildings and other environments.

The economic and human benefits of a site design that is barrier free are substantial. Data from the U.S. Office of Housing and Urban Development (1978) suggest that the initial costs of remodeling existing structures or designing and constructing new, fully accessible facilities are minimal when compared with the benefits derived by the disabled, their families, friends and colleagues, educational and other service agencies, and employers. The initial, one-time investment in a barrier-free design provides long-term benefits in terms of personal comfort, mobility, maximization of educational, social and employment options, and (particularly important for business) an expansion in the pool of active consumers.

Guided by the ANSI standards, architects and facility planners must ensure that the entrances to and the interiors of buildings allow for the uninhibited mobility, orientation, comfort, and performance of all facility users. As reviewed by Cotler and DeGraff (1976), the structural dimensions, interior design, entranceways and the layout of furniture in all buildings should be integrated to accommodate the physical limitations in mobility, reach and posture experienced by most wheelchair users and individuals aided by crutches, walkers and canes. It is of equal importance to the sensorily handicapped population (e.g., individuals who are blind or deaf) that building environments offer a simple, regular, well-lighted and marked design that enhances orientation and ready access to sources of visual, aural and tactile information.

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AMERICANS WITH DISABILITIES ACT
ARCHITECTURAL BARRIERS
ARCHITECTURE AND THE HANDICAPPED

ACCESSIBILITY OF PROGRAMS

Section 504 of the Rehabilitation Act of 1973, as amended, provides that

> no otherwise qualified handicapped individual . . . shall, solely by reason of his handicap, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance or under any program or activity conducted by any executive agency or the United States Postal Service.

The substantive provisions apply to two distinct sets of entities: recipients of federal financial assistance (federally assisted programs) and the operations of government agencies (federally conducted programs).

The concept of program accessibility is a key requirement of the implementing regulations for both federally assisted and federally conducted programs (U.S. Government, 1978; U.S. Government, 1985). In both cases, the requirement is not that every existing building or classroom be physically accessible, but rather that "the program or activity, when viewed in its entirety, is readily accessible to and usable by handicapped persons" (28 CFR 41.57(a)). All new buildings and facilities must be designed and constructed to be readily accessible to and usable by handicapped persons.

Since the late 1970s, federal court decisions and regulatory policy have interpreted and qualified the precise requirements of program accessibility. Of particular importance is the U.S. Supreme Court decision in *Southeastern Community College* v. *Davis* (1979), which held that the school was not required to modify a nurse training program as sought by a hearing-impaired individual because such modification would constitute "a fundamental alteration in the nature of the program." In discussing program modification, the Court also referenced attaining desirable goals "without imposing undue financial and administrative burdens" (pp. 410, 412).

In a prototype regulation distributed to all agencies as nonbinding guidance, and in its own regulation on federally conducted programs promulgated in 1984 (U.S. Government, 1985), the Department of Justice employs criteria from the *Davis* decision. The program accessibility requirement for existing programs explicitly does not "require the agency to taken any action that it can demonstrate would result in a fundamental alteration in the nature of the program or in undue financial and administrative burdens" (28 CFR 39.150(a)(2)).

Some commentators on the Department of Justice's proposed regulation objected to the inclusion of the *Davis* criteria. They argued that the language must be identical to the Department of Justice's government-wide coordinating regulation on federally assisted programs, which does not include such criteria (U.S. Government, 1985, p. 357). The Department of Justice's position is that "judicial interpretation of Section 504 [including circuit court decisions following *Davis*] compels it to incorporate the new language" and that the regulations for federally assisted programs must now be interpreted consistent with the federally conducted rule and *Davis* (U.S. Government, 1985, p. 357).

A good discussion of these issues is in the editorial note to 28 CFR 39 (U.S. Government, 1985). Other precedents have established the rights of all students to accessibility of educational programs (Sales et al., 1999).

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ACCESSIBILITY OF BUILDINGS
AMERICANS WITH DISABILITIES ACT
SPECIAL EDUCATION, LEGAL REGULATION OF

ACCOMMODATION

Accommodation is one of two complementary processes proposed by Jean Piaget to account for an individual's adaptation to the environment; its counterpart is assimilation. Accommodation involves changing or transforming cognitive or sensorimotor schemes according to the demands of the environment; assimilation involves incorporating external elements into existing conceptual schemes.

The difference between accommodation and assimilation can be illustrated by an example of an infant's response to a rattle (Ginsburg & Opper, 1969). When a rattle suspended from an infant's crib begins to shake after the infant's arm movement causes it to move, the infant looks at and listens to the toy rattling, assimilating the event into his or her schemes of looking and listening. To repeat the movement of the rattle, the infant must make the necessary hand and arm movements, accommodating his or her actions according to the demands of the situation.

Assimilation and accommodation were viewed by Piaget as inseparable aspects of a single process of adaptation, separable only for purposes of discussion (Brainerd, 1978). Assimilation and accommodation occur simultaneously; a balance between the two is necessary for adaptation. A scheme must accommodate itself to the specific characteristics of the object or event it is attempting to assimilate;

accommodation guides the eventual change in structures (Gelman & Baillargeon, 1983).

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ASSIMILATION
COGNITIVE DEVELOPMENT
PIAGET, JEAN

ACETYLCHOLINE

Acetylcholine (ACh) is a neurotransmitter, a chemical that is released from one neuron to pass a message to another neuron. Acetylcholine is naturally synthesized in living cells in cholinergic nerve terminals that are located primarily in the autonomic nervous system. It also is evident at parasympathetic postganglionic synapses, and at neuromuscular junctures (Cooper, Bloom, & Roth, 1982).

The autonomic nervous system is involved in what appears to be functionally reflexive responses directed toward energy conservation or preparation for possible trauma. Thus, with cholinergic stimulation, pupils contract, heart rate slows, and muscular contraction is facilitated (Katzung, 1982). Experimental work by Deutsch (1984) suggests the possibility of an indirect, environmental role for ACh in the development of memories. Results of animal studies indicate that drugs that block cholinergic action tend to increase low rates of response and decrease high rates of response among behaviors that were maintained through food reinforcers (Seiden & Dykstra, 1977). Such findings are consistent with the likelihood that ACh plays a role in creating a chemical environmental context for learning by mediating autonomic responsiveness. A role in pain perception also has been postulated (Cooper et al., 1982). Myasthenia gravis, a disease characterized by fluctuating muscle weakness, especially in muscles innervated by the motor nuclei of the brain stem (Adams & Victor, 1981), is a model of ACh dysfunction. Observed involvement of cholinergic systems in tardive dyskinesia, Huntington's chorea, and Alzheimer's dementia has led to experimental administration of drugs that facilitate ACh; however, no consistent results have been observed in such studies (Cooper et al., 1982).

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CENTRAL NERVOUS SYSTEM

ACHIEVEMENT NEED

Achievement need is also known as achievement motivation, the need for achievement and n:Ach. The concept was first defined by Murray (1938) as the need, "to overcome obstacles, to exercise power, to strive to do something difficult as well and as quickly as possible" (pp. 80–81). Murray, however, chose not to attempt to conduct applied research in achievement motivation and the concept did not receive much attention until McClelland (1951) developed a cognitive theory of motivation in which the need for achievement is one element. McClelland's theory states that a person's tendency to approach a task (effort) is a function of the strength of the achievement need, the strength of the need to avoid failure, the person's subjective belief about the probability of success or failure, and the value of the incentives associated with either success or failure. According to McClelland (1951) and Atkinson (1964), achievement need is intrinsic. It is not associated with extrinsic rewards that accrue as a result of achievement. Achievement need is generally measured through the Thematic Apperception Test (TAT), although Hermans

(1970) developed a paper and pencil test for this purpose called n:Ach.

Many researchers have attempted to determine how achievement need develops. Crandall (1963) discovered that children with high achievement needs had mothers who rewarded achievement and achievement activities at an early age. These mothers also did not attend to their children's pleas for help when the children faced a difficult problem. Crandall further concluded that middle- and upper-class parents were more likely to engage in behaviors that develop achievement motivation than were parents of lower economic status.

A number of studies have been conducted to determine the effects of achievement on task performance and personality. Weiner (1970) found that high-need achievement persons persist in the face of failure while low-need achievement persons become more inhibited in their responses. He further found that low-need achievement persons will engage in achievement activity when success and reinforcement rates approach 100%, but high-need achievement persons work best when reinforcement is attained approximately 50% of the time. Weiner & Kukla (1970) related achievement need research to Rotter's (1966) research in locus of control. Using elementary school children, they concluded that high-need achievement children viewed their successes as resulting from their effort. Both high- and low-achievement need children attributed failure to themselves, but high-need achievement children attributed failure to lack of effort while low-achievement children attributed it to lack of ability.

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LEARNED HELPLESSNESS
MOTIVATION
SELF-CONCEPT
SELF-CONTROL CURRICULUM

ACHIEVEMENT TESTS

Achievement tests are individually- or group-administered standardized instruments intended to measure the effectiveness of former training. Achievement tests are the dominant form of standardized assessment in education. Measures of achievement have been used to evaluate student performance, school instruction efficacy, candidates for scholarship awards, admission to academic programs, and applicants for industrial and government employment. Group administered achievement tests are more likely to be employed for the evaluation of a scholastic program, whereas individually administered achievement tests are typically used to assist in appropriate grade placement in schools and the identification and diagnosis of learning disabilities.

Traditional achievement tests were based on the principle of comparing examinees to their peers, or normative testing (classical test theory). Some more contemporary achievement tests are based on the premise that a prediction can be made about the performance of a person with a specified ability in regard to that person's probable success or failure on an item of specified difficulty (Anastasi, 1988). In other words, as the level of ability increases, the probability that an examinee will give a correct response increases (Hambleton, Swaminathan, & Rogers, 1991). Given the special characteristics of item response theory (IRT), computer adaptive testing is a desirable method to select different sets of items for each subject.

Some examples of commonly used normative achievement tests and their publishers include: Comprehensive Tests of Basic Skills (CTB/McGraw-Hill), Iowa Tests of Basic Skills (Riverside Publishing Company), Kaufman–Test of Educational Achievement (American Guidance Service), Stanford Test of Academic Skills (Psychological Corporation), and Tests of General Educational Development (GED Testing Service of the American Council on Education).

The use of computer aided testing and IRT represents a new era in achievement testing. For example, the ACCUPLACER (College Board) computerized battery of achievement tests for college level placement was implemented in the placement of hundreds of thousands of students during the 1996–97 academic school year (Cole, Muenz, & Bates, 1998).

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ASSESSMENT
CRITERION-REFERENCED TESTS
NORM-REFERENCED TESTS

ACHONDROPLASIA

Achondroplasia, also called chondrodystrophy, refers to a defect in the formation of cartilage in the epiphyses of long bones, such that a type of dwarfism results. This most common form of dwarfism is usually inherited as an autosomal dominant trait, or it may result from spontaneous mutation (Avioli, 1979; Magalini, 1971). Clinical features of achondroplasia include absolute diminution of extremities; normal trunk and head size; a prominent, bulging forehead; and a flattened, saddle nose. Hands and feet typically are short, and fingers tend to be nearly equal in length (trident hands). Adult height generally does not exceed 1.4 meters.

The intelligence of affected persons is reported to be normal (Avioli, 1979; Lubs, 1977), although there is evidence of occasional neurologic complications during early adulthood (Magalini, 1971). The fertility of achrondroplastic dwarfs is reported to be 30% of normal. Of offspring of two affected persons, two-thirds will exhibit the syndrome (Lubs, 1977). In educational settings, afflicted children may require adaptive equipment to accommodate their short stature. While there is no evidence to suggest that achondroplasia places individuals at increased risk for learning problems, a multifactored evaluation is appropriate for children who experience difficulty in school.

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CONGENITAL DISORDERS
MINOR PHYSICAL ANOMALIES

ACTING OUT

Acting out has been defined by Harriman (1975) as the "direct expression of conflicted tensions in annoying or antisocial behavior in fantasies" (p. 30). A child who exhibits acting-out behavior is one who cannot easily accept structural limits and is difficult to manage in the classroom. Acting-out behaviors are similar to conduct disorders, but not necessarily as severe. One reason for the similarity is that acting-out behavior is one of the characteristics clustered under the broader grouping of conduct disorders. Acting-out behaviors usually are of high frequency and of significant duration, and do not include minor daily misbehavior.

Usually, when a behavior is identified as an acting-out behavior, it is operationally defined, observed, and recorded by the classroom teacher in specific and observable terms. Some of the behaviors that can be identified as acting-out behaviors include fighting, lying, temper tantrums, pouting, stealing, hyperactivity, threatening, and bullying (Quay, 1979).

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APPLIED BEHAVIOR ANALYSIS
CONDUCT DISORDER

ADAPTED PHYSICAL EDUCATION

Adapted physical education is a

> diversified program of developmental activities, games, sports, and rhythms suited to the interests, capacities, and limitations

> of students with disabilities who may not safely and successfully engage in unrestricted participation in vigorous activities of the general physical education program. (Hurley, 1981, p. 43)

The focus of adapted physical education is on the development of motor and physical fitness and fundamental motor patterns and skills in a sportslike environment (Sherrill, 1985).

Adapted physical education implies the modification of physical activities, rules, and regulations to meet existing limiting factors of specific handicapped populations. By definition, adapted physical education includes activities planned for persons with learning problems owed to mental, motor, or emotional impairment, disability, or dysfunction; planned for the purpose of rehabilitation, habilitation, or remediation; modified so the handicapped can participate; and designed for modifying movement capabilities.

Adapted physical education primarily occurs within a school setting, but it may also occur in clinics, hospitals, residential facilities, daycare centers, or other centers where the primary intent is to influence learning or movement potential through motor activity (AAHPER, 1952).

In the school setting, adapted physical education differs from regular physical education in the following manner. It has a federally mandated base through PL 94-142. It serves students who are primarily identified as having a handicapping condition but may serve students such as the obese, who are not identified as handicapped but are in need of physical activity modification within a restricted environment. Adapted physical education classes are usually separate and educationally distinct from regular physical education owing to the need to modify the curriculum to suit the individual interests and capabilities of the student.

The basic elements in curriculum planning are individuality, flexibility, and educational accountability. Because of the intra-and intervariability of individual differences within and across handicaps, activities must be designed and programmed to fit each child's motor capabilities. For instance, children within a particular handicapped group may be able to throw a ball, but each within the group, because of motor limitations, may throw the ball differently while still achieving the objective of distance and accuracy. Second, adapted physical education activities are designed to be flexible enough to achieve educational goals. For instance, for basketball, a smaller ball is provided and baskets are lowered so that students may be able to score more baskets in a game, thereby increasing their enjoyment in the sport (Auxter & Pyer, 1985).

Adapted physical education for students classified as handicapped implies accountability via the individualized educational plan (IEP). Objectives stated on an IEP ensure that the student is receiving instruction in activities where there is the greatest physical, motor, and social need. The student is evaluated periodically to assess progress toward the short- and long-term goals stated in the IEP.

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PHYSICAL EDUCATION FOR STUDENTS WITH DISABILITIES

ADAPTIVE BEHAVIOR

Adaptive behavior, or the daily activities required for personal and social sufficiency, is an integral part of the evaluation and planning for handicapped and nonhandicapped individuals. It is not a new concept and has its roots in historical views concerning the treatment of the mentally retarded. The increased emphasis now placed on the use of the adaptive behavior concept in special education and programs for the handicapped is resulting in attempts to better understand the characteristics of adaptive behavior and in the publication of many new instruments for measuring adaptive behavior (Meyers, Nihira, & Zetlin, 1979).

Present concepts of adaptive behavior are traced to early attempts to describe the mentally retarded (Harrison, 1985). As early as the Renaissance and Reformation, language and law defined mental retardation in terms of adaptive behavior, or a person's ability to take care of himself or herself and get along with others. Legal reforms for the mentally retarded during the 1800s resulted in continued attention to adaptive behavior. However, in the early 1900s, the development of the Binet intelligence scales and its counterparts led to a prevalent practice of defining mental retardation solely in terms of IQ; this practice continued for many years.

Edgar Doll, the major pioneer in adaptive behavior assessment, disagreed with the use of IQs only, and, in the 1930s, indicated that a person's social competence, or adaptive behavior, should be the first and most important criterion for mental retardation. It was not until 1959 that the American Association on Mental Deficiency published

its official manual and formally included deficits in adaptive behavior, in addition to low intelligence, as an integral part of the definition of mental retardation (Heber, 1961). Subsequent editions of the manual have further emphasized the importance of adaptive behavior.

Several issues in the 1960s and 1970s precipitated an upsurge of interest in adaptive behavior and adaptive behavior assessment (Witt & Martens, 1984). A concern arose about "6-hour retarded children" or minority group and low socioeconomic status children who were labeled as retarded in the public schools but exhibited adequate adaptive behavior at home and in the community (Mercer, 1973). This concern eventually led to litigation such as the Guadalupe and Larry P. cases and court decisions that indicated that results of intelligence tests cannot be the primary basis for classifying children as mentally retarded and that adaptive behavior must be assessed. The 1960s and 1970s saw a trend toward the normalization of handicapped individuals and the awareness that effective programs for teaching adaptive skills allow handicapped individuals to participate as fully as possible in normal environments. A third issue was the need for a nonbiased and multifaceted assessment of all handicapped children to facilitate the fairness of decisions based on the results of tests and to investigate functioning in all areas related to a particular handicap.

The passage of the Education of All Handicapped Children Act of 1975 (Public Law 94-142) represented the culmination of the issues of the 1960s and 1970s. Public Law 94-142 and its successor, the current Individuals with Disabilities Education Act, commonly known as IDEA, have stringent guides for the assessment of handicapped children and stipulates that deficits in adaptive behavior must be substantiated before a child is classified as mentally retarded. Further, it recognizes the importance of adaptive behavior assessment for children other than the mentally retarded. Since the passage of the law, most states have developed guidelines for adaptive behavior assessment (Patrick & Reschley, 1982) and many have strict criteria for the types of adaptive behavior instruments and scores to be used.

Sparrow, Balla, and Cicchetti (1984) discuss several characteristics that are inherent in concepts of adaptive behavior. Adaptive behavior is an age-related construct; as normally developing children grow older, adaptive behavior increases and becomes more complex. Adaptive behavior is determined by the standards of other people, those who live, work, play, teach, and interact with an individual. Finally, adaptive behavior is defined as what an individual does day by day, not by an individual's ability or what he or she can do. If a person has the ability to perform a daily task, but does not do it, adaptive behavior is considered to be inadequate.

An important issue in the description of adaptive behavior is the distinction between adaptive behavior and intelligence (Meyers, Nihira, & Zetlin, 1979). Adaptive behavior and intelligence have several important differences. First, adaptive behavior focuses on everyday behavior and intelligence on thought processes. Adaptive behavior is based on concrete environmental demands while intelligence focuses on academic demands. Adaptive behavior assessment involves common, typical, and everyday behaviors, whereas intelligence scales attempt to measure a person's potential, or his or her best possible performance.

Since the passage of Public Law 94-142, a large number of adaptive behavior scales have been published or developed for local use. Most adaptive behavior scales are administered to a respondent such as a parent or teacher who is familiar with the daily activities of the person. Some are administered directly to the person whose adaptive behavior is being assessed. The Vineland Adaptive Behavior Scales (Sparrow, et al., 1984) measure adaptive behavior in the areas of communication, daily living skills, socialization, motor skills, and maladaptive behavior. The Adaptive Behavior Inventory for Children (Mercer & Lewis, 1977) assesses a child's adaptation to family, community, and peer social systems. The AAMD Adaptive Behavior Scale (Lambert & Windmiller, 1981) evaluates personal sufficiency, social sufficiency, responsibility, and personal and social adjustment. The Scales of Independent Behavior (Bruininks, Woodcock, Weatherman, & Hill, 1984) include measures of motor skills, social interaction and communication, personal and community independence, and problem behaviors. The Children's Adaptive Behavior Scale (Richmond & Kicklighter, 1980) contains scales for language, independent functioning, family roles, economic vocational activity, and socialization.

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ADAPTIVE BEHAVIOR INVENTORY FOR CHILDREN
MENTAL RETARDATION

ADAPTIVE BEHAVIOR INVENTORY FOR CHILDREN (ABIC)

The Adaptive Behavior Inventory for Children (ABIC), a component of the System of Multicultural Pluralistic Assessment (SOMPA; Mercer & Lewis, 1977), is a 242-item rating scale for children ages 5 to 11 years. It provides an indication of a child's adaptation to social systems involving the family, peer group, and community. The ABIC items are administered to a child's parents or guardians; the questions are read to a parent and he or she indicates whether the child's role in the activity described by the item is latent, emergent, or mastered. The administration requires about 1 hour. The ABIC contains six scales: Family, Community, Peer Relations, Nonacademic School Roles, Earner Consumer, and Self-Maintenance. A measure of veracity (or a lie scale) is also included.

Scaled scores (with a mean of 50 and a standard deviation of 15) are available for each of the six scales; the ABIC Average Scaled Score, a measure of overall adaptive behavior, is the mean of the six scaled scores. The ABIC was standardized with a sample of 2085 California schoolchildren (696 black, 700 Spanish surname, and 689 white). The SOMPA *Technical Manual* reports average split-half reliability coefficients ranging from 0.82 to 0.89 for the six scales and a reliability coefficient of 0.97 for the ABIC Average Scaled Score. No validity data are reported in the manual, but the ABIC has been used in numerous studies that investigated, for example, the relationship between the ABIC and intelligence and achievement (e.g., Harrison, 1981; Oakland, 1983) and the representativeness of the ABIC norms (Oakland, 1979). Use of the ABIC has declined considerably as its parent system, SOMPA, has lost favor in the profession.

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ADAPTIVE BEHAVIOR
BEHAVIORAL OBSERVATION
SYSTEM OF MULTICULTURAL PLURALISTIC ASSESSMENT
VINELAND SOCIAL MATURITY SCALE

ADAPTIVE BEHAVIOR SCALE

See VINELAND ADAPTIVE BEHAVIOR SCALES.

ADAPTIVE DEVICES

Adaptive, assistive, augmentative, prosthetic, and orthotic devices are all aids to help those with a variety of disabilities to overcome problems of everyday living. Examples range from leg braces to highly sophisticated microcomputers adapted for the disabled. Included are hearing aids, Braille books, glasses, wheelchairs, specialized eating utensils, braces, positioning devices, page turners, tape recorders, typewriters, and the artificial larynx.

Two sources of information for this wide range of adaptive devices are *The Directory of Living Aids for the Disabled Person,* published by the Veterans Administration (U.S. Government Printing Office, 1982), which provides an extensive list of aids for daily living, and *The Information System for Adaptive, Assistive and Rehabilitative Equipment* (*ISAARE*) (Melichar, 1977, 1978), an information storage and retrieval system that lists devices by categories such as "travel" and "communication."

The type of adaptive devices currently experiencing the greatest technological advances as well as the greatest emphasis in rehabilitation is augmentative communication systems. Three general modes of nonvocal or augmenta-

tive communication have been developed for those for whom intelligible speech is not an option. They are manual communication, communication boards, and electronic systems. Manual communication includes gestures, signs, and finger spelling; it is used extensively with nonhearing-impaired as well as hearing-impaired populations, but it does not include an adaptive device. Communication boards are boards, or booklets, that come in a wide range of sizes, shapes, and materials, and make use of a variety of symbol systems. These symbols include objects, drawings and photographs, rebus symbols, Blissymbols, letters, and words. Sources of information on the design and use of communication boards include the *Language Board Instruction Kit* (Oaklander, 1980); Carlson, 1981; Musselwhite & St. Louis, 1982; Silverman, 1980; and *Non Oral Communication* (Plavan Schools, 1980).

The tremendous growth of computer technology is providing the impetus for the development of communication systems for the physically disabled that can be individually tailored to their abilities. Input devices for those who do not have sufficient motor control for direct selection (pointing or using a keyboard) include paddle switches, joy sticks, moisture switches, optical switches, eyebrow or tongue-controlled switches, sip and puff switches, and voice-controlled switches, among others. These augmentative systems are also tailored to the user's output needs and may include a combination of hard copy printout, synthesized speech output, display screens, and so on. The selection of an appropriate system to include the most effective and efficient symbol system, input technique, and output capabilities is a complex process requiring the services of a team of experts. The American Speech-Language-Hearing Association (ASHA) Ad Hoc Committee on Communication Processes and Non-Speaking Persons (1980) identifies possible team members as well as essential components of the assessment process. Depending on the individual's needs, most of the following people should be involved in the assessment and training process: speech-language pathologist, occupational therapist, physical therapist, parents, teacher, system user, psychologist, rehabilitation engineer, and social worker.

Ongoing research on the design and use of augmentative communication systems makes any list or discussion of specific systems quickly obsolete. The sources in the References list will provide further background reading. The most current information can be obtained through the following: *Communication Outlook,* a monthly publication from the Artificial Language Laboratory, Computer Science Department, Michigan State University, East Lansing, MI 48824; National Rehabilitation Information Center (NARIC), The Catholic University of America, 4407 8th Street NE, Washington, DC 20064; *The Resource Guide, Rehabilitation Engineering and Product Information* (Publication No. E-80-2205, September 1980), U.S. Dept. of Education, Office of Special Education and Rehabilitation Services, Office for Handicapped Individuals, Washington, DC 20202; *Augmentative & Alternative Communication,* the official journal of the International Society for Augmentative and Alternative Communication, Baltimore: Williams & Wilkins; and the Trace Research and Development Center University of Wisconsin, Madison, WI.

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AUGMENTATIVE COMMUNICATION SYSTEMS
BLISSYMBOLS
COMMUNICATION BOARDS

ADAPTIVE PE

See ADAPTED PHYSICAL EDUCATION.

ADDERALL

Adderall is a stimulant medication that is a different mixture of amphetamine isomers than the common stimulants

such as dexedrine, benzedrine, methamphetamine, methylphenidate, and magnesium pemoline. It is available in 5, 10, 20, and 30 mg tablets. Adderall is used primarily in the treatment of attention-deficit hyperactivity disorder (ADHD) and narcolepsy. Adderall has been shown in clinical trials to increase alertness, improve attention span, decrease distractibility, and increase the ability to follow directions among children ages 3 years and up.

Adderall is popular among many children and families because it may need to be taken only once or twice a day, eliminating the need for dosing at school. Since it is a different chemical preparation, Adderall has been found to be effective with patients who do not respond to more popular stimulant treatments, such as Ritalin. However, Adderall may take as long as 3 to 4 weeks to become effective, while other stimulants tend to take effect more immediately. Adderall has a similar side-effect profile to other common stimulants, the most common of those being appetite suppression, growth retardation, insomnia, and headache. Less frequent side effects of this drug class include tics, dry mouth, irritability, cardiovascular acceleration, and, at high dosages, hallucinations and a disorder characterized as amphetamine psychosis. Adderall also interacts with a variety of drugs used in the treatment of depression and with drugs used to treat psychotic symptoms. Certain foods, especially those at extremes of acidity or alkalinity, may also alter dosage effects of Adderall.

Adderall may be habit-forming and is classified as a central nervous system stimulant. Monitoring of dose response, side effects, and polypharmacy by a physician is crucial to safe use of Adderall and other drugs in its class. Additional information is available in Arky (1998) and Cahill (1997).

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ADDITIVE-FREE DIETS

During the 1970s and 1980s, a very important and particularly controversial theory of the management of learning and behavioral disorders in children was the theory of the additive-free diet proposed by Feingold (1975). Specifically, Feingold has maintained that children with hyperactivity and other behavioral disorders have a natural toxic reaction to artificial food colors, flavorings, preservatives, and other substances that are added to food to enhance their shelf-life. The additive-free diet regimen proposed by Feingold purports to eliminate artificial flavors and salicylates (compounds naturally occurring in certain fruits and vegetables) from a child's diet as a treatment for hyperactivity and learning disabilities. It is also noteworthy that Feingold has advocated his additive-free diet for a number of other conditions, including mental retardation, early infantile autism, and delinquency (Barkley, 1990).

Despite the widespread appeal of the additive-free diet among the lay community and the Feingold Association, this treatment has been widely assailed in scholarly literature. On the basis of empirically unsubstantiated claims concerning the efficacy of this diet, Feingold has insisted that nearly 50% of hyperactive children in his clinical private practice sample displayed a complete remission of symptoms as a result of the additive-free dietary regimen. Such improved symptoms, according to the Feingold group, include markedly enhanced cognitive and academic functioning. Further, Feingold has insisted that the younger the child, the more expedient and complete the improvement that occurs. Nonetheless, several investigators (Harley & Matthews, 1980) have attributed this dramatic success to a placebo effect, or even the changed aspects of family dynamics that often result from the additive-free diet. Also contributing to widespread acceptance of the Feingold diet is our culture's current obsession with diet consciousness and health food fads.

The publicity and heated debate resulting from Feingold's claims have resulted in a proliferation of empirical studies among investigators in the scientific community that have assessed the efficacy of additive-free diets in hyperactive children (Conners, 1980; Conners, Goyette, Southwick, Lees, & Andrulonis, 1976). In a cogent summary of a series of studies conducted by these researchers, Conners (1980) has concluded that only a small number of children (less than 5%) respond specifically to the additive-free diet. More important, many investigators now recognize that those foods that Feingold has recommended be eliminated from children's diets are often high in important nutrients necessary for normal growth and development. Thus, placing children on the additive-free diet may even compromise their nutritional needs. Nonetheless, despite the "gross overstatements by Dr. Feingold" (Conners, 1980, p. 109) and the proliferation of weak studies in this area, one must be cognizant of the fact that for a small subgroup of hyperactive children (Ross & Ross, 1982) diet management may be a useful form of intervention. It remains unclear whether it is the additive-free diet itself that is responsible for the observed improvements or the behavioral regimen associated with this special diet. As a result, Conners (1980) has recommended that limited empirical investigations still be continued in this controversial area. Practitioners and researchers concerned with this topic will want to examine Conners' (1980) important

work in this field, which is consistent with subsequent reviews (Brown, Dreelin, & Dingle, 1999; NIH, 1998).

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FEINGOLD DIET
HYPERACTIVITY

ADJUSTMENT OF THE HANDICAPPED

By virtue of their "differentness," handicapped individuals and their families must make certain special adjustments to lead fulfilling and satisfying lives. The most obvious and important of these adjustments is the appraisal and acceptance of the handicapping condition itself. Such acceptance is prerequisite to seeking and obtaining appropriate care and services.

Another necessary adjustment requires recognizing and dealing with influences of a handicapping condition on all aspects of the individual's development. For example, a physical handicap affects social development and interactions in ways that have only recently been addressed scientifically and professionally, but have long been sources of confusion and frustration to the handicapped.

It has become fashionable among educators and developmental psychologists to refer to the "whole child" in nurturing and/or describing the development of "normal," i.e., nonhandicapped, children. Some (e.g., Shontz, 1980) have advocated this integrated approach in understanding the development of handicapped children and adolescents. However, two factors make it especially difficult to grasp specific implications of particular handicapping conditions for domains not directly affected by the conditions. One difficulty is that the interrelationships among the various developmental domains are subtle and complex; another is that the exceptional child's development is affected by special social and internal forces. Therefore, our ability to recommend theoretically based prescriptions for professional and parenting practices that will promote maximal development in indirectly affected domains is limited by the lack of empirical evidence comparing particular approaches to raising, treating, and educating the "whole" handicapped child.

The development of the child with a handicap occurs along the same lines as that of the nonhandicapped child. However, an individual handicapped child's development will exhibit qualitative variations from the norm. The specific deviations from typical development depend both on the nature and severity of the handicapping condition and on the level of adjustment achieved by the child and his or her family and teachers. Of particular significance in the adjustment of the handicapped child are personality and social development. Also of concern are possible physical and/or medical adjustments that may be required, and special educational adjustments.

Normal personal-social development includes the emergence of the individual's self-concept and self-esteem. These beliefs about one's characteristics, relative worth, and competence are acquired by internalizing an image of one's self as it is reflected by important adults and peers. Bartel and Guskin (1980) emphasize that the feedback one receives from the social environment is a crucial factor in the development of a positive self-concept and high self-esteem, for it creates an expectation and interpretive schema for self-evaluation of one's abilities and efforts. The self-concept of a handicapped child is at risk because society's negative evaluations of individuals who are different from the norm are systematically, if unconsciously, transmitted to him or her (Gliedman & Roth, 1980). Because the development of high self-esteem is based on what an individual *can* do, a handicapping condition may endanger a child's self-esteem by focusing attention on what the child cannot do.

The social side of personal-social development includes the acquisition of skills for interacting socially. Two forces interact to interfere with normal social experiences and therefore place the handicapped child at a disadvantage for acquiring appropriate social skills. On the one hand is a cultural tendency, described by Bartel and Guskin (1980), to stigmatize a handicapped individual; this often

results in deliberate as well as unconscious social rejection of the child. Therefore, he or she may experience decreased opportunities to participate in the sorts of activities through which social skills are acquired and refined. On the other hand, some researchers (Field, 1980; Novak, Olley, & Kearney, 1980) have demonstrated that handicapped children are less likely to initiate social interaction with peers, preferring instead object-oriented activities. Such reserve is self-defeating, for the child denies himself or herself opportunities that are available. In sum, the rejection of others and the child's own reluctance to join in the usual social activities interfere with normal personal-social development by reducing opportunities for social participation.

A handicapping condition may limit a child's or adolescent's physical activities. The handicap may impose restrictions owing to physical limitations or medical complications that limit freedom to get about in the environment. Physical and/or medical limitations may reduce opportunities for interaction and exploration in both the physical and social realms and thus curtail experiences that stimulate and promote cognitive growth and personal-social development. Handicapped children must be encouraged not to retreat from any activities that are accessible, although inconvenient, because of physical restrictions. Professionals and others can help them to participate in an adapted way, if necessary, in order not to deprive them of beneficial experiences.

Handicapped children may have to adjust medical interventions or therapies such as drugs, braces, physical therapy, surgical procedures, hearing appliances, etc. The child's adjustment to the medical aspect of his or her program is absolutely essential because the child must cooperate in order to achieve the maximum benefits of the prescribed treatment(s).

A handicapped child is very likely to have to make an adjustment involving his or her educational programs. The adjustment may range from simply modifying his or her study habits or methods to full-time participation in a special self-contained program. Professionals who work with the child should strive to minimize whatever educational disadvantage(s) may be imposed by the handicap. The goals of the child's educational program should emphasize activities to compensate for and/or overcome his or her handicap.

The effectiveness of the child's program will be amplified by the active involvement of parents in consistently following through on behavioral and educational interventions in the home environment. Concrete benefits are derived from the parents' participation. Parents are able to provide additional reinforcement and practice for skills learned during the school day, helping their child consolidate gains more rapidly. In addition, their involvement is a signal to the child of their commitment to his or her development and the high value they place on educational achievement. These attitudes are highly motivating and will help see the child through difficult periods.

Parents who do not accept and adjust to the child's handicap escalate their child's difficulties. Maladaptive behavior patterns that emerge in the relationship between parents and their handicapped child can arise from either of two opposite, but equally harmful, reactions. Parents may either overestimate or underestimate their child's abilities and potential. Overestimates may be due to parents' denial of their child's problems. Such parents are prone to establish unreasonably high standards for their child's behavior or development. Because the child wants to please the parents but is not capable of fulfilling their expectations, he or she continually faces feelings of frustration, inadequacy, and other negative emotions such as guilt, disappointment, and uncertainty as to his or her place in the affections of the parents. On the other hand, some parents seem to overcompensate for their handicapped child. Some typical behaviors of these parents include setting goals that are too easily attained, praising or rewarding the child for work that is below his or her level of functioning, and intervening unnecessarily when the child is working on difficult tasks. Such behaviors convey the message, albeit indirectly, that the parents do not recognize or appreciate the child's actual abilities. These signals undermine the development of high self-esteem and a positive self-concept.

Adjusting to the child's handicap is difficult, but Kogan (1980) has shown that parents can learn and use techniques for interacting with their child in ways that promote an adaptive relationship. General guidelines for parents in nurturing optimum development include realistically accepting the child, including abilities and disabilities. Parents should be sympathetic, but must encourage independence in order to enhance the child's self-esteem and promote his or her success in the "real" world.

Parents also have a crucial role in setting the stage for good sibling relationships. They must not show favoritism toward any of their children. Although they may enjoy different activities with their individual children, they should not give their attention preferentially to any single child. In particular, parents must avoid making comparisons among their children, and instead emphasize each child's individual strengths. All children will benefit when parents provide experiences and delegate responsibilities in accordance with each child's developmental level and needs.

Due to increasing recognition of social and emotional problems that may be secondary to other disabilities, the IDEA requires a behavioral assessment of all children with a disability, regardless of their handicapping condition. It has become commonplace to use objective behavior rating scales and personality assessments during the initial referral and evaluation process (e.g., Reynolds & Kamphaus, 1992). Also, as a direct result of recognition of behavioral

and emotional concomitants of various disabilities, IDEA now requires a behavioral assessment prior to disciplining a child with a disability, so that it can be determined whether the behavior of concern is a result of the child's disability. When behavioral problems are disability-related, children must be treated, not punished. Teachers will have the primary role to play in such interventions at school.

Over and above the special methods and materials teachers use in working with the handicapped child, perhaps the most important element of the handicapped child's educational experience is a positive social climate. Teachers can provide a model for accepting individual differences in general and specifically valuing each child's, including the handicapped child's, abilities and contributions. The child's classmates will imitate the teacher and assimilate the underlying nondiscriminatory attitudes. Being accepted by one's teachers and classmates nourishes the handicapped child's self-concept and self-esteem, thereby promoting not only social development, but also cognitive growth and educational achievement.

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BEHAVIOR ASSESSMENT SYSTEM FOR CHILDREN
FAMILY RESPONSE TO A HANDICAPPED CHILD
HANDICAPISM
INDIVIDUALS WITH DISABILITIES EDUCATION ACT
TEACHER EXPECTANCIES

ADLER, ALFRED (1870–1937)

Alfred Adler, an Austrian psychiatrist, severed an early connection with Freudian psychoanalysis to develop his more socially oriented Individual Psychology, which was a powerful influence in the development of the field of social psychology. Adler's work in education and child guidance is less well known, but it contributed greatly to the development of school services in Austria and it had worldwide significance for the education and treatment of children.

At the Pedagogical Institute of the City of Vienna, he helped to train thousands of teachers and established the first child guidance clinics in the Vienna school system. In 1935, with the coming of a fascist regime in Austria, Adler left Vienna for the United States, where he established a private practice and served as professor of medical psychology at the Long Island College of Medicine.

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ADMINISTRATION OF SPECIAL EDUCATION

Prior to the advent of public school programs for the handicapped in the late nineteenth and early twentieth centuries, administration of special education programs was usually executed by persons who were not administrators. Because many of the early programs were provided by religious organizations (Hewett & Forness, 1977), the earliest administrators were probably monks, nuns, or other religious figures (e.g., Pedro Ponce deLeon, a Spanish monk who worked with the deaf in the sixteenth century). During the late eighteenth and early nineteenth centuries, philosophical changes and a new attention to science changed attitudes toward the handicapped and their treatment. These changes, evidenced in the French and American revolutions, created a reverence for the individual and

a belief that the lives of handicapped persons could be significantly improved through the application of science. Thus a new wave of administrators arose. These administrators were not interested primarily in running a program, but in teaching, scientific inquiry, and having an impact on contemporary thought through their writings. Thus a time was born in which most programs were managed by scientists, physicians, and philosophers such as Edouard Sequin, Valentin Hauy, and Samuel Gridley Howe. During the nineteenth century a great number of public and private residential schools/institutions were developed. For the most part, these institutions (which remained the dominant force in special education until the middle of the twentieth century) were administered by physicians. This was especially true for institutions for the mentally retarded, the emotionally disturbed, and the physically handicapped.

Public school services for exceptional children began in the latter part of the nineteenth century (Gearheart & Wright, 1979). By the middle of the twentieth century, public school classes became the primary mode of education for exceptional children. With this change, the administration of special education programs fell to educators and school psychologists. Although special education programs were held in public school buildings, they were usually separate, and writers of the time advocated separate administration and supervision systems (Ayer & Barr, 1928).

The rise of special education administration as a discipline occurred simultaneously with the rise of segregated public school programs. Special education administrators during the first quarter of the twentieth century were not trained generally as administrators; it was not until 1938 that any professional identity was established. In that year, the National Association of State Directors of Special Education was founded (Burrello & Sage, 1979). In 1951 the Council of Administrators of Special Education (CASE) convened as a special interest group within the Council for Exceptional Children (Burello & Sage, 1979).

During the 1950s, 1960s, and 1970s, special education administration grew as a result of the increase in public special-education programs brought about by the increased federal role in programs for the handicapped. In the 1950s, the U.S. Office of Education conducted several large-scale studies of special education and special-education administration (Mackie & Engel, 1956; Mackie & Snyder, 1957). These studies helped to establish the roles of administrators of programs for exceptional children and the need for professional training. Many more studies were conducted during the 1960s and 1970s (e.g., Kohl & Marro, 1971; Sage, 1968; Wisland & Vaughan, 1964). It was, however, the passage of PL 94-142, The Education of All Handicapped Children Act of 1975, that brought special education administration to its current state. This legislation, and others that followed, together with numerous lawsuits, created a demand for administrators who were specifically trained to manage special-education programs, a demand that has grown with subsequent programs (e.g., IDEA).

Although special education administration has developed a uniqueness and identity, there is considerable variety within the discipline. This variety is expressed across governmental levels and organizational arrangements. There are three governmental levels in special education administration: federal, state, and local. Within each level the tasks of the administrator may vary considerably depending on the specific role of the administrator, the organization of the agency for which the administrator works, and the ways in which the agency delivers services.

Presently, the federal role in special education administration is executed primarily by the Office of Special Education and Rehabilitation of the U.S. Department of Education. The administrative roles of this office include monitoring state compliance with IDEA; generating research; providing public information; formulating regulations; promoting personnel development; and drafting legislation. As a result of PL 94-142 and IDEA, the federal role in administration of special education has grown substantially. Nearly every administrative decision in special education must be made with consideration for the regulations propagated by IDEA. Because of this, the majority of the administrators at the federal level are involved in activities related to providing services to the states in order that they may carry out the provisions of IDEA, or in evaluating/monitoring the state's efforts.

Administration of special education programs at the state level occurs in three places: at the state education agency (SEA); at state-operated schools; and at state-operated regional centers. At the SEA, the roles of administration are to develop legislation; to develop state plans; to obtain and administer financial resources; to develop personnel preparation systems and standards; to develop plans for improving instruction; to enforce and monitor regulations; and to develop public relations (Gearhart & Wright, 1979; Podemski, Price, Smith, & Marsh, 1984). The SEAs also directly administer programs such as state schools for the deaf or blind (e.g., Pennsylvania). These programs are usually for low-incidence populations. In Georgia, the SEA administers both state schools and regional centers that provide direct service to low-incidence populations, especially in rural areas. Regional centers also serve as resource centers for local education agencies (LEAs).

Some state-operated programs in special education are not administered by the SEA. These programs, usually serving the mentally retarded or the emotionally disturbed, may be managed by state agencies such as a department of mental retardation, mental health, and juvenile services. Such programs are generally subject to the same regulations as programs operated by the SEA. In many instances, however, the programs are not managed

by educators. The practice of employing physicians, psychologists, or social workers to manage state residential programs is a vestige of a tradition in state institutions and is justifiable for programs that are not chiefly educational.

At the local level, there are a number of different administrative arrangements and even more varied service delivery arrangements (Burello & Sage, 1979). The simplest administrative arrangement is the LEA. The LEA, also known as the local school district, provides direct services to exceptional children through various delivery systems. Administration at the local level may be centralized or decentralized. In a centralized system, persons (i.e., teachers) who provide services to exceptional children are managed by a district-wide special education director (coordinator). The special education director in a centralized system exercises a great amount of control over special education personnel and programs. In a decentralized system, the special education administrator serves in a coordinating/supporting/advising role. This administrator may have some authority over personnel but it is generally a building administrator (principal) who oversees daily operations.

More complex local administrative arrangements include intermediate educational units (IEU) and cooperative programs. Intermediate units exist in approximately 35 states (Podemski et al., 1984). In some states (e.g., Georgia) these units may be state-operated regional programs. In other states (e.g., New York, Texas, Wisconsin, Pennsylvania) the intermediate units are administered as a separate level of education agency. Intermediate units may be known by several names (e.g., Board of Cooperative Educational Services in New York, Regional Education Service Centers in Texas). According to Podemski et al. (1984), intermediate units were developed to pool resources and to share costs. In some states (e.g., Pennsylvania) intermediate units provide more than special education services and were developed for political as well as educational reasons during a time of district consolidation. Intermediate units have been criticized as arrangements that violate the principle of least restrictive environment because their services often require removing a child from his or her home school. Among the problems facing administrators of intermediate units are competition with LEAs for funds and students, potential conflict in lines of authority, communication gaps with the LEA, and salary variations that influence competition with LEAs for teachers.

Many rural school systems and suburban systems enter into cooperative agreements in order to provide more cost-effective programs, especially for low-incidence populations (Howe, 1981). Cooperative programs engender the same problems as do IEUs. Additionally, they must often contend with long distances for busing students.

The competencies of LEA and IEU special education administrators are similar. The differences are probably in terms of the amount of time devoted to different tasks rather than the tasks themselves. This may be true also for administrators of state-operated direct service programs (e.g., state schools). The competency areas for such administrators include organization theory and behavior; budget development; curriculum development; supervision; personnel administration; community relations; community resources; change processes; physical plant management; research; professional standards; and policy development.

IDEA requires all LEAs to have available the complete range of service-delivery options. This includes self-contained classes, resource rooms, part-time classes, residential programs, and other options (Deno, 1970). Before PL 94-142 it was possible for LEAs to offer only one service-delivery option (most often self-contained classes). This change and the variability of placement options has brought new problems to the forefront of special education administration. These problems include team-work with regular educators; appropriate placement; coordination with general education administrators; and increased parental involvement (Ysseldyke, Algozzine, & Allen, 1982; Mingo & Burrello, 1985).

Specialized graduate training for administrators of programs for exceptional children began in 1965. The impetus for such training was provided by a journal article by Milazzo and Blessing (1964). Subsequent to the publishing of that article, the U.S. Office of Education awarded grants to universities for the purpose of developing training programs (Burrello & Sage, 1979). Although these training programs have existed for 20 years, it is apparent that most persons in special education leadership positions have not come through such programs but rather have progressed through the ranks as teachers or as general education administrators (Burrello & Sage, 1979). Furthermore, as of 1971, only slightly more than 50% of the graduates of doctoral programs in special education administration actually became special education administrators (Vance & Howe, 1974). Although most states do have certification requirements for special education leadership positions, requirements can be met with a general administrative certificate or a collection of courses and experience. Because market demands are limited, most training programs have not reached a high degree of articulation, sophistication, or visibility. A number of writers have articulated the desired content of special education administration training programs. Among the more notable training programs is the Special Education Supervisory Training Project (SEST, 1974), which was based on a human/conceptual/technical model (Burrello & Sage, 1979).

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INDIVIDUALS WITH DISABILITIES EDUCATION ACT
POLITICS AND SPECIAL EDUCATION
SPECIAL EDUCATION PROGRAMS
SUPERVISION IN SPECIAL EDUCATION

ADOLESCENCE AND SPECIAL PROBLEMS OF THE HANDICAPPED

Adolescence is the period extending from puberty (about 12 years of age) to age 18 through 20. Crises during adolescence, according to McDowell (1981), generally involve two common elements, physiological and psychological development. Physiological development involves definition of concepts such as identity, relationships, and independence; psychological development involves definition of concepts such as identity, relationships, and independence. The physiological changes include development of sex characteristics. Changes in the body build and structure are very prominent during this period. Much of the stress and anxiety during this period revolve around a general lack of understanding about what adolescents can expect to happen; an impatience with nature in the developmental process; and possible ridicule if an adolescent does not meet certain standards.

Havinghurst (1972) outlined several tasks associated with adolescent development. They include the following:

> Achieving new and more mature relations with agemates of both sexes.
>
> Achieving a masculine or feminine social role.
>
> Accepting one's physique and using the body effectively.
>
> Achieving emotional independence of parents and other adults.
>
> Preparing for marriage and family life.
>
> Preparing for a career.
>
> Acquiring a set of values and an ethical system.
>
> Desiring and achieving socially responsible behavior (pp. 45–75).

These developmental tasks are considered crucial stages in development that require a great deal of adjustment and decision making. However, there are critical problems that many adolescents may be confronted with during this stage. According to McDowell (1981), one major problem adolescents have to deal with is the lack of support systems to meet their needs. Many programs for adolescents were originally designed for children or adults. Three major agencies that adolescents may be involved with are the public schools, mental health facilities, and the legal system. Only recently have the public schools begun to develop appropriate educational alternatives for handicapped adolescents. Many mental health agencies are still in the process of revising child and adult programs to meet the needs of adolescents. The legal system is confronted with deciding whether an adolescent is a child or an adult.

Other problem areas frequently encountered by adolescents include alcohol and drug abuse, crime, suicide,

teenage pregnancy, and marriage. Alcohol and drug abuse has been a major problem for many years. Drug abuse surfaced during the late 1960s. The use of drugs by adolescents can lead to emotional and physical problems. Some youngsters may occasionally experiment with drugs; others may become drug abusers to escape from personal problems. Adolescent crime usually involves minor offenses. Only a small number of youngsters are brought to court for serious crimes such as assault, rape, or murder. Adolescent suicide is usually the result of extreme depression and is often related to a relationship problem. Teenage pregnancy can be a traumatic experience for a young girl. Information about sex and birth control are easily available, therefore many adults think adolescents have adequate knowledge. However, many adolescents are not educated about sex and birth control and tend not to admit their lack of knowledge.

Adolescence is often a difficult period for the nonhandicapped child, therefore it is reasonable to assume that it may be even more difficult for the handicapped child. The handicapped adolescent experiences all of the developmental stages and general needs characterized by this period of growth, plus problems relating to exceptionality (Smith & Payne, 1980). According to Cartwright, Cartwright, and Payne (1984), handicapped adolescents may be classified into two groups, the mildly vocationally handicapped and the seriously vocationally handicapped. Those individuals with a strong chance of becoming independent and self-supporting are classified as mildly vocationally handicapped. Those students will be able to get and maintain a job with the proper counseling, career and vocational training, and compensatory skills. Many others may be able to attend technical and trade schools. The seriously vocationally handicapped have severe disabilities that offer little hope for independent living. This group includes the severely and profoundly retarded, multihandicapped, and severely physically handicapped.

Prior to the 1970s, the educational programs for handicapped adolescents were very limited. During the 1950s and 1960s, educational programs for severely handicapped adolescents were minimal. During this time, handicapped youths who attended special classes in public schools were often socially promoted. Many dropped out of school at age 16. The impact of parent groups and the passage of PL 94-142 created many more special programs for handicapped adolescents of every level of severity and handicapping condition (Cartwright et al., 1984). Traditional secondary programs for handicapped adolescents are being rejected by many special educators. These programs are often inappropriate for handicapped students. The lack of relevant subject matter, materials, instructional practices, and testing methods are often major problem areas that offer little or no assistance in meeting the needs of the handicapped (Laurie, Buchwach, Silverman, & Zigmond, 1978).

Mandell and Gold (1984) emphasized that the handicapped adolescent's needs, skills, and future goals are essential components that must be considered when selecting the most appropriate service delivery model. The mildly handicapped student may be served in the mainstream with supplementary assistance. Some students may benefit from a combination of regular secondary and vocational education with supplementary assistance. The more severely handicapped student may benefit from self-contained and special classes or special vocational training centers.

Career and vocational education is an essential component of the secondary education program for the handicapped adolescent. McDowell (1979) stated that for handicapped adolescents, the following behaviors are essential for survival on the job and in today's society.

1. Be able to establish eye contact if required by the situation.
2. Demonstrate respect for others and their property.
3. Be attentive to authority figures in appropriate ways.
4. Exhibit good manners.
5. Use appropriate manners.
6. Discriminate between behaviors as to time and place (i.e., recognize that certain behaviors are appropriate at different times and places).
7. Achieve a reasonable balance between dependence and independence.
8. Learn to accept directions and take orders.
9. Learn to accept and follow the work schedule established by an employer.
10. See a task through to its completion (p. 2.).

A great deal of emphasis should be placed on helping the handicapped adolescent learn behaviors and skills essential to independence. However, many handicapped people are underemployed and unable to find jobs within their range of abilities (Razeghi & Davis, 1979). Another essential component of a secondary program for handicapped adolescents is social skills. Many handicapped children have problems developing appropriate social skills. Difficulties in these areas lead to problems with integration into the mainstream and peer relationships.

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AFFECTIVE EDUCATION
FAMILY RESPONSE TO A HANDICAPPED CHILD
SOCIAL SKILLS
VOCATIONAL TRAINING OF HANDICAPPED

ADOPTEES

The practice of adoption is centuries old, but our understanding of the impact of this form of child care continues to be without definitive answers. At the theoretical level, adoption has often been associated with increased risk for psychological maladjustment. Psychoanalytic theory, for example, suggests that the experience of adoption sets the stage for disturbances in personality and identity development. This is especially true because of doubt surrounding the true circumstances of the child's origins, and because the child has two sets of parents instead of one with whom to identify. Bowlby's work (1969) suggests that adopted children are at risk for emotional problems, but only in cases where there is disruption in the development and continuity of primary attachment relationships. Consequently, infants adopted soon after birth and cared for continually by affectionate and competent parents would not be viewed as being at risk in terms of possible maladjustment. However, individuals raised by multiple caregivers, or separated from caregivers after a secure attachment has developed, would be perceived as being at risk.

In contrast to the theoretical literature, the results of empirical research have produced an inconsistent picture of the effects of adoption on an individual's psychological development. After reviewing the social work literature on the success of adoption placements, both Mech (1973) and Kadushin (1974) concluded that the majority of placements were satisfactory. However, an examination of the records of mental-health clinics reveals that adopted children are referred to these clinics at disproportionate rates. Mech (1973) reported that while adopted children reared by nonrelatives constitute approximately 1% of the population, they account for over 4% of the children seen in clinics. Researchers have also reported that there are differences in types of problems presented by adopted children versus those who are nonadopted. Adopted children typically manifest more aggressive and acting-out problems, as well as learning-related difficulties. In fact, a recent study has even reported an elevated number of pediatric health conditions among adopted children (Dalby, Fox, & Haslam, 1982).

While there are those studies available that validate these findings, there are also those such as Aumend and Barrett's (1984) that provide a contrary set of findings. In their study of adult adoptees they reported the following: the majority of those in their study scored above the 60th percentile on the Tennessee Self Concept Scale; had positive scores on the Attitude Toward Parents Scales; were happy growing up, with only 12% reporting that they were unhappy; and did not report revelation of their adoptive status as being disruptive or traumatic. These findings were consistent with those of Norvell and Guy (1977), who determined there were no significant differences between self-concepts of an adopted and nonadopted population, aged 18 to 25. They concluded that problems of a negative identity seemed to stem more from problems within the home, rather than an association with adoption.

Because of a lack of definitive empirical information, the issue of open records, or allowing adopted children to learn about their biological parents at a particular point in time, continues to be controversial. As has been the case in the past, this issue will probably be resolved in the courts. Another issue unique to adoption is when children should be informed of their adoptive status. Currently, most specialists on adoption advocate telling children before they are 5 years of age. The specialists believe this promotes the development of a trusting relationship within the context of a warm and supportive family and eliminates the possibility that the child will hear of his or her unique family status from nonfamily members under less than desirable conditions. While many advocate telling the child during the preschool years, recent studies such as that by Brodzinsky, Schechter, Braff, & Singer (1984) suggest that a child's cognitive development during the preschool years may mitigate against his or her understanding of the nature of adoption. Their concern is that parents may relate this information to children and then feel the "job is done," failing to understand that advanced stages of cognitive development call for further explanations and sequential exploration of concerns the child might harbor.

While the data are not as definitive as might be liked, it certainly seems that adoption is a legitimate way of build-

ing families and caring for young children. It is superior to alternatives such as serial placements in a number of homes, or large-scale institutional care. Assuming the family is capable of providing a stable environment that is free of debilitating or otherwise pathological features, and relates the information on adoption in a facilitative fashion, there seems to be little reason to expect greater childhood problems than experienced in biologically created families. In families where psychological attachment between adoptee and parent fails, increased emotional and behavioral problems will occur (Ziegler, 1994).

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CHILD CARE AGENCIES
CHILD CARETAKER
CHILD GUIDANCE CLINIC
POSTINSTITUTIONALIZED CHILDREN

ADULT BASIC EDUCATION (ABE)

Adult basic education (ABE), a part of the adult education movement, is designed and intended for those individuals who may lack the basic education needed to function appropriately in society. For many adults, particularly those with handicapping conditions, adult education serves as a substitute for the education that was missed in earlier years or never completed. For others, adult education implies further or continuing education.

Adult education encompasses all organized learning, including vocational education (Stubblefield, 1981). During the formative years of what became the adult education movement (mid-to-late 1920s), adult education revolved around a belief that individual growth and improvement was paramount; that is, individuals would respond to education that would assist in helping them to understand their life experiences and improve themselves through the acquisition of knowledge, enjoyment, power, etc.

Later, the adult education movement emphasized a variety of other themes, including psychological and physical maturity, service to society, and civic life. Those who have tried to identify a central focus within adult education have most often portrayed the adult learner as an individual who seeks out education and has a desire to accommodate to a changing society and value system. Thus one major issue has centered around whether the goal of adult education should be to satisfy individual needs or societal needs.

The content of adult education varies from the simple to the complex. In fact, any content that is reflective of the adult's interest and desire to know is legitimate (Schroeder, 1970). At times, content is selected to achieve cognitive objectives (i.e., facts, knowledge of principles) while, at other times, content is selected to achieve affective objectives (i.e., interests, values, or psychomotor objectives or skills). Similarly, adult education can involve hobby learning (e.g., learning to play golf or bridge), literacy learning (e.g., learning at the academic level of elementary and secondary schools), occupational learning (e.g., learning manual and clerical skills), and higher learning (e.g., learning beyond the secondary and vocational level) (Bowen, 1980). It is literacy learning that constitutes adult basic education.

There are many adult education service providers, although most can be assigned to one of four categories: (1) agencies that serve the needs of adults; (2) agencies that serve the needs of adolescents, but have some responsibility for serving the needs of adults; (3) agencies that serve the educational and noneducational needs of the community; and (4) agencies that serve the special interest needs of particular groups. In the first category are agencies such as proprietary schools (i.e., business schools, technical schools) and independent education centers. The second category consists of public schools, community colleges, and institutions of higher education. The third category includes libraries and museums, while the fourth category includes unions, churches, business and industry, and so on. In essence, adult education is found in a variety of organizations that provide education for adults.

There are numerous categories of individuals who provide potential populations of adult learners. These include:

Those desiring to overcome educational limitations
College and high school dropouts
Career changers or career updaters
Institutionalized populations
Elderly persons
Those who simply enjoy learning
The handicapped.

Adult basic education coupled with programs for speakers of other languages long have been features of adult education. The rationale behind ABE programs is based on the demonstrated correlation between years of schooling and income. That is, there is a presumed relationship between the length of time spent in school and the amount of income earned. Consequently, ABE programs are directed toward assisting individuals to enter or upgrade their skills for the labor market. A further rationale for ABE programs is that every adult has a basic right to acquire skills in written and verbal communication and computation. Therefore, ABE programs are directed toward undereducated adults. Although this can include those adult individuals having known handicapping conditions, the majority of clients are poor, from a minority background, and possibly defeatist.

All possible knowledge could be included in an ABE program. However, few programs have the resources to provide such an extensive range of services for all types of adult learners. Limiting services, however, tends to limit the types of individuals who can participate; thus, handicapped adults may not be recruited for ABE programs that require students who have needs that are linked to a program's goals or capacities. While some ABE programs for adult handicapped persons are available, they have not been a major focus of ABE programs.

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COMMUNITY-BASED SERVICES

REHABILITATION

VOCATIONAL VILLAGE

ADULT PROGRAMS FOR THE DISABLED

There are numerous programs of several types that serve adults with disabilities. Many such programs are financed by federal, state, and local governments; many others are funded by private business, private nonprofit organizations, and charities. The following is a summary of major programs organized by function and financing source. It will not capture the complexity and breadth of these programs, especially at the state and local level.

The Social Security Act authorizes several major programs providing cash payments and health insurance to adults on the basis of disability. The disability insurance (DI) program replaces in part income lost when a person with a work history can no longer work because of a physical or mental impairment. Many individuals, of course, have separate commercial disability insurance policies provided by an employer or purchased on their own. After receiving Social Security DI benefits for 24 months, regardless of age, an individual becomes eligible for government-provided health insurance under the Medicare program, which normally covers persons 65 and over. The Social Security Act also contains the Supplemental Security Income (SSI) program, which provides cash income support payments to needy individuals who are aged, blind, or disabled. Income is provided regardless of work history to those who meet means and asset requirements. In most states, with SSI eligibility comes eligibility for the Medicaid program (federal-state matching required), which provides health insurance for low-income individuals. Included in Medicaid is support for intermediate care facilities for the mentally retarded (ICFs/MR), which provide residential care and service programs. Many disabled individuals benefit from programs for which they may be eligible without regard to their disability, for example, Social Security Old Age and Survivors insurance payments and Medicare (persons 65 and older).

Finally, there are four other major federal programs of this type for special groups of disabled individuals. Veterans with service-connected disabilities are eligible for special cash payments under the Veterans Compensation program. Veterans of wartime service with nonservice-connected disabilities are eligible for a special pension program. Coal miners disabled by black lung or other lung disease are eligible for one of two separate special payment programs (one administered by the Social Security Administration, the other by the Labor Department), depending on circumstances.

Special programs of postsecondary education for the deaf and hearing impaired, supported with significant federal funding, are provided at Gallaudet College, the National Technical Institute for the Deaf, and four special regional postsecondary institutions. In addition, educational programs that are recipients of federal financial assistance at public and private colleges and universities must be accessible to and usable by individuals with disabilities of all types. Some schools are making adaptations and providing support services that go beyond legal requirements.

Rehabilitation and job training services are available from a number of sources. Under Title I of the Rehabilitation Act, the federal government and the states provide vocational rehabilitation services such as physical restoration, job training, and placement to persons with mental and physical disabilities, regardless of prior work history. Physical rehabilitation is covered by most accident and health insurance policies; vocational rehabilitation is sometimes covered. Rehabilitation is available and in fact required under some state workers' compensation laws. Rehabilitation services financed by various forms of insurance are provided by private, for-profit companies and facilities, private nonprofit agencies, and state agencies. Provision of rehabilitation services by private, profit-making (proprietary) firms has been a growing phenomenon (Taylor, et al., 1985) for many years now.

Private nonprofit entities play a significant role in providing job training, rehabilitation, and other skill development to adults with disabilities. Included in this group are organizations such as the Association for Retarded Citizens, Easter Seals, Goodwill Industries, and United Cerebral Palsy. Some activities of these organizations are financed by the government; others are funded by contracts with businesses for work performed.

Major employers, faced with rising costs of disability, will find it in their interest to pay greater attention to management, rehabilitation, and disability prevention (Schwartz, 1984). Many are increasing efforts in these areas, including rehabilitation, job, and work-site modification efforts to facilitate entry or return to jobs by individuals with disabilities. Contracts with the federal government of more than $2500 must operate with an affirmative action program to employ and advance individuals with disabilities.

Self-help, referral, and training services are available to people with very severe disabilities to improve their capacity for independent living. These services are available through a network of community-based nonprofit centers and from state rehabilitation agencies. In addition, supported employment is an important new program for individuals with disabilities so severe they were previously thought incapable of working. These individuals (especially those with mental impairments) are likely to need continual support, but they are able to work on regular jobs in integrated settings if given a highly structured training program and some support on the job site (Mank 1986).

Special housing and transportation programs are available for individuals with disabilities, financed by both the federal government and states and localities. The same is true for special recreation programs for the disabled, in which local governments, service organizations, charities, and private businesses play a large role. Therapeutic recreation is also part of some rehabilitation programs. In addition, many local recreation facilities and organizations, including those involved with the arts, are adapting programs so that the disabled can participate or attend with the general public.

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ACCESSIBILITY OF PROGRAMS
AMERICANS WITH DISABILITIES ACT
HABILITATION OF THE HANDICAPPED
REHABILITATION

ADVANCED PLACEMENT PROGRAM

The Advanced Placement Program was established in 1955 as a program of college-level courses and examinations for secondary school students. It is administered by the College Board, a nonprofit membership organization composed of public and private secondary schools, colleges, and universities. This program gives high school students the opportunity to receive advanced placement and/or credit on entering college.

The essential premise of the Advanced Placement Program is that college-level courses can be successfully taught to high school students by high school teachers on

high school campuses (College Entrance Examination Board, 1985). Descriptions and examinations on 26 introductory college courses in 14 fields are disseminated. These fields include art, biology, chemistry, computer science, English, French, German, government and politics, history, Latin, mathematics, music, physics, and Spanish. Course descriptions are prepared, with the help of the Educational Testing Service, by working committees of school and college teachers appointed by the College Board. Exams are administered by the Educational Testing Service.

Most participating high schools, offering one or more advanced placement courses (called AP courses) are larger schools with enough students to qualify for a class. Smaller schools usually provide independent study for those students wishing to take advanced placement exams. The AP course teachers are provided with course descriptions and teachers' guides that state curricular goals and suggest strategies to achieve them. Teachers are not required to follow a detailed plan of assignments and classroom activities; however, seven Advanced Placement Regional Offices and Advanced Placement Program conferences are available to assist teachers.

Advanced Placement courses offer demanding academic opportunities for abler students. Students who complete these courses are not required to take advanced placement examinations, but those who choose to take them and who receive a passing score, have the opportunity to receive advanced placement and/or credit on entering college.

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ACCELERATION OF GIFTED CHILDREN
GIFTED AND TALENTED CHILDREN

ADVANCE ORGANIZERS

Advance organizers are general overviews or conceptual models of new information presented to learners immediately prior to receiving new information. Ausubel (1960) originally proposed the concept of the advance organizer for use with reading material. The principle of advance organizers is that learning is enhanced when information is linked to learners' existing cognitive structures, thereby enabling the learner to organize and interpret new information (Mayer, 1979). Thus advance organizers prepare the learner for the meaningful reception of new learning. They can either present salient prerequisite knowledge not known to the learner (known as expository organizers), or help the learner establish connections between relevant dimensions of existing knowledge and the new information (known as comparative organizers) (Ausubel, Novak, & Hanesian, 1979).

Expository organizers draw the learner's attention to the internal organization of the body of new information by means of a rough overview that briefly presents general topics and concepts and how they are related. Outlines, models, and introductory paragraphs may serve this purpose. With comparative organizers, students' previous experiences or prior learning is tapped in such a way as to identify major points or dimensions of similarity between the new information and existing understandings. By providing external organization, or how new information is related to what students already know, comparative organizers establish a meaningful learning set.

Advance organizers may be either verbal or graphic, and can take a variety of formats, including overviews, outlines, analogies, examples, thought-provoking questions, concrete models, and figures such as cognitive maps (Alexander, Frankiewicz, & Williams, 1979; Mayer, 1984; Zook, 1991). Although originally conceptualized as abstract introductions, advance organizers tend to be more effective if they are concrete and if they are both familiar to the learner and well-learned. In this way, advance organizers provide frameworks or cognitive maps for new content. Corkill (1992) also emphasizes the importance of using examples that enable learners to identify the relationship between ideas in the organizer and the new information.

Eggen and Kauchak (1996) use the following example of an advance organizer from an elementary social studies lesson on governments.

> The organization of a government is like a family. Different people in the government have different responsibilities and roles. When all the people work together, both families and governments operate efficiently (p. 214).

Current schema theory provides a theoretical basis for advance organizers, whose function can be viewed as both activating relevant schemata for to-be-learned material and revising the activated schemata to promote assimilation of the new material (Derry, 1984; Glover, Ronning, & Bruning, 1990). Advance organizers will benefit learners

most when students lack the prerequisite knowledge for understanding, and when the transfer of learning to new problems is the desired outcome. To be maximally effective, they should be easy to acquire, as concrete as possible, and offer an integrated overview or model of the new material (Mayer, 1987).

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ADVENTITIOUS DISABILITIES

Disabilities may present themselves at birth or be acquired through disease or accident. Those acquired later in life are known as adventitious disabilities. Among these is brain damage produced by extremely high and consistent temperatures or a lack of needed oxygen to the brain. Adventitious disabilities may also be a consequence of trauma to the brain or injury to other parts of the body. A major cause of adventitious disabilities is child abuse. Child abuse is emotionally or physically damaging and can cause durable learning problems. An area of childhood exceptionality often associated with an adventitious disability is hearing impairment or deafness. Hearing losses may be present at birth or adventitiously acquired later on in life through disease or accident. Adventitious disabilities and congenital disabilities that appear similar (but are obviously of different etiologies) may well have different outcomes.

BRAIN DAMAGE/INJURY
CHILD ABUSE
POSTINSTITUTIONALIZED CHILDREN

ADVOCACY FOR CHILDREN WITH DISABILITIES

Advocacy for handicapped people has become a multifaceted reality in today's world of concern about the legal rights of those with disabilities. The term actually has a variety of meanings, depending on who is providing the advocacy. In its essence, advocacy refers to attempts by an individual handicapped person, by another person, or by a group to guarantee that all rights due a handicapped person are realized. Roos (1983) traces the origins of the advocacy movement to the 1930s, when parents of mentally retarded children began to react against neglectful or inappropriate actions by professionals who claimed to be helping these children and their families. Frustrated with the professionals' response, parents turned to each other for help.

In 1933, the Cuyahoga County (Ohio) Council for the Retarded Child was founded by parents as the forerunner of today's Association for Retarded Citizens (*ARC*). Other local, grass-roots organizations sprang up in different communities, and later, in 1950, joined together to form what was then known as the National Association of Parents and Friends of Mentally Retarded Children. At that time, similar organizational activity sprung up with parents of children with cerebral palsy.

Recently groups have been formed to advocate the interests of learning disabled, deaf, blind, and autistic children, and those with a variety of medical and physical anomalies. The early parent movements had at least three effects in the 1950s, at the same time as they formed a base on which later governmental and judicial action would be built. First, local ARCs extended emotional support to families with retarded members, providing information about available resources and bringing the issue of mental retardation into public view. This helped remove some of the stigma of having a handicapped child. Second, they encouraged state legislatures to adopt mandatory legislation for public school programs for retarded children, to enforce

existing legislation, and to increase state appropriations for publicly funded programs. Third, parents developed preschool, school-age, and adult programs that became models for professionals, and public education and voluntary agencies (Lippman & Goldberg, 1973).

The role of ARC as a direct service provider has declined recently. Greater emphasis is now placed on information and public education services, advocacy, legislation, and funding (Roos, 1983). Advocacy efforts by ARC and other such groups today focus on citizen advocacy and self-advocacy. Professionals and volunteers have joined with parents to change the makeup of many groups formerly consisting exclusively of parents of handicapped children. Various advocacy groups and professional associations have formed coalitions to increase their political and public influence, with many organizations maintaining full- or part-time offices in Washington, DC, as well as in state capitals. These groups may be closely linked with legal advocacy agencies and may be represented on state and national advisory panels, accrediting boards, and monitoring bodies, often by state or federal regulation or court order. Advocacy groups have been instrumental in initiating litigation, often through the use of class-action suits, to guarantee that the existing rights of handicapped persons are safeguarded, to obtain new rights or services, or to enhance currently available programs. In some cases, international societies have been formed by national advocacy groups representing several nations (Roos, 1983).

Herr (1983) describes several different kinds of advocacy that have evolved from earlier movements. Though definitions and actual practice may vary, the following types of advocacy approaches for the handicapped can be identified:

1. *Self-advocacy*: "part consciousness-raising, assertiveness-training. . .and springboard to direct consumer involvement. . . ." (Herr, 1983).
2. *Family advocacy*: the oldest and most well understood.
3. *Friend advocacy*: personal, voluntary assistance by altruistic citizens; also referred to as *citizen advocacy.*
4. *Disability rights advocacy*: trained advocacy specialists dealing with individual needs and human service systems.
5. *Human rights advocacy*: usually citizen review committees composed of volunteers and professionals.
6. *Internal advocacy*: individuals within, rather than external to, human service agencies who attempt to guarantee clients' rights (sometimes referred to as ombudsmen).
7. *Legal advocacy*: primarily nonprofit, public-interest law projects, including some private or government lawyers (Herr, 1983).

Although individual special educators, acting alone or through professional organizations, may also view themselves as advocates for the handicapped children they serve, there may be inherent conflicts in attempting to play the two roles simultaneously (Bateman, 1982). Special educators must keep current on ethical practices and legal developments in their field, and on law and education in general.

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ADVOCACY GROUPS, CITIZEN

A citizen advocacy group may be defined in general as any organization that has as its purpose to increase the quality of life for a specified handicapped population. Two examples of citizen advocacy groups containing both parents and professionals, and formally organized, are the Association for Children With Learning Disorders (ACLD) and the American Association on Mental Deficiency. These two groups have national headquarters but are organized state by state, having local chapters at county, city, or regional levels. They are not, however, classified as grass-roots advocacy groups.

An example of an informal organization is Youth Advocacy in the Washington, DC, area, a group of citizens (nonparents), with paid professional leadership, that provides services for adjudicated youths. They may represent an alternative to incarceration, providing community-based rehabilitation and supporting school, work, and living arrangements for youths in the area. Another example of a grass-roots nationally organized group is the Association for Autistic children. The chief characteristic of the organization is that the majority of local support groups are informally organized, and indeed are parents, while the leadership has national consolidation. There are formal and informal advocacy groups at national, regional, and lo-

cal levels serving handicapped students representing all disability groups. The purposes for each group may vary considerably, depending on the perceived needs of the group.

The work of advocacy groups includes seeking federal or state legislation, developing policy or ordinances at the community level, supporting parental work, and intervening directly for students. One example of a community-based advocacy group is the Lion's Club, which supports the visually handicapped. Other social clubs support the hearing impaired (Rotary), the mentally retarded (Civitan), or orthopedically impaired (Shriners) by paying for services, prostheses, or therapy. Another example is the Junior Chamber of Commerce, a group that raises partial or full support for group homes, sheltered employment centers, or residential or day schools for the emotionally disturbed.

Providing funds for services or a community-support base are two of the major purposes of advocacy organizations. The definition of a community-support base varies with the particular advocacy group and community. Certainly, providing emotional support for parents is a major consideration. Obtaining legislation also is a primary function, given the fact that all legislation for the handicapped was provided and obtained by parents, not professionals. Advocacy groups may purchase direct services or even provide direct services, but that has not been their major role in the past. It is becoming more of a major role though, and represents a trend toward advocacy in the United States.

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ADVOCACY ORGANIZATIONS

Advocacy organizations are organizations that devote themselves to advocacy for individuals or groups who have needs for which their own resources may not be sufficient. The establishment of these organizations has proceeded on "the assumption that classes of persons exist with similar needs and similar inability to speak effectively for themselves" (Sage & Burello, 1986).

Many, if not most, of the services currently available to handicapped children and adolescents either began or succeeded because of the efforts of advocacy groups. Much of special education history represents the efforts of advocacy groups, including church, parent, and charitable groups. The Association for Retarded Citizens, in its national, state, and local forms, is an example of an advocacy organization that has altered educational practices in major ways.

Increasing growth in all sorts of advocacy groups has taken place since the 1960s, with an acceleration in the last decade. Not all groups, of course, deal with the handicapped. There are environmental advocacy groups, groups concerned with product safety, with the elimination of drunk driving, etc. However, advocacy groups for the handicapped have been among the most vociferous and successful.

Many of these advocacy groups began and sustained themselves through grants from the federal government. This was particularly true during the 1960s and 1970s, when they were financially encouraged as part of the social legislation of the times. Some were started or supported through funds provided by foundations or their own fund-raising activities.

The nature of advocacy is such that agencies are likely to be activist, to aggressively seek to achieve long-range changes in the social system to benefit their clients, and to immediately help those clients. Thus they often seek to influence legislation. Some advocacy agencies have special service missions, but modern agencies are more likely to intercede with a particular service or political system so as to obtain services and other needed benefits for their clients rather than provide those benefits themselves. They also make efforts to educate both their clients and the systems with which they interact so as to facilitate their working relationships. Professional advocacy groups usually assume major informational roles. They provide forums for speakers and disseminate information and literature, including manuals that assist their audiences to assist themselves in achieving their goals.

Advocacy organizations often have been successful in obtaining services for their clients, either through their own intercessions or by educating and supporting the services' "consumers" or their representatives so as to make them more effective. Such organizations as Closer Look Information Center for the Handicapped and the National Center for Law and the Handicapped have been instrumental in making public schools more responsive to the needs of handicapped students. They also have played major roles in disseminating information to the individuals whose advocacies they are assuming, to the general public, and to the legislative bodies whose laws and regulations may affect their constituencies.

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AFFECTIVE DISORDERS

Affect is the externally observable, immediately expressed component of human emotion (e.g., facial expression, tone of voice). Mood is considered to be a sustained emotion that pervades an individual's perception of the world. Affective disorders, as defined by the American Psychiatric Association (1994) are the class of mental disorders where the essential feature is a disturbance of mood.

Emotions and their expression are an integral part of human experience. It is only under certain conditions that the expression of emotion is considered maladaptive; in some instances, in fact, a lack of affect might be viewed as abnormal. It is only when an emotional reaction is disproportionate to the event, when the duration of the reaction is atypical, or when it interferes with a person's psychological, social, or occupational functioning that an emotional response may be labeled symptomatic of an affective disorder.

Affective disorders are comprised of two basic elements, depression and mania, which can be conceptualized as opposite ends of a continuum paralleling the normal happiness/sadness continuum. Both depression and mania have their counterparts in everyday life: The parallels for depression are grief and dejection; the experience corresponding to mania is less clear-cut, but probably could be described as the feverish activity with which people sometimes respond to stress.

Formally, both mania and depression can be characterized by symptoms at the emotional, cognitive, and somatic/motivational levels. The major emotional components of depression are sadness and melancholy, often accompanied by feelings of guilt and worthlessness. These emotions permeate the individual's total experience of life. Cognitively, depressed persons are characterized by a negatively distorted view of themselves, the world, and the future. Their outlook is generally one of unrealistic hopelessness. In terms of their physical functioning, depressed persons frequently suffer appetite and sleep disturbances, fatigue, apathy, and a general loss of energy.

In certain aspects, the symptoms of mania could be viewed as opposite to those of depression. For instance, people suffering a manic episode often are in a highly elevated mood, seeming to experience life with an intense euphoria. However, it generally takes little frustration to shift this elated enthusiasm to irritability or tears, which suggests that mania may be closer to depression than initially seems apparent. In fact, it has been suggested by a number of theorists that mania is a defense against depression, that it is an attempt to ward off depressive feelings through feverish activity.

Cognitively, manic individuals characteristically show wildly inflated self-esteem, believing themselves to be capable of great accomplishments or possessed of exceptional talent. Manic individuals act on their high opinion of themselves. They behave recklessly, involving themselves in unwise business deals or sexual liaisons, wasting large sums of money on shopping sprees or gambling. When experiencing a manic episode, individuals often have a decreased need for sleep, sometimes going for days without rest.

Within the affective disorders, there are two major syndromes: major depression (or unipolar depression as it has traditionally been called) and bipolar disorder (formerly manic-depressive disorder). In unipolar depression, an individual experiences one or more episodes of depression without ever experiencing an episode of mania. Approximately half of the people who suffer major depression will undergo only one episode of depression: Their first episode will be their last. In general, even without intervention, most people will recover from an occurrence of unipolar depression within 3 to 6 months.

In bipolar disorder, an individual experiences both manic and depressive episodes. In rare cases, an individual vacillates between manic and depressive episodes without an intervening period of normal functioning. More often, there are periods of normality interspersed between the manic and/or depressive episodes. There is no separate diagnostic category for persons who experience only manic episodes; this occurs only rarely. In such instances, an assumption is made that the person will ultimately experience a depressive episode, and a diagnosis of bipolar disorder will be made.

Of the two disorders, bipolar disorder is typically, but not always, the more serious and debilitating. People with bipolar disorder, in comparison with those with unipolar disorder, experience more episodes, and their interepisode functioning is worse. Further, such people are more likely to have serious alcohol abuse problems and attempt and commit suicide at a higher rate than persons with unipolar disorder.

Mood disorders have long been the most common of mental illnesses, but they are on the increase in modern society (Keller & Baker, 1992). Depression has been referred to as the common cold of mental illness. Around 10% of the males and perhaps 22% of the females living in the United States will at some point in their lives experience an episode of major depression. This one-to-two ratio has been found in many different cultures, in Europe and Africa as well as North America. (There are, however, a few notable exceptions such as the Amish in Pennsylvania.) It has been hypothesized that more women experience depression than men because it is more socially acceptable for women to respond to negative life experiences with passive, depressive symptoms. Men may be less likely to experience or express depressive symptoms because they may receive more social rejection (or less social reinforcement) than women for acting depressed. Instead, men may respond to stressful events more actively, with substance abuse (e.g., alcoholism) or antisocial behavior.

Bipolar disorder is much less common than unipolar

disorder; slightly less than 1% percent of the U.S. population will experience bipolar disorder at some point in their lives. Unlike unipolar disorder, bipolar disorder occurs with approximately the same frequency in men as in women. Both unipolar and bipolar disorder tend to run in families, though bipolar disorder probably has a significantly larger genetic component than unipolar disorder. At present, the nature of the genetic mechanisms underlying the affective disorders is not clear. It is known, however, that in both mania and depression there are abnormalities in the level of neurotransmitters in the brain.

Beyond the possibility noted that mania is a defense against depression, there has been relatively little psychological theorizing about the causes of mania and bipolar disorder. This is not the case with unipolar depression, for which a number of etiological theories have been developed. From a Freudian perspective, depression is viewed as the punishment an overly punitive superego inflicts on the ego for the ego's failure to properly treat a lost love. The superego's harshness is seen also as a means of preventing the ego's feelings of anger and aggression from being expressed (Freud, 1917).

From a more behavioral perspective, Lewinsohn (1974) has hypothesized that depression is the result of a low rate of response-contingent reinforcement, caused by either a lack of social skills or a deficient environment, which results in the person experiencing behavioral extinction. Rather than being a function of the rate of reinforcement, Seligman et al. (Abramson, Seligman, & Teasdale, 1978) believe that it is the individual's lack of control over his or her environment and the attributions that this person makes about this lack of control that results in depression. Seligman believes that a lack of control that is attributed to causes that are internal (the self), global (some general quality), and stable (not likely to change) will result in depression.

Most theorists believe that the cognitions that depressed persons experience are a consequence of depression. Beck (1967), however, believes that negative cognitions and thought patterns are the cause of unipolar depression rather than a consequence of depression. He has proposed that individuals prone to depression have negative schema that are activated by stress. Once activated, the individual tends to interpret his or her experience in the worst possible light, using errors of logic (e.g., drawing sweeping conclusions based on one or two events) to do so. This negative interpretation occurs even when more plausible explanations for experiences are available; the person chooses his or her explanation on the basis of its negativity rather than its validity.

From the viewpoint of the individual working with children, what may be most important regarding affective disorders is an awareness of and ability to recognize signs of childhood affective disorders. It should be noted first that it is rare for children, particularly prior to puberty, to experience manic episodes. When a young child exhibits overactive behavior that appears manic, it is probably more appropriately considered a symptom of hyperactivity. (It is also possible for overactive behavior to result from an endocrine dysfunction.) Depressivelike syndromes, on the other hand, have been reported in children 3 years of age and younger. The symptoms of these syndromes vary in part as a function of age; the older a depressed child, the more closely his or her symptoms will parallel those of adults. Consequently, this discussion will focus on the symptoms of younger school-aged children (i.e., approximately ages 6 to 14).

A major distinction between depressed children and adults is that children, in contrast to adults, seldom seek help or complain about feelings of depression. Instead, they may become apathetic regarding school or socially withdrawn, sometimes preferring to remain in their rooms at home rather than playing with friends. They may make vague physical complaints about head or stomach pains, seem overly self-conscious, and cry inexplicably. Older children may see themselves as bad kids—incompetent in school and unworthy of the love of adults or the friendship of other children. Some, but not all, depressed children may simply look sad, particularly in their facial expressions, for extended periods of time with little apparent fluctuation in mood. Overall, a child will usually exhibit only some of the symptoms noted, and the symptom pattern may vary across a period of weeks.

Such symptoms are expressed in what is essentially a passive manner. Though there is far from universal agreement on the issue, certain professionals believe that in some instances children may express depression through aggressive misbehavior. While it is usually difficult to distinguish between genuine misbehavior and misbehavior that is an expression of so-called masked depression, children who are acting out as a symptom of depression often are more responsive to firm (but not overly authoritarian) limit-setting than children who are misbehaving for other reasons.

A technique that is sometimes useful in determining if a child is feeling depressed is to ask the child where he or she stands on a scale of 1 to 10, with 10 being children who are very happy, and 1 being children who are very sad. (This technique presupposes a certain level of cognitive development in the child.) On an informal level, there are several things a teacher can do for a depressed child. With children who appear apathetic and low in self-esteem, it may be useful to set lower standards for praising their accomplishments in school, or to praise them for their efforts in addition to their finished products. It is important, however, to strike a balance between setting criteria that allow an increase in praise and avoiding reinforcement of the child's symptoms. The latter may lead to the child using the symptoms as an excuse to perform at a level significantly below his or her ability level. Children may also

respond to messages from the teacher that suggest that the child is an important, valued person. Overall, it is important to make sure that such interactions with the child are honest and nonpatronizing; if it is not possible to do something in this manner, it is probably better not to do it. Psychologists use a variety of objective testing methods to assess the presence, absence, and degree of depression. Objective testing is necessary for accurate diagnosis.

If a teacher feels that a child needs more assistance than the teacher has the training or experience to render, there is a wide range of professional treatments for depression, many with proven efficacy (though the majority of treatment research has focused on adults rather than children). These treatments range from medication to psychotherapy and behavior therapy. Antidepressants are often prescribed in the treatment of unipolar depression, and they tend to be quite effective. Lithium carbonate is usually prescribed for bipolar disorder in adults; it has an effect on both the depressive and manic symptoms, and is probably the treatment of choice for bipolar disorder. The exact mechanism for lithium's action is unknown. In a few instances, lithium may be used to successfully treat adult unipolar depression.

The variety of psychological and behavioral therapies used in the treatment of depression is vast. Techniques such as social skills training, modification of negative cognitions through cognitive restructuring and reality testing, and the teaching of self-control strategies (to name just a few) have been used. Treatment may occur individually or in groups, and many of the therapies have been empirically tested, often with results supporting their value as treatments for depression. Cognitive-behavioral therapies have the greatest support in the scientific literature (e.g., Knell, 1998).

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CHILDHOOD NEUROSIS
CHILDHOOD PSYCHOSIS
DEPRESSION
EMOTIONAL DISORDERS

AFFECTIVE EDUCATION

Affective education promotes emotional development by educating students about attitudes, thoughts, values, feelings, beliefs, and interpersonal relationships (Morse, Ardizzone, Macdonald, & Pasick, 1980). Through it, students are provided experiences in which cognitive, motor, social, and emotional elements are interrelated and balanced (Morse et al., 1980), leading to the enhancement of self-concept (what one is) and self-esteem (how one feels about what one is) and the development of social skills essential to meeting basic needs in a satisfying and socially responsible way (Wood, 1982). Affective education helps youngsters to establish value systems, morals, independence, a sense of responsibility, and self-direction (Morse et al., 1980; Wood, 1982). Although the need for affective education is not limited to students in special education programs, it is especially relevant for them because social skills are essential for success in mainstream placements.

Although most educators agree on the importance of affective education and understand its general purpose, there is less agreement among them on the specific objectives or how best to realize them. In part, this ambiguity derives from the persistent difficulty of defining such terms as self-concept, self-esteem, affect, and attitude. The general lack of systematic programming should not, however, be an indication that affective goals are unimportant (Francescani, 1982). Affective education is commonplace in regular education classrooms and is routinely addressed in teacher education programs (e.g., Woolfolk, 1995). Morse et al. (1980) have argued that affective education represents serious obligation and is an essential component of special education. Essentially, all children deserve the right to more "systematic assistance with their affective growth" (Morse et al., 1980, p. 6).

Nonetheless, affective goals are often subordinated to academic objectives, as the following example (Reinert, 1982) illustrates. Ann, age 10, was known by her teacher to display many different types of inappropriate behavior in

the classroom. She talked out loud, pushed and shoved other children, would not share, and cried for no apparent reason. During evaluation, it was discovered that Ann was reading and spelling on a kindergarten level and her arithmetic skills were two years below grade level. In addition, Ann's parents were divorced and she was often absent from school because she had to babysit for her younger sister while her mother worked. She seldom came to school appropriately groomed or attired. Ann was either unwilling or unable to speak to adults or peers in a normal, conversational tone of voice; she had a poor self-concept and relatively few friends. Upon staffing, her Individual Education Plan (IEP) prescribed 60 minutes in a resource room for remedial help in arithmetic and reading skills, but no emphasis on affective problems. Although affective needs should be a part of an IEP, they are seldom systematically delineated.

Systematic instruction in the affective domain is especially important for emotionally handicapped students like Ann. Emotionally handicapped students include those who have not learned essential skills for social and emotional growth, or how to control their behavior in times of stress, how to communicate their feelings and needs in a socially acceptable manner, how to bring interpersonal problems to a satisfying solution, or how to encounter others without conflict (Francescani, 1982). It is difficult to imagine how a student with deficits as pervasive as these can survive in an environment for which he or she is so poorly equipped. Yet it is in the highly socialized classroom world in which affective education must occur, and most proponents recognize the need to integrate affective learning into everyday classroom life.

Integrated affective learning lies at one end of the intrinsic/extrinsic dimension of affective education. Morse et al. (1980) defined this dimension as the extent "to which (affective education) grows naturally out of what is going on in the educational life space versus how much is added as a special function" (p. 16). Ideally, affective lessons should derive naturally from school activities, using materials already in the curriculum in harmony with the philosophy of the program (Morse et al., 1980; Schlindler, 1982). Teachers should capitalize on naturally occurring opportunities spending time motivating the uninvolved student, resolving peer conflicts, encouraging a reluctant student to join in group activity, or trying to enliven a depressed student. A teacher should not rely on an added-on or extrinsic curriculum to accomplish affective goals.

Affective educators stress the need for developing empathetic relationships between teachers and students in order to convey fundamental human relationships where the "sense of relationship dominates authoritarianism" (Morse et al. 1980, p. 15). Teachers and students share responsibilities, goals, and rules for living together (Morse et al., 1980; Reinert, 1982; Sarason, 1971).

However, to expect all teachers to act at all times with the spontaneity, sensitivity, and astuteness that the ideal intrinsic approach requires is unrealistic. This expectation belies the human limitations of teachers and assumes a degree of training rare if not unknown in teacher preparation programs. Approximations to this intrinsic ideal may be found in curricular approaches to affective education and in strategies such as role playing and socio-drama (Wood, 1982) that allow for the exploration of new solutions to familiar problems.

Among the most popular and widely used curricula is DUSO (Developing Understanding of Self and Others). It is designed to be used by teachers or counselors as an add-on to the academic curriculum. Throughout the school year, eight themes (e.g., Developing Self-Concept, Understanding Peers) are explored through listening, modeling, discussion, and role-playing activities. Everyday problems of classroom life are described through pictures, stories, and puppetry, and solutions are discussed, modeled, and role played. The elements of the lessons are carefully prescribed and the materials are attractive and engaging to a primary-aged audience. Although the curriculum is extrinsic, it does provide a structure through which problems may be simulated and the values of alternative solutions weighed.

Only one of many such curricula, DUSO is singled out here for illustration only. Suffice it to say that they are diverse in objectives, activities, and the sophistication of their intended audiences. It is difficult to compare extrinsic programs because the materials themselves provide content and continuity in their individual components (Reinert, 1982). Most seek to enhance self-concept, encourage positive socialization, recognize and understand basic feelings, and model appropriate responses to given situations through practice and role playing. Few have substantial data bases.

Affective education has grown out of the school mental health movement, but has not yet evolved into a well-formulated program intrinsic to the ongoing school process (Morse, 1980). Instead it tends to be relegated to the periphery of the basic curriculum. If affective education is to realize its potential, deliberate efforts must replace the haphazard, casual, and indirect approaches currently in operation.

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DEVELOPING UNDERSTANDING OF SELF AND OTHERS
SELF-CONCEPT
SOCIAL SKILLS

AFRICA: EAST AND SOUTHERN, SPECIAL EDUCATION IN

A brief history, statements on current status, and the future prospects of special education in twelve East and Southern African countries are presented here. The countries discussed include Botswana, Ethiopia, Eriteria, Kenya, Lesotho, Malawi, Namibia, Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe. The availability of information on the aforementioned topics and between these countries differs widely. Thus, some countries are discussed in greater detail (Tanzania, Uganda, and Zimbabwe) than others (Eriteria, Malawi, and Swaziland).

Incidence of Handicapping Conditions within This Region

Reliable data on the incidence of childhood disorders within this region are unavailable. Various problems associated with incidence surveys preclude obtaining accurate data. Parents may need to register their disabled children in special centers, and they often are reluctant to admit their children display handicapping conditions (Kisanji, 1997; Whyte & Ingstad, 1995). Also, community attitudes toward the handicapped often are negative (Devlieger, 1995; Jackson & Mupedziswa, 1989). These and other qualities are believed to contribute to grossly underestimated incidence figures for handicapping conditions.

This large region in East and Southern Africa is home to an estimated 59,800,000 children. Population details for children ages 5 to 16 years for the year 1996 are provided below (UNICEF, 1996):

Botswana	700,000
Ethiopia	15,600,000
Eritrea	1,600,000
Kenya	12,100,000
Lesotho	600,000
Malawi	3,200,000
Namibia	700,000
Tanzania	8,700,000
Uganda	10,500,000
Zambia	2,900,000
Zimbabwe	3,200,000

If we accept the World Health Organization's general incidence estimate that 10% of a country's population is likely to be handicapped, almost six million children in this region can be expected to have one or more handicapping conditions. We believe this estimate substantially underestimates the number of handicapped children, given the region's sub-standard medical, health, and early childhood education facilities. Among children with handicaps, less than 1% attend formal school (Tungaraza, 1994; Kann, Mapolelo, & Nleya, 1989).

General History of Educational Services for Handicapped Children

The availability of special education services and other resources for children with physical, sensory, and cognitive disabilities occurred recently. Historically, native African societies integrated learning and other developmental activities within their everyday home and community activities (Kisanji, 1997). Home- and community-based activities provide various advantages: a favorable ratio between the young and elders, accommodations to match the child's developmental levels, and utilization of the child's natural milieu within which to promote development and transfer of training. The extent to which homes and communities provide appropriate adaptations to accommodate children with disabilities is unknown. The beneficial effects that professional services can have on children with disabilities are well-established.

The introduction and evolution of professional services for these children in East and Southern Africa closely follows a pattern found in other developing areas: first, national or regional institutions, often residential in nature and initiated by religious, humanitarian, and philanthropic agencies, are established. Professional services for middle-class children then develop in metropolitan centers. The widespread provision of services to children with disabilities in public schools occurs only after general edu-

cation services, at least through the elementary level, are well-developed and nationally available. Children with handicapping conditions who reside in rural areas are least likely to receive professional services. Stronger special education services generally are found in countries with stronger and well-established regular education programs (Saigh & Oakland, 1989).

The majority of countries in this region have inadequate basic education programs (UNICEF, 1991, 1994), lack formal special education policies, and experience school dropout rates in the range of 15% to 60% involving disadvantaged children, which includes those with disabilities (Kann, Mapolelo, & Nleya, 1989; Stubbs, 1997; UNICEF, 1994).

The Role of Missionaries

Christian missionaries, often from Western Europe, initiated and provided almost all formal education within African communities during the colonial period. The development of special education services in this region is closely associated with their work. Trends in the development of special education facilities within individual countries generally followed a consistent pattern: Services were provided first for those with visual handicaps, and then for those with auditory, physical, and mental handicaps. This trend probably reflected the missionaries' beliefs as to the resources (like teaching expertise and materials) needed to serve each of these groups, as well as the family's willingness to admit one or more members have a disability. Because of their normal hearing ability, persons with visual impairments may have been thought to respond more favorably to the use of conventional instructional methods.

In Botswana, German missionaries opened special schools for the visually handicapped at Linchwe (in Mochudi) and the hearing impaired at Ramotswa (in Ramotswa) in the 1950s. A German couple opened residential centers named Rankoromane based on the Waldorf School model to educate children with mental handicaps in a number of towns in the late 1960s (Ingstad, 1995).

In Ethiopia, the Christofeblinden Mission opened a school for the blind and a training program for teachers of the visually handicapped in the early 1950s. Finnish missionaries were involved in developing Ethiopia's special education programs, and they opened a school for the deaf at Keren in the 1950s. The Church of Christ established the Mekanissa School for the Deaf in 1964. The Baptist Mission created the Alpha School for the Deaf in Addis Ababa in 1967. The Ethiopian Evangelical Mekaneyesus Church started the Hossana School for the Deaf in 1981.

In Eriteria, French Catholic, Swedish Lutheran and Italian Catholic churches provided school education to the natives since 1890 (Miran, 1998). The role of these organizations in founding schools for persons with disabilities could not be established. Eriteria, now an independent nation, was once a province of Ethiopia.

The first school in Kenya for the visually impaired, the Thika School, was opened by the Salvation Army in 1946 (Kristensen, 1987). Kenya's first full-time program to prepare teachers of students with visual handicaps and a school for deaf-blind children were founded by the Christofeblinden Mission in the 1980s.

In Malawi, education for the blind was started during the early 1940s when two primary residential special schools were established by missionaries at Kasungu and Lulwe. The Catholic Order of the Immaculate Conception (of the Netherlands) developed a program in 1964 that integrated students with and without visual impairments into regular classrooms within ordinary schools; resource rooms provided supportive services to the visually impaired. Fourteen resource rooms serving about 100 blind students were in operation by 1983 (Ross, 1988). The program at Montfort College, organized by the Catholic teaching brothers of the Order of the Immaculate Conception, prepared teachers for students with auditory and visual impairments for Malawi and some neighboring countries (namely, Lesotho, Swaziland, Tanzania, Zimbabwe, and Zambia) in the 1970s.

Tanzania established its first special education facility in 1950 when the Anglican Church opened a school for the blind, the Buigiri School. Two additional schools for the blind followed this school, one opened by the Swedish Free Mission, the Furaha, in 1962, and another by the Lutheran Church, the Irente School, in Lushoto in 1963. The first Tanzanian school for the hearing impaired, the Tabora Deaf-Mute Institute, was opened by the Roman Catholic Church in 1963. The Salvation Army opened the first school in Tanzania for the physically handicapped in 1967.

In Zambia, missionaries again pioneered special education services in the region (Csapo, 1987a). The Dutch Reformed Church established the first school for the deaf (Sichula, 1990) and one for the blind (Csapo, 1987a) at Magwero Mission in 1955. The Christian Mission of Zambia opened another school for the blind at Mambiling soon after. Other special schools were opened by missionaries and continue to exist today.

In Zimbabwe, the Dutch Reformed Church opened the Margaret Hugo School for The Blind, at Masvingo in 1927 (Peresuh, Adenigba, & Ogonda, 1997). Two schools for the hearing impaired opened in 1947, one in Loreto and another in Pamushana, founded by the Catholic Dominican Sisters and the Dutch Reformed Church respectively (Chimedza, 1994).

Information on missionary work and the opening of special education facilities in Lesotho, Namibia, Swaziland, and Uganda could not be located. However, the Dutch Reformed Church appears to have been involved in Namibia,

and the Roman Catholic Church and Church of Uganda may have been involved in Uganda. Margaret Brown of the Church Missionary Society initiated Uganda's in-service teacher education for children with hearing impairment in 1962. Although Islam has a substantial following in some East African countries (namely, Tanzania, Uganda, Kenya, and Ethiopia), its role in establishing special education facilities in these countries could not be ascertained.

The Role of International Nongovernmental Organizations and Local Organizations

International nongovernmental organizations and local organizations advocating on behalf of students with disabilities also have had strong roles in developing and providing special education services. Their importance exceeds that of the colonial governments. The Danish International Development Agency (DANIDA), UNESCO Sub-Regional Project for Special Education in Eastern and Southern Africa, Swedish International Development Agency (SIDA), Royal Commonwealth Society for the Blind (now called the Sight Savers), International League for Persons with Mental Handicaps, and the British Red Cross are among the international agencies that have played significant roles in establishing special education programs in East and Southern Africa. DANIDA has been actively involved in promoting special education advising in Kenya, Uganda, and Zimbabwe for at least the past decade. SIDA has been involved in developing special education programs in all twelve Eastern and Southern African countries which comprise the focus of this paper. It helped establish Braille printing presses in Tanzania in 1971 (Tungaraza, 1994) and in Zimbabwe in 1994. In the early 1960s the Royal Commonwealth Society for the Blind started a rehabilitation center at Salama (in Uganda) for adults with visual impairments (Onen & Njuki, 1998).

Information on the involvement of local organizations in founding special education facilities in the East and Southern African countries is quite sparse. The Botswana Red Cross, with support from the Norwegian Red Cross, established a vocational training center for persons with physical disabilities in 1981. The Botswana Council for the Disabled has been unable to implement programs that enable children with disabilities to attend school (Ingstad, 1995). In Ethiopia, the Haile Selassie One Foundation established two special schools for blind students. They became government schools in the 1980s.

In Kenya, local voluntary organizations established two special schools for the mentally handicapped at St. Nicholas and Aga Khan in the late 1950s. These schools amalgamated in 1968 to form the Jacaranda School (Ross, 1988). The Kenya Society for the Mentally Handicapped and The Parents and Friends of Handicapped Children were formed by parents of children with disabilities to promote the education of persons with disabilities, improve the preparation for teachers of children with disabilities, and consolidate schools. The Tanzania Society for the Deaf established the first school for the hearing impaired at Buguruni in 1974. In 1955, the first school for children with visual impairment and blindness was started at Madera in Eastern Uganda by the joint effort of the then-local education committee (Teso education committee), the Ministry of Education, and Uganda Foundation for the Blind. The Uganda government later asked the Catholic Church to administer the school.

With the assistance of the Uganda Society for the Deaf, Sherali Bendali Jafer, Peter Ronald, and Mr. Semmpebwa were closely involved in developing awareness throughout Uganda of the need to educate children with hearing impairment (Onen & Njuki, 1998). As a result of their efforts, an integration unit for children with hearing impairment was started at Mengo Primary School. Subsequently, the Uganda School for the Deaf was started on Namirembe Hill in 1968. The following year, Ngora School for the Deaf was established.

Ugandan educational services for children with physical disabilities and mental handicaps both began in 1968, and both were largely the results of efforts of local self-help organizations. For instance, the Uganda Spastic Society was formed in 1968. Its membership consisted mainly of parents of children with spastic conditions and polio, and medical professionals. The society played a key role in the establishment of a school for the physically handicapped at Mengo (Onen & Njuki, 1998). Services for children with mental disabilities were available through the Uganda Association for Mental Health (UAMH). This association, established in 1968 by the Ministry of Health, had a short life due to the political turmoil in the country at the time and in subsequent years. In 1983, the Uganda Association for the Mentally Handicapped was founded, and it has been instrumental in the founding of many resource units for children with mental handicaps.

In Zimbabwe, the Jairos Jiri Association founded the Narran Center School for the Deaf and the Blind in Gweru in 1968, a school for the visually impaired at Kadoma in 1981, and a number of other schools for children with various physical, mental, and multiple handicaps at Bulawayo, Gweru, and Harare in the 1970s (Farquar, 1987). Zimbabwe's Council for the Blind has been involved in providing structural facilities and equipment to school-based integration units for children with visual disabilities since about 1980. Its Zimcare Trust has been actively involved in providing education for Zimbabwean children with mental handicaps since the 1980s.

Zambia's Council for the Handicapped has conferred with teachers and the Zambian government to promote effective ways of teaching children with disabilities since the 1970s. However, its role in the establishment of special education facilities in that country is unclear.

Information on the involvement of international non-

governmental agencies and local organizations advocating for those with disabilities and the establishment of special education facilities in Eriteria, Malawi, Namibia, and Swaziland could not be located.

The Role of Postcolonial Governments

Support for the development of special education by the postcolonial governments in each of the twelve East and Southern African countries differs widely. Support is strongest when elementary and secondary education is widely available and a commitment to the principle of universal education is widely held. Countries recently ravaged by civil war (Uganda, Eriteria, Ethiopia) currently are attempting to re-establish basic elementary and secondary education programs. Their programs in special education are in initial stages of development and support. In contrast, countries that have enjoyed relative political stability (Kenya, Tanzania, Zimbabwe) tend to have stronger regular education programs, as well as a longer history and stronger support for special education programs.

Although Botswana's National Development Plans (1973–1978; 1991–1997) identify the needs of disabled persons as a national priority (Ingstad, 1995), the government historically has viewed educational support to children with disabilities as a family responsibility rather than a state obligation (Ingstad, 1995; Kann et al., 1989). Children with disabilities are conspicuous in their absence from Botswana schools (Kann et al, 1989). Nonetheless, a special education unit was established within the Botswana Ministry of Education in 1984 with the support of SIDA. The University of Botswana has complemented government efforts by offering a two-year diploma course for specialist teachers for children with mental, visual, hearing, and learning handicaps, and is expected to launch a bachelor's degree in special education in August, 1998 (Abosi, C., pers. comm., February 2, 1998).

The Kenya government, through the Kenya Institute of Education, launched special needs teacher education programs at Jacaranda and Highridge Teachers Colleges in 1966–67 (Peresuh et al., 1997). The Kenya Institute of Special Education (KISE), founded by the Kenyan government with the assistance of DANIDA, has assumed responsibility for these programs. More than one thousand teachers have graduated from the KISE teacher education programs since 1987. KISE also is responsible for the educational placement of children with disabilities, community education, and teacher in-service education programs on disabilities.

Lesotho's government became involved in special education in 1987 when its Ministry of Education, with the financial support from the United States Agency for International Development (USAID), commissioned a comprehensive study of its special education programs and accompanying guidelines for its development (Csapo 1987b). The report recommended the infusion of special needs components to both pre- and in-service teacher preparation programs, adoption of an integration (resource room) model for educating children with special needs, and full community involvement in establishing and supporting special education facilities. The Lesotho Ministry of Education, Lesotho National Federation of Disabled People, Ministry of Social Welfare and Health, and Save the Children Fund (UK) created ten integration units. A special education unit was established in the Lesotho Ministry of Education in 1991 to coordinate the opening of integration units. The Lesotho National Teacher Training College assumed responsibility for introducing special education components in its pre-service programs in 1996, and the abovementioned special education unit within the Ministry of Education assumed responsibility for in-service education programs for teachers (Pholoho, Mariga, Phachaka, & Stubbs, 1995).

Namibia became politically independent in 1990 after a legacy of colonial rule under apartheid from South Africa, which left most of its Blacks with little or no education. Thus, the history of educating children with disabilities in Namibia is recent and short. According to Bruhns et al. (1995), Namibia established its first school for children with disabilities, the Dagbreek Special School, in 1970 as a racially segregated facility for White children. The school opened its doors to disabled students of other races after Namibia become independent. The Eluwa School for blind and deaf students was established at Ongwediva in 1973 with 20 deaf and 20 blind students. By 1995 the school enrolled 172 deaf, 70 blind, and eight physically disabled students. The Moreson School for children with severe learning difficulties was established by the Association of the Handicapped in 1976 and became a government school in 1990. It had 60 students along with seven teachers in 1995.

The Tanzania government, with the help of the Royal Commonwealth Society for the Blind, established the country's first integrated education program for children with visual handicaps, Uhuru Co-education School, in 1966, followed by a similar program for children with mental handicaps in 1982 (Tungaraza, 1994). The government also established a diploma-level teacher education program in 1976 and one for teachers of pupils with mental handicaps in 1983 at the Tabora Teacher Training College. In addition, the Mpwapwa Teacher Training College prepares teachers to work with students with visual handicaps. The number of special needs teachers who have graduated from the two Tanzania colleges could not be established.

Uganda's government involvement in special education came earlier than others in the region because of the lobbying efforts of Sr. Andrew Cohen, then-Governor of Uganda, to educate a blind relative (Atim, 1995). Government support to educate the blind was established through an act of Parliament in 1952. The first trial to integrate

children with visual impairment was launched in 1962 at Wanyange Girls School in Eastern Uganda. In July 1973, a department of special education was established at the Uganda Ministry of Education headquarters in Kampala. This department was created to coordinate special education services in the Ministry and to work with other governmental and nongovernmental organizations providing services for persons with disabilities. The head start Uganda enjoyed in developing its special education programs was severely thwarted during two decades of dictatorships and civil war. Special education programs in Uganda began to rebuild after 1991.

The Ugandan government, with the help of DANIDA, founded the Uganda National Institute of Special Education (UNISE) in 1991 and save it the responsibility for coordinating the country's special education programs and teacher education programs at certificate, diploma, and degree levels. So far, about 255 teachers have received specialist training and attended awareness seminars, which are offered to ordinary primary school teachers in the districts throughout the country. The Special Education/Educational Assessment and Resource Services of Uganda (EARS-U) was formed in 1992. EARS-U, a division within the Uganda Ministry of Education, is responsible for evaluating programs for children with hearing, speech, learning, visual, mental, and physical impairments. EARS-U also is responsible for coordinating educational placements of children with disabilities, counseling services to their parents, community education, and prevention programs.

The Zimbabwe government, with the assistance of SIDA, established a Department of Special Education within the Ministry of Education in 1982, with its primary responsibility being educational placement of children with disabilities, pre-service and in-service training of teachers on special educational needs, and community education programs on disabilities. A teacher education program for teachers of children with visual, mental, hearing, and speech and language impairments was established by the government at the United College of Education in Bulawayo in 1983. About 300 special needs teachers graduated from the United College of Education since the establishment of its special education teacher education program. A two-year, post-diploma bachelor's degree in special education was launched at the University of Zimbabwe in 1993 and has graduated about 75 teachers of special needs children. The Zimbabwe Ministry of Education also has issued a number of documents to guide special education programs in the schools (Mpofu & Nyanungo, in press).

Government involvement in special needs programs in Zambia, Ethiopia, Eriteria, Malawi, and Swaziland could not be ascertained. However, respondents to a recent survey of special needs experts in these countries suggested that special education facilities in these countries are quite limited (Mpofu, Zindi, Oakland, & Peresuh, 1997).

Current Status of Special Education in East and Southern Africa

Special education services in East and Southern Africa generally follow a functional integration (resource room) model in which children with disabilities attend class part-time to full-time with their non-disabled peers and receive support of a full-time specialist teacher (Charema & Peresuh, 1997). Specialist teachers maintain the resource room, provide intensive individualized instruction to children with disabilities, and work closely with mainstream teachers in planning and effecting integration strategies for children with disabilities. A functional integration model generally is preferred for children with mild to moderate sensory, physical, and cognitive handicaps. Children with more severe handicaps generally attend special schools and rehabilitation centers, typically those residential in nature, which provide more specialized resources. With few exceptions, most integration units for the visually handicapped and hearing impaired are residential, whereas those for children with moderate to mild physical and cognitive handicaps are nonresidential.

Compared to current needs and potential demand, special education facilities in the twelve East and Southern countries of this survey are severely limited. Botswana has approximately 20 special schools and resource units for children with visual, auditory, mental, and physical handicaps (Abosi, C. O., pers. comm., February 2, 1998). Current enrollment figures by handicapping condition were unavailable. However, previous enrollment was vision (35 students), hearing (88), mental (176), and physical (18) (Kann et al., 1989). There are no facilities in the country for children with severe disabilities.

Lesotho has twelve special schools (Stubbs, 1997). Enrollment figures by handicapping condition were unavailable. Lesotho's Ministry of Education, with support from international nongovernmental organizations and United Nations agencies, recently opened integration units for children with a variety of handicaps in eight of the country's ten districts.

Namibia's school for children with visual impairments has 71 students and its school for the hearing impaired has 185 students (Bruhns et al., 1995). Twenty-four specialist teachers work in these schools. Two schools and 15 specialist teachers serve 125 children with severe learning disabilities. Two additional schools staffed by 67 teachers provide instruction to 733 children with mild learning difficulties. Twelve schools and 16 teachers offer remedial education to 385 children with specific learning disabilities. Namibia also has 28 integration units attended by 507 children with moderate to mild disabilities and taught by 40 teachers.

In Tanzania, services for students with visual impairments are provided in twelve special schools and 23 integrated (18 primary, 5 secondary) schools that offer edu-

cation to 979 children with visual disabilities (Possi & Mkaali, 1995; Tungaraza, 1994). Sixty-four specialist teachers and 157 regular education teachers provide education to children with visual handicaps. Services for children with auditory impairments are provided through 14 special schools and three integrated primary (one residential and two nonresidential) schools to approximately 980 pupils and staffed by 100 specialist and 26 regular class teachers. In addition, 6 schools serve 305 deaf-blind students. About 930 children with physical disabilities attend 61 specialist and integration units staffed by 185 specialist and regular class teachers. The vast majority of children with physical disabilities either attend schools in their communities or do not attend school at all. Tanzania also has four residential special schools for children with moderate mental handicaps and 15 nonresidential integrated units that serve 980 children with moderate to mild mental handicaps. Sixty-seven specialist and 128 regular class teachers teach these children. Twelve children with autism and 14 with cerebral palsy attend four units taught by 6 specialist teachers. Thousands of children with severe mental handicaps do not receive any schooling. In contrast, more than 90% of Tanzanian children with epileptic conditions attend ordinary schools (Whyte, 1995).

Uganda has at least 6 special schools and one integration unit which serve about 500 children with visual impairments, two special schools for 150 children with hearing impairments, and one special school for 124 students with physical handicaps (Ross, 1988). An estimated 32,134 children with mild to moderate disabilities are attending ordinary schools (Onei & Njuki, 1998). The Ugandan government's goal was to have the country's estimated 325,000 children with disabilities attend school in 1997 (Kristensen, 1997; Uganda Ministry of Education, 1992). However, the country lacked the resources for meeting this highly ambitious target then, and it still does today (Mpofu et al., 1997).

Zimbabwe's twenty special schools provide educational and rehabilitation services to 5,000 children with visual, hearing, physical, and mental disabilities. The country also has 162 integrated resource units: 69 for those with hearing disabilities, 46 with mental disabilities, and 47 with visual disabilities. A total of 1,315 children with disabilities are served by the integrated resource units: 552 with hearing impairments, 409 with mental impairments, and 354 with visual impairments. Additionally, about 4,300 children with moderate to mild generalized learning difficulties attend 270 part-time special classes in regular education settings. At least 50,000 children with learning difficulties receive part-time remedial education in classes or clinics in general education schools.

The current status of special education programs in Swaziland, Eriteria, Kenya, and Zambia is unknown. However, information from respondents to a survey on school psychology practices in these countries (Mpofu et al., 1997) suggests special education programs may be better established in Kenya than in other East and Southern African countries. Such programs generally are limited to urban areas in Zambia, and may not exist to any significant degree in Swaziland and Eriteria.

Although the need for more special education facilities in all of the East and Southern African countries is quite apparent, a paradox exists in that attendance is below capacity in many existing special education schools and units in some countries, including Tanzania and Lesotho (Kisanji, 1995; Stubbs, 1997). This under-utilization exists because the facilities are not well-known to parents of children with disabilities and parents in some rural communities are suspicious of their intended purposes. In addition, government departments and international aid agencies often established special education schools and units in certain communities in response to requests by local politicians or parochial interest groups, but without adequate consultation with traditional and other community leaders. Thus, resistance to utilizing these facilities often occurs regardless of their need.

Some countries in this region have mounted comprehensive community outreach programs aimed at educating citizens on the nature of disabilities, their prevention, and appropriate educational interventions. In addition, teachers have walked from village to village to locate children with disabilities to attend school (Kisanji, 1995). The teachers' door-to-door, village-to-village approach can effectively reach families and significant community leaders, and it often yielded larger enrollments of children with disabilities in areas that seem to have few if any such children.

Future Prospects of Special Education in East and Southern Africa

Nearly all countries in East and Southern Africa provide some forms of special education programs. The work of Christian missionaries and nongovernmental agencies often resulted in the establishment of special education programs. The continued involvement of missionaries, although desired, is unlikely to match prior levels of involvement. Nongovernmental agencies increasingly are recognized by international agencies (like the United Nations and the World Bank) as effective implementers of needed social programs. Although their involvement is likely to continue for some years, their resources also are limited in time. Thus, special education programs in this large and important region must depend more heavily, if not exclusively, on local and regional resolve and resources.

A government's involvement in special education programs and teacher preparation programs (through policies enacted and funded by its legislature and implemented by its ministries of education) provides demonstrable evi-

dence that they support special education as an essential component of its national education program. Although the degree to which federal governments are involved in special education programs differs among the twelve countries within this region, all are involved to some degree. However, beneficial policies often are enacted and either not funded or not implemented by ministries of education. For example, the governments of Uganda and Botswana both established policy underscoring the importance of school attendance among children with disabilities as a national priority. However, this policy remains to be implemented.

The adoption of the principle of universal primary education by these governments implicitly recognizes children with disabilities as having the right to education. This, and other positive trends in educational thinking, eventually can be expected to translate into more favorable policies and practices governing special education programs. Moreover, most governments continue to support the further development of their elementary and secondary regular education programs—conditions prerequisite to the strong support of special education programs. Thus, prospects for the continued growth and availability of special education programs in these countries are somewhat encouraging.

However, one should not underestimate impediments to the further development of sustainable special education programs in East and Southern Africa. These impediments include inadequate personnel and financial resources for the provision of basic and regular education and inadequate leadership from advocacy groups.

Given other pressing responsibilities, federal governments in this region are unlikely to prioritize special education programs without some form of external support. Uncertainty exists as to the willingness and commitment of some governments to fund special education programs at current or higher levels than that currently provided by international development agencies (like DANIDA and SIDA).

The sustainability of donor-supported special education programs in East and Southern Africa will depend on the extent to which donor agencies build into their aid packages policies and practices that cultivate a cadre of local personnel willing to lobby for future programs, to implement genuine partnerships with federal and regional government to establish and maintain special education programs, to employ phased donor-funding withdrawal, and to help developing vibrant self-advocacy organizations at the local and national levels. For example, the Swedish Federation for the Blind has financed an advisory project in Eastern Africa aimed at improving the organization and self-advocacy of persons with disabilities (Ross, 1988).

Greater involvement of parents and community members in founding special education schools and integration units would strengthen a sense of ownership for special education facilities in communities, leading to greater attendance and school retention. In addition, the importance of community education programs on disabilities to the future of special education programs in East and Southern Africa cannot be over-emphasized. Most parents of children with disabilities are not involved with any special interest groups or agencies providing special education services (Kisanji, 1995; Ross, 1988).

The significantly limited material and manpower resources within most of these countries constrain the establishment and growth of special education programs (Tungaraza, 1994; Ross, 1988). Most countries are grappling with the provision of basic education and health facilities. The countries have very few personnel specifically prepared to work with children with disabilities in either special or mainstream school settings. The future of special education programs in the region could be considerably enhanced if countries pooled resources to promote professional preparation and research on effective methods to promote basic education of students in special education.

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AFRICA, SPECIAL EDUCATION IN

Special education is relatively new in most African countries. The need for a major commitment to special education by African countries to provide handicapped learners with a variety of programs and services has been recognized for some time now (Anderson, 1983; Joy, 1979; Shown, 1980; UNESCO, 1979, 1986), though progress toward realization has been slow and halting. The UNESCO definition of special education is one that generally adheres to western European and American expectations. Thus the Nigerian National Policy on Education (1981) has defined special education as "education of children and adults who have learning difficulties as a result of not coping with the normal school organization and methods" (Nigerian Year Book, 1984). In Nigeria's Plateau State (Nigeria), special education is defined as including "the course and content of education, including specially defined classroom, material, and equipment designed to meet the unique needs of a handicapped child" (Shown, 1986).

Despite such broad perspectives, special education in Africa is more likely to be concerned with children who are physically and sensorially handicapped rather than suffering from mild cognitive deficits. Children with more severe cognitive deficits are likely to be cared for in other contexts than those of formal special education. Expressing this fact, Shown observes: "To acquire education in the modern sense one must possess and make full use of all his senses. This is beside being fully mobile" (Shown, in press). Sambo (1981) has pointed out "when one loses two or more

of these senses, then the acquisition of education in the normal sense becomes a problem entirely different from those problems normally encountered in the acquisition of education. For such a person, there is a need for a viable alternative for educating him."

Anderson (1973) observed that the majority of African teachers were not familiar with the special techniques and methods required to assist handicapped students to become educationally competent. Furthermore, as Shown (1986) has pointed out, a lack of clear educational objectives has hampered the delivery of educational services to handicapped learners.

Because most African nations have faced major fiscal difficulties for many years, improvements in special education have been difficult to achieve. Nations like Nigeria have, however, made serious efforts at both federal and both federal and local levels to teach the elements of special education in teacher training institutions (Nigeria Federal Ministry, 1977). Nigeria has established training programs at the universities of Jos and Ibadan. These universities provide training and research on scientific education of the handicapped at undergraduate and graduate levels.

In most places in Africa, there are not likely to be clearly defined admission policies for the handicapped or age limits for education of the handicapped as it now exists in Africa. It is not uncommon, therefore, to find a handicapped adult in a special education class with much younger students. Furthermore, the personnel providing special education services are likely to come from the middle or lower ranks of school staffs rather than the higher. The burden of education for handicapped students is thus frequently carried by less well-trained aides and members of the local community, rather than by highly skilled teachers.

Special education teachers working in regular school settings have been reported to be facing emotional and psychological problems (Joy, 1972). They may face neglect and even hostility on the part of other teachers who resent having handicapped students and special education teachers in regular schools. Also, nonspecialist teachers are often resentful of the fact that special education teachers receive extra pay.

Many of the special education services provided in Africa on a noninstitutional basis must be on an itinerant basis because of the scarcity of educational facilities able to serve handicapped students. A dearth of itinerant teachers has limited the extent and effectiveness of such education. Recent efforts have been made in certain African countries to mainstream handicapped students. Thus the Federal Ministry of Information, Lagos, Nigeria (1977) mandates that handicapped school children, where possible, should be mainstreamed along with their nonhandicapped peers. Some African educators have expressed disagreement with this policy (Shown, 1980). There is concern about the dangers that the physical hazards of African terrain may pose for mainstreamed handicapped students who are not carefully supervised, e.g., most parts of Nigeria have dangerous structures and hazards such as rocks, forests, and rivers. Also, the application of mainstreaming policies in Africa places an inordinate burden on most handicapped students unless they are able to use the same materials as their nonhandicapped peers or can be assisted to achieve comparable levels of attainment; this is difficult to achieve in light of the current dearth of trained professionals and the lack of proper facilities and materials. As UNESCO has pointed out (1979), mere physical placement in a mainstreamed school environment is not an answer to providing services to handicapped African children. Provisions at African colleges for handicapped students are essentially nonexistent. There are no ramps, suitable steps elevators, or toilet facilities with special accommodations.

Despite efforts to improve the education of the handicapped, the outlook of Africans respecting the needs of handicapped students and adults is not such as to raise hopes for serious concern regarding their transition into productive roles in society. As Shown has observed regarding the largest nation in Africa, "Nigerians are immensely practical people cauling something or someone only if it is seen to be economically useful. With this in mind, the outlook for the handicapped would seem to be bleak" (Shown, in press).

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NIGERIA, SPECIAL EDUCATION IN

AGE-APPROPRIATE CURRICULUM

An age-appropriate curriculum is a special-education curriculum that consists of activities that are matched to both the students' chronological ages and their developmental or skill levels. This match has been difficult to achieve, especially for older trainable and severely handicapped students who continue to function on preschool levels. The older students with severe handicaps often need continued training in fine motor, cognitive, and language skills, but also need to acquire skills that can be used immediately and will transfer to later community and vocational placements (Drew, Logan, & Hardman, 1984).

Public law 94-142 has mandated an appropriate education for all handicapped students, but wide differences remain when defining this term. The justification for using an age-appropriate education lies in the principle of normalization, which Nirje (1979) has defined as follows: "Making available to all mentally retarded people patterns of life and conditions of everyday living which are as close as possible to the regular circumstances of society" (p. 73). Although it may appear unrealistic to teach age-appropriate behaviors to students with severe developmental delays, Larsen and Jackson (1981) argue that this is the mission of special education: "No, we will not be completely successful (but) . . . our goals for students will stress skills relevant to the general culture, rather than skills that have a proven value only in special-education classrooms" (p. 1).

Our current knowledge of developmental milestones, task analysis procedures, and behavior modification principles can be used in adopting this approach if we also examine the "age-appropriateness" of the materials, skills, activities, environments, and reinforcers used during instruction. For example, in learning visual discrimination of shapes, elementary-age students may use form boards and shape sorters, while older students use community signs and mosaic art activities. For other skills, calculators may be used instead of number lines; colored clothing can be sorted rather than colored cubes; and the assembly of vocational products may replace peg boards and beads (Bates, Renzaglia, & Wehman, 1981).

Because there are many skills that older severely handicapped youths will never acquire (e.g., reading a newspaper and buying groceries), the curriculum focuses on those abilities that can be learned (e.g., reading survival signs or following directions). To identify these skills for each group of students, Brown et al. (1979) employ an ecological inventory approach listing the environments and subenvironments where the students currently (or will eventually) function. An inventory of the activities in each environment and a listing of skills needed to participate in those activities provide the framework for selecting curriculum goals. In this approach, for example, the basic skill of matching pictures leads to finding grooming items in a drugstore, and identifying different foods leads to ordering in a fast-food restaurant.

Classroom design and decor also should reflect the chronological age of the students. For older youths, pictures of teen activities and movie celebrities are more age-appropriate decorations than cartoon characters. Many special-education classrooms have moved into secondary buildings, opening up opportunities to use age-appropriate training sites such as home economics rooms.

Severely handicapped students may have extremely slow learning rates and much difficulty in generalizing learned skills to new situations. Therefore, their education must include the teaching of critical skill clusters and opportunities to practice functional skills in natural settings such as sheltered workshops, supermarkets, and public transportation. For a more detailed description of curricular approaches to teaching functional skill clusters see Guess and Noonan (1982).

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ADAPTIVE BEHAVIOR
FUNCTIONAL INSTRUCTION
FUNCTIONAL SKILLS TRAINING
MENTAL RETARDATION

AGE AT ONSET

Age at onset refers to the point in an individual's life when a specific condition began. Age at onset can be compared with a child's chronological age to establish the duration of a condition. It is a significant variable in making diagnostic judgments and prognostic statements. Within a school setting, age at onset is typically a consideration in: (1) understanding behavioral disorders; (2) understanding the prognosis for adequate intellectual and learning performance in children with neurologic and chronic medical conditions; and (3) assessing and programming for children with learning disabilities.

In the assessment of behavioral difficulties, it is important to have an adequate history of the disorder, including an estimate of when the child began experiencing difficulties. Knowledge of age at onset allows one to assess the relationship between behavioral changes and other significant occurrences in the child's life (e.g., Did difficulties start when a sibling was born? When the child entered school?). Different psychopathologic conditions have different histories, ages at onset, and significance. For example, infrequent nightmares are not pathognomonic, in fact, they are normal in a three-year-old child (Lowrey, 1978). Infantile autism, by definition, has an age of onset prior to 30 months of age (*Diagnostic and Statistical Manual of Mental Disorders,* 1994). For many disorders, age of onset will influence diagnostic decisions, treatment choices, and prognostications.

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ASSESSMENT
MEDICAL HISTORY
MENTAL STATUS EXAM

AGGRESSION

Aggression is usually defined as any form of behavior designed to harm or injure some living being (Baron & Byrne, 1991), although some also include aggressive acts turned toward objects (intentional destruction of property) or toward the self (Ruhl & Hughes, 1985). This intentional definition of aggression includes two categories: hostile aggression and instrumental aggression. If the goal of an aggressor is to injure a victim, the behavior constitutes hostile aggression, whereas instrumental aggression involves acts perpetrated as a means to some end (to get an object or protect one's play space). Hollandsworth (1977) differentiates aggression from assertiveness by emphasizing the former's threatening, punitive, and coercive qualities.

Aggression is sometimes correlated with other disordered behavior patterns. It is frequently associated with hyperactivity and is also related to excessive distractibility and impulsivity. Positive correlations have been found between impulsive cognitive tempo and both aggression and lack of concern for the consequences of aggression (Messer & Brodzinsky (1979).

Children's aggression against others may be expressed as tantrums, verbal abuse, teasing, opposition (doing the opposite of what one is requested to do), and hitting, kicking, pinching, spitting and other forms of physical assault. There are several categories of high-frequency behaviors that are often exhibited as aggression, including yelling, harmful physical acts, the use of negative commands and threats to force compliance (Patterson, Cobb, & Ray, 1972; Patterson, Reid, Jones, & Conger, 1975).

While some instances of aggressive behavior are a common and normal part of the behavioral repertoire of children, it is only when the behavior occurs at high frequency or has extreme potential for harm that the aggressive child label is applied. What constitutes excessive aggression must be determined with reference to age, sex, form, and culture. For example, males in almost all cultures exhibit more physically aggressive behavior, although females exhibit more relational aggression (like excluding classmates from a group) (Crick & Grotpeter, 1995). Aggressive children also continue to exhibit aversive behaviors at a much later age than do normal children.

Explanations of aggressive behavior can be classified into five theoretical perspectives: (1) ethological/biological, (2) psychodynamic, (3) drive theory, (4) social learning theory, and (5) social-cognitive perspective. Lorenz (1966) has proposed the ecological view that aggression stems from an innate fighting instinct. Aggressive energy is thought to build up over time and must eventually be released directly or indirectly. But evidence for causative evolutionary or genetic factors in humans is weak. It is far more likely that environmental histories determine specific

aggressive acts and targets (Simmel, Hahn, & Walters, 1983).

Biological approaches hold that aggression can be influenced by genetic factors (Olweus, 1980), biochemical factors (hormonal processes), or electrical activity in the central nervous system (Moyer, 1976). The extent of this influence varies, but most agree that the expression of biological tendencies is very much a function of the qualifying effects of the environment. Rather than providing a sufficient cause of aggression, it is more accurate to view biological factors as one of a multiple set of determinants (Parke & Slaby, 1983).

Freud believed that aggression is a basic instinctual force that creates a need for aggressive behavior. Thus aggression is viewed as a motivating force that causes behavior and may be expressed in either positive or negative ways. The demands of the environment and the controlling mechanisms of the ego and superego determine whether the expression of aggression is manifested in socially acceptable or unacceptable ways. This view continues to decline in influence because of its intestable hypotheses and because of far more persuasive alternatives.

The frustration-aggression hypothesis provides an historically important explanation of aggression. Frustration is hypothesized to be the cause of aggression (Dollard, Doob, Miller, Mowrer, & Sears, 1939; Berkowitz, 1962). Frustration, which is the result of the blocking or thwarting of some goal-directed activity, induces an aggressive drive that can only be reduced through the expression of aggressive behavior. Although it is certainly true that frustration can produce aggression, this explanation is far too simplistic to explain the myriad instances of aggression. Additional research has shown that aggression is not the inevitable consequence of frustration and that the frustration-aggression hypothesis has limited utility in accounting for either the onset or maintenance of aggressive behavior (Achenbach, 1982).

According to social learning theory (Bandura, 1973) acquiring aggressive behavior is a function of learning from models, the child's reinforcement history, and current contingencies of reinforcement that maintain aggression. It is well established that children can learn aggressive responses from live or filmed models, and from adults, peers, or cartoon characters. They are also more likely to imitate aggressive models who have high social status and who either receive no punishment or are reinforced for their behavior. Further, when specific or generalized imitation of aggression goes unpunished or is rewarded, a child will be more likely to engage in that behavior. Aversive stimulation in the form of taunts or threats, or the removal of salient reinforcers, may also evoke aggressive behavior.

Once aggression has become a regular aspect of one's behavioral repertoire, it will be perpetuated to the extent that it continues to be reinforced. Paradoxically, some uses of corporal punishment can increase the probability of future aggressive behavior (Axelrod & Apsche, 1983). Aggression can also be maintained through mental processes that serve to justify one's behavior. As Bandura has continued to develop this theory, primary emphasis has shifted from behavioral contributions to the importance of cognitive processes, including a person's thoughts, perceptions, attitudes and self-efficacy.

Cognitive analyses of aggression include interpersonal cognitive problem solving (Spivak & Shure, 1974; Shure and Spivak, 1978) and social information processing (Crick & Dodge, 1994). Both of these views link social cognition to social behavior by emphasizing how children's thoughts about themselves and others affect their behavior.

Interpersonal cognitive problem solving focuses on children's ability to generate multiple strategies for solving social problems. Skills associated with social problem solving include sensitivity to social problems, recognizing alternative solutions, identifying means to reach a social goal, considering the consequences of possible actions, and considering possible causes of other people's behavior. The more strategies children know for solving social problems and hence the greater their social competence, the less likely they are to resort to aggressive or impulsive behaviors. Training programs that increase children's cognitive problem-solving skills have been found to reduce children's aggressive behavior (Denham & Almeida, 1987; Shure, 1993).

A related approach emphasizes teaching children healthy ways to manage frustration (Fagen & Hill, 1987). By training children to recognize feelings of frustration, accept those feelings, tolerate frustrating experiences, and build coping skills, teachers can enable aggressive students to respond in more adaptive ways to inevitable frustrations.

According to the social information processing model, children's aggressive behavior is believed to be a function of the social schemas that they have gained from their experiences. Social schemas refers to memory structures that organized information, and it is proposed that aggressive children hold schemas that predispose them to interpret ambiguous behavior directed at them by their peers as having aggressive intent (Dodge & Frame, 1982). In other words, one's memories for specific events, private rules for interpreting behavior, and social schemas affect how children process information in specific social situations. Aggressive children use fewer cues in a social situation before drawing inferences than do nonaggressive children (Slaby & Guerra, 1990), and they pay more attention to aggressive cues (Gouze, 1987).

The model focuses on social judgments and interpretations of social cues. It calls attention to the attributions and inferences that are made about the motives of others. One must interpret social cues accurately in order to make

correct attributions about whether another person's behavior is hostile or not. Cognitive mediators of aggression may affect how a child first determines which social cues are relevant and then evaluates those cues to interpret a peer's intentions. Other internally mediated events involve considering alternative responses to the situation, determining when to apply one's personal response rules, and deciding on the optimal response given the costs and benefits of various solutions. Therefore, this view of aggression seeks to reveal the cognitive and attributional underpinnings of personal decisions regarding the expression of aggressive behavior.

Studies based on this model indicate that aggressive children tend to have little interest in relationship goals, instead preferring to use their power to get what they desire. Also, they less often think of socially desirable responses (Dodge, Murphy, & Buchsbaum, 1984; Dorsch & Keane, 1994), in hypothetical situations will evaluate aggressive responses more positively, and have greater confidence about their ability to use aggression.

Approaches to the control of aggression vary according to theoretical persuasion. Psychodynamic interpretations of aggression invoke the concept of catharsis, the dissipation of built-up aggression that results from fantasy activities that permit one to vicariously express aggressive impulses (watching violent television programs or painting with aggressive themes), or through the psychodynamic processes of displacement and sublimation. Building trust, communicating total acceptance of the child, and creating a permissive, noncompetitive classroom environment are also recommended. Not only is there no empirical support for the efficacy of these approaches, but there is some evidence that such approaches may actually increase aggressive propensities (Lefkowitz, et al., 1977).

Procedures referred to as "psychoeducational" are distinctive for their focus on cognitive and affective contributions to behavior. The premise of most of these approaches is that cognitive awareness, feelings about aggression, and perceptions of others will influence the nature of one's behavior (Fagen, Long, & Stevens, 1975; Rezmierski, Knoblock, & Bloom, 1982; Dodge and Crick, 1994). Therefore, interventions should focus on training explicit skills for achieving self-control over aggressive behavior.

For example, the self-control curriculum of Fagen and Long (1979) taught skill clusters such as anticipating response consequences, managing frustration, inhibition and delay, and relaxation. A variety of strategies are used to teach these skills, including many used in cognitive-behavior modification (Mahoney, 1974). Research confirms that aggression can be decreased by altering a child's cognitive strategies and affective states (Goldstein, 1983). In a study of the social information processing model, Guerra and Slaby (1990), were able to improve adolescents' social information processing, change their beliefs about the acceptability of aggression and reduce the degree of aggressive, impulsive and inflexible behavior.

Interventions based on social learning theory also incorporate a variety of behavior modification techniques. All social learning strategies seek to modify the child's current social environment (Bandura, 1973; Patterson et al., 1975). Training consists of modeling or role playing (Chalmers, & Townsend, 1990). Children are taught nonaggressive behaviors for those situations most likely to elicit aggressive responses.

Strictly behavioral interventions are often effective in reducing aggression, even though adequate generalization to other environments and maintenance of behavior over time is sometimes problematic (Kazdin & Frame, 1983). To counter this challenge, careful effort is given to teach acceptable behavior, not merely eliminate aggressive responses. This may include building effective skills of social interaction, as well as cognitive or affective behaviors. As a consequence, there may be considerable overlap in the techniques used by proponents of behavioral and cognitive approaches to reducing aggressive behavior in children.

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COGNITIVE BEHAVIOR THERAPY
CONDUCT DISORDER
SOCIAL COGNITIVE THEORY

AGRAPHIA

The *Cyclopedia of Education* (1915) defines agraphia as a disorder of the associations of speech in which there is a partial or complete inability to express ideas by means of written symbols in an individual who had previously acquired this mode of speech expression. Agraphia is often associated with apraxia and with so-called motor aphasia.

Orton (1937) distinguished between motor agraphia and development agraphia, or special writing disability. Orton defined motor agraphia as the loss of ability to write restricted to the motor component of writing. Orton attributed this problem to dysfunction in relevant motor control areas of the brain without accompanying dysfunction in nearby speech functioning areas. Developmental agraphia was said to manifest itself in one of two ways: the first instance characterized by an unusually slow rate of writing; the second characterized by quality of writing. Orton suggested that "shifted sinistrals," or enforced training of the right hand in left-hand children, may result in slow writing. In other cases, the lack of dominant handedness was said to result in writing problems.

Strauss and Werner (1938) suggested that finger agnosia (inability to recognize one's own fingers) may be related to agraphia. Terms such as agraphia have declined in popularity in recent years, partly as a result of a trend toward the use of more educationally relevant orientations

(see Hallahan, Kauffman, & Lloyd, 1985, for a historical overview). Deficits in writing performance are best defined and remediated in terms of task-specific behaviors (Mercer, 1979).

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DYSGRAPHIA
HANDWRITING

AICARDI SYNDROME (CALLOSAL DYSGENESIS)

Aicardi Syndrome (AS) is the most common of syndromes involving agenesis or dysgenesis of the corpus callosum and is sometimes used interchangeably with the designation *callosal dysgenesis*. The corpus callosum is the largest of the cerebral commissures and is the major communication link between the left and the right hemispheres of the brain.

Depending upon the level of dysgenesis, symptoms may vary considerably in their severity but among the most common are: mental retardation, autistic syndromes, severe obssessive compulsive disorders, seizure disorder, and macrocephaly (Gillberg, 1995). When limited to the extreme posterior portions of the corpus callosum, ADHD is a more common result. Girls tend to be overrepresented in callosal dysgenesis syndromes and in, Aicardi Syndrome proper, only girls occur since it is an X-linked, dominant mutation. As, among the callosal dysgenesis syndromes, is among the most severe and typically results in moderate to severe mental retardation and numerous physical abnormalities, especially of the spine and the orofacial area. Diagnosis is by CAT scan or MRI. Neuropsychological testing is recommended due to the possible range of reaction.

Treatment is entirely symptomatic and virtually all such children will require special education services and may qualify under multiple areas of disability. In less severe cases of callosal dysgenesis, asymptomatic presentations have been reported, emphasizing the need for ongoing neuropsychological follow-up and periodic reassessment of intervention plans. Symptoms not appearing by puberty typically do not occur and the disorder is not progressive. In the most severe forms of callosal agenesis, death in infancy is common.

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AIDES TO PSYCHOLINGUISTIC TEACHING

Psycholinguistics focuses on the interactions and psychological functions underlying communication. It attends to the processes by which a speaker or writer emits signals or symbols, and the interpretation of those signals by the receiver (Hammill & Larsen, 1974).

Language programs and assessment techniques have been derived from these psycholinguistic principles and have been applied to education. A basic tenet of psycholinguistics is that language is made up of discrete components that may be identified and measured; further, it is assumed that if one is deficient in a given component, the deficiency can be remediated. This leads to two more assumptions, that a child's failure to learn stems from his or her own weaknesses, and that strengthening weak areas will result in improved classroom learning (Hammill & Larsen, 1974). If these assumptions are valid, programs aimed at mitigating psycholinguistic weaknesses are both necessary and desirable. If the assumptions are invalid, however, a great deal of time and money is being wasted on the application of these programs in educational settings.

In their review of research, Hammill and Larsen (1974) showed that the efficacy of psycholinguistic training had not been adequately demonstrated. They pointed out that many exceptional children are being provided with training programs aimed at increasing their psycholinguistic competencies. On the basis of their review, the authors claimed that it is essential to determine whether the constructs are trainable by present programs. It is also necessary, they said, to identify the children for whom such training would prove worthwhile.

Arter and Jenkins (1977), in their examination of the

benefits and prevalence of modality considerations in special education, concluded that research evidence failed to support the practice of basing instructional plans on modality assessment. Thirteen of the 14 studies they reviewed indicated that students were not differentially assisted by instruction congruent with their modality strengths. Further, they stated that "increased efforts in research and development of test instruments and techniques may be warranted but, as far as the practitioner is concerned, advocacy of the (modality) model cannot be justified." (p. 295)

Recent reviews using a quantitative statistic known as effect size (ES) have been conducted to summarize educational research. This statistic is computed to quantitatively determine how much improvement occurs across different investigations, based on two indices: the direction of improvement (+ or –) and the amount of improvement with an ES of 1.00 revealing a 34% improvement. Kavale and Glass (1982) refer to a meta-analysis performed by Kavale in 1981 that investigated the effectiveness of psycholinguistic training. Kavale's studies yielded 240 effect sizes with an overall ES of 0.39. Kavale and Glass conclude by asserting that there are specific situations where psycholinguistic training is effective and that it should be included within a total remedial program. The findings from this research should be qualified, however, because of the lack of consideration of research methodologies across the different investigations. Furthermore, the outcome measures were based on performance on the process tests (i.e., Illinois Test of Psycholinguistic Abilities—ITPA), not on academic tests. Further analyses of studies using achievement outcomes have found negligible effect sizes. It remains open to question whether such improvement on psycholinguistic process tasks would translate into improved performance on academic tasks in the classroom.

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FERNALD METHOD
ORTON-GILLINGHAM METHOD
PSYCHOLINGUISTICS

AIDS

See Pediatric Acquired Immune Deficiency Syndrome.

AKINETON

Akineton is the proprietary name of *biperiden*, a skeletal muscle relaxant used in the treatment of Parkinson's disease (Modell, 1985). It is available in tablet and ampul form. Akineton is used in the treatment of all forms of parkinsonism, and it helps reduce movement disorders associated with this condition. It also is used in conjunction with antipsychotic drugs such as the phenothiazines to control extrapyramidal disturbances. Safe, effective use in children has not been established. Possible side effects associated with Akineton include dryness of the mouth, drowsiness, blurred vision, and urinary retention. Extreme adverse effects include mental confusion, agitation, and disturbed behavior. Teachers who have students with juvenile Parkinsonism may encounter those side effects in their students.

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CHOREA
PHENOTHIAZINES

AL-ANON

Al-Anon originally was an adjunct of Alcoholics Anonymous, but in 1954 it incorporated as a separate fellowship. The central headquarters, known as the World Service Office (WSO), serves Al-Anon groups all over the world. The WSO is guided by a voluntary board of trustees, a policy committee, and an executive committee that makes administrative decisions. There is a paid staff with an executive director. Although there is a central headquarters, all local groups operate autonomously. The only requirement for membership is the belief that one's life has been or is

being deeply affected by close contact with a problem drinker.

Al-Anon groups help affected by someone else's drinking to:

- Learn the facts about alcoholism as a family illness
- Benefit from contact with members who have had the same problem
- Improve their own attitudes and personalities by the study and practice of the "twelve steps"
- Reduce tensions and improve the attitudes of the family through attendance at Al-Anon meetings

Al-Anon is primarily a self-help/support group that focuses on assisting family members in dealing with the problems that an alcoholic brings to the family. It is based on anonymity and sharing.

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ALATEEN

Alateen is a self-help, self-support group for young Al-Anon members whose lives have been affected by someone else's drinking. Each Alateen group has an active, adult member of Al-Anon who serves as a sponsor and who is responsible for guiding the group and sharing knowledge of the twelve steps and traditions. The basis purpose of this group is to help Alateens to cope with the turmoil created in their lives by someone else's drinking. Meetings are voluntary and generally are held in community buildings. Alateen members openly discuss their problems, share experiences, learn effective ways to cope with their problems, encourage one another, and help each other to understand the principles of the Al-Anon program.

In a survey conducted by World Service Office it was found that 46% of the Alateens held membership for between 1 and 4 years, 57% were female, most were children of alcoholics, 27% were the brother, sister, or other relative of an alcoholic, and the average age of a member was 14, with 71% between the ages of 13 and 17. Furthermore, 31% of the Alateen members had participated in treatment/counseling before or since coming to Alateen. Fully 94% of the Alateen respondents indicated that personal influences were responsible for their attendance at their first Alateen meeting, with Alcoholics Anonymous members, Al-Anon/Alateen members, or family members being the most frequently identified influence.

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AL-ANON
ALCOHOL AND DRUG ABUSE PATTERNS

ALBINISM

Albinism is a genetic disorder that affects the pigmentation, of the skin, hair, or eyes or any combination of the three. Individuals with albinism often have significant visual impairment. Problems with acuity are common, as is pendular nystagmus. Central nervous system involvement may be present. Although one would typically require intense illumination for such problems, persons with albinism are severely photosensitive, i.e., intolerant of light. Special education services will often be necessary, particularly if the visual impairments so often accompanying albinism are severe. Social and behavioral problems related to the odd physical appearance concomitant with albinism are common, as are problems with anxiety and self-esteem. Children with albinism will vary as much as normal individuals in the vast majority of human characteristics. Some will not require special education.

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ALBRIGHT'S HEREDITARY OSTEODYSTROPHY (PSEUDOHYPOPARATHYROIDISM)

Albright's hereditary osteodystrophy is believed to be an X-linked inherited disorder that results in a low level of calcium and a high level of phosphorus in the blood. Varying degrees of mental retardation, ranging from slight to severe, are associated with the condition, and hearing and vision problems are found in a number of afflicted children. At times, hyperthyroidism is associated with Albright's, therefore alterations in personality and behavior may be seen (Carter, 1978).

Children with this condition are usually short and stocky with skeletal abnormalities often observed in both upper and lower extremities and prominent foreheads. Calcium deposits may be present in the brain, skin, and organs. Calcification is often found in hands, wrists, and feet. Toes and fingers are short and stubby. There may be impairment in the sense of sour and bitter taste and the sense of smell. Glandular disorders may be seen and sexual glands may be poorly developed (Lemeshaw, 1982).

Neurological, sensory, and motor problems often accompanying this syndrome will require related attention. Developmental and mental status evaluations will be neces-

sary to measure the degree of disability each child has. Because seizures may be present, drug therapy may be necessary and must be known and monitored.

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HYPERTHYROIDISM
PHYSICAL ANOMALIES

ALCOHOL AND DRUG ABUSE PATTERNS

Alcohol and drug abuse patterns in contemporary American society should be viewed from many perspectives in an effort to understand the multidimensional nature of the problem. Patterns of alcohol and drug use, abuse, and dependence, particularly among adolescents, have changed radically in the past 20 years. Rates of use, abuse, and dependence have all increased at an alarming rate, as has the variety of substances indulged in by young and old alike. Many theories have been developed as social scientists seek to understand and explain the upsurge in adolescent alcohol and drug use. For example, in 1980, 50 theorists described 43 different theories on drug abuse (Lettieri, Sayers, & Pearson, 1980). Similarly, a plethora of research articles have appeared on the phenomenon of alcohol use and abuse (Maisto & Caddy, 1981; Roebuck & Kessler, 1972).

To explore and explain fully the complex nature of alcohol and drug use among youths, one must look at the theoretical constructs of anthropology, economics, medicine, politics, psychology, and sociology. In a recent review of the many determinants of alcohol and drug use, Galizio and Maisto (1985) call for a "biopsychosocial" model. Given the alarming rate of acceleration in alcohol and drug use and the complexity of the issue, such a model would allow theorists and scientists from varying disciplines to study and collaborate in an effort to understand and intervene in this escalating social issue.

The fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1994) clearly distinguishes among the terms, use, abuse, and dependence. Although each category of psychoactive drug use (e.g., alcohol, barbiturate, opioid, cocaine, amphetamine, phencyclidine, hallucinogen, cannabis, and tobacco) is separated within the manual, the more general term substance use, is employed when referencing the disorder as a whole. Substance use is defined as a pattern of consumption of a psychoactive substance; (i.e., one that has a mechanism of action in the brain) that does not meet the definitive criteria that follow for abuse or dependence. Substance abuse is a pattern of pathological use, (i.e., impairment in social or occupational functioning that is related to the use of the substance) that lasts at least 1 month. Substance dependence is defined by the presence of body tolerance to the drug, or evidence of withdrawal symptoms (e.g., runny nose, goose flesh, fevers and chills, gastrointestinal discomfort, muscle cramping) after cessation of use. Tolerance is defined as a state of use in which larger and larger amounts of the particular substance are required to produce the user's desired outcome. Withdrawal symptoms can be physiological, psychological, or both; several drugs, notably alcohol, heroin, opioids, barbiturates, sedatives, and some types of stimulants, frequently create both. This point is significant regarding the establishment and maintenance of specific patterns of alcohol and drug use. Cessation of use by a chemically dependent person may create such great discomfort that the user feels compelled to return to use for relief.

Patterns of alcohol and drug use among adolescents are strongly linked with delinquent behavior. Indeed, delinquent behavior and substance abuse are consistently correlated (Elliott & Ageton, 1976). At the least, use of alcohol, illicit drugs, or prescription drugs not prescribed for the individual using them is illegal. Further, other unconventional or nonconforming actions such as sexual experiences, attenuated academic performance, and flagrant violations of minor and major laws often precede involvement with illicit substances. Not all youths who experiment with alcohol and other drugs will manifest the problems associated with chronic or continued substance abuse, but current research supports a high correlation between continuing drug and alcohol use and delinquent behavior (Clayton, 1981). Initial, or trial, use of alcohol and drug is likely to occur in youths who have already participated in other minor deviant activities; those who choose a high level of peer group involvement; and those who have seen both parent and peer use. Huba, Wingard, and Bentler (1980) found that prior behavior is a much stronger predictor of intended drug behavior than is either expressed interest or desire. This factor is significant in understanding the causal relationship between criminal behavior and drug and alcohol use. Initial research suggested that drug use precedes other forms of juvenile delinquent behavior (Single & Kandel, 1978), but more recent studies indicate that delinquent subgroups establish group acceptance of continued alcohol and drug use beyond the level of what could be considered normal adolescent experimentation and curiosity (Clayton, 1981).

Initiation of alcohol and drug use can be seen as either a developmental issue of adolescence (Kandel, 1975) or as an abnormal adaptation to frustration (Hendin, 1980), among other possibilities. Numerous theories have been posited about the initial or trial stage of drug use. However, consensus has been reached as to the critical role of peer-group pressure and the addictive nature, physically and/or psychologically, of the substances used in maintaining drug use. Thus regardless of the reason for beginning drug use, acceptance and support by peers to continue use, tolerance, and aversive withdrawal symptoms are essential factors in understanding the use, abuse, and dependence continuum. The addictive potential of the substance used, amount used, frequency and duration of use, and route of administration are key factors influencing adolescent's ability to start and stop their alcohol and drug use.

Adolescents seem to follow a predictable pattern in their continued alcohol and drug use. The use of legal drugs usually precedes the use of illegal drugs, irrespective of what age the use of illegal drugs is begun. Similarly, the use of illicit drugs like marijuana rarely takes place without prior experimentation or use. However, no evidence indicates that anything inherent in the pharmacologic properties of any substance necessarily leads from use of one to the use of another (the stepping stone theory of addiction). That is, the use of tobacco leads to alcohol, alcohol to marijuana, marijuana to stronger drugs, and finally addiction and dependency. Factors such as parental role models, peer pressure, and availability and access seem to be more important than anything pharmacological (Kandel, 1975).

A further complication is that adolescents who use and abuse substances that can produce tolerance may suffer the biomedical consequences of lifelong chemical affinity for continued abuse and dependency (Cohen, 1981). Also, evidence of a biogenetic predisposition to drug dependency can be seen in patterns of use and abuse in the offspring of alcoholics and, to a lesser degree, other substance-addicted parents (Crabbe, McSwigan, & Belknap, 1985). Children of addicted parents may become addicted with fewer episodes of intoxication, smaller amounts of substances, and fewer of the factors noted previously for adolescents. A word of caution is offered by Schuckit (1980), who states that even when a predisposition or affinity for substances is noted in an adolescent, the final picture must involve not only genetics but also the careful consideration of environment, culture, and other social factors.

The range and variation of the adolescent experience is an important final concern in understanding adolescent patterns of alcohol and drug use. The period of chronological growth beginning at age 12 and continuing through age 21 is marked by great physical, emotional, and intellectual development. Early, middle, and late phase adolescents respond differently to issues such as opportunity for first use, continued use, decision making, the ability to make choices, stress and anxiety, and prevalent patterns of communication within a given peer network. Cohen (1983) and Kandel (1975) substantiate concerns about the impact of the age of first use moving downward. Data on age of admission to treatment centers and survey responses both suggest that a large number of adolescents will become dependent at an earlier age. Further research is needed to determine the impact of this trend on the rapidly developing, but fragile, systems of young people. Although some studies suggest a decline in the frequency of adolescent drug and alcohol use in this society (Johnston, Bachman, & O'Malley, 1982), more specific information is needed about high-risk youths from isolated populations that are not routinely surveyed in national studies (e.g., high school dropouts, younger members of the armed forces, and residents of college dorms). Miller (1981) indicates that the "surveillence function of epidemiological research" will best be served by closer attention to special "pockets" of substance-abusing youths who have escaped close scrutiny in the recent past.

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CHEMICALLY DEPENDENT YOUTH
DRUG ABUSE
SUBSTANCE ABUSE

ALEXANDER GRAHAM BELL ASSOCIATION FOR THE DEAF

The Alexander Graham Bell Association for the Deaf is a nonprofit membership organization established in 1890. The Association's mission is to empower persons who are hearing impaired to function independently by promoting universal rights and optimal opportunities to learn, use, maintain, and improve all aspects of their verbal communications, including their abilities to speak, speechread, use residual hearing, and process both spoken and written language. Towards this end, the Association strives to promote (1) better public understanding of hearing loss in children and adults, (2) detection of hearing loss in early infancy, (3) prompt intervention and use of appropriate hearing aids, (4) dissemination of information on hearing loss, including causes and options for treatment, and (5) inservice training for teachers of children who are deaf or hard of hearing. The organization also collaborates on research relating to auditory/verbal communication and with physicians, audiologists, speech/language specialists, and educators to promote educational and social opportunities for individuals of all ages who are hearing impaired.

To accomplish these objectives, a wide variety of member-oriented programs, publications, and financial aid programs are offered, including school-age financial aid awards, scholarships, aid to parents to infants diagnosed with moderate to profound hearing loss, and arts and sciences awards.

The Alexander Graham Bell Association for the Deaf may be contacted by writing 3417 Volta Place, N. W., Washington, DC 20007-2778 or by calling (202) 337-5220 (Voice and TTY).

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ALEXIA

Alexia is used often in a general sense to refer to reading disabilities of adult onset (Lezak, 1995). As such, the term serves to differentiate between adult reading disorders and developmental reading disabilities commonly denoted by the term dyslexia. Literally, however, the term *alexia* derives from the Greek and can be approximately translated as "no reading." Thus, in a more precise sense, alexia denotes a total inability to read brought about by an abnormality in the central nervous system (Thomas, 1977). The term can be correctly applied to individuals regardless of age.

In most individuals, the perception of verbal material is mediated by cortical association areas found in the temporal lobe of the left hemisphere of the brain (Milner, 1971). Specifically, the perception of written words appears to be dependent on the proper function of a cortical area found in the posterior temporal lobe, the angular gyrus. As such, the presence of alexia is often seen as an indication of a cortical lesion or other abnormality associated with this particular brain region.

Not all researchers, however, agree that alexia should signify only a condition in which individuals demonstrate an inability to recognize words. It has been argued that individuals who cannot attach meanings to words that they can recognize (i.e., those who demonstrate a failure in word comprehension) are also alexic. Such an inability (whether or not one chooses to call it alexia) may also be re-

lated to cortical abnormalities in the left temporal lobe involving neural pathways connecting the angular gyrus to verbal comprehension centers such as Wernicke's area. Interestingly, individuals suffering from right temporal lobe lesions, although seldom demonstrating reading disorders, have been shown to experience related difficulties in nonverbal tasks calling for both spatial recognition and comprehension (Vignolo, 1969).

Given that the events that may lead to cortical damage (e.g., cardiovascular accident, toxic or other poisoning, head trauma) rarely are confined in their effects to any one specific brain location, alexia is generally observed in combination with related language dysfunctions, and rarely in pure form (Lezak, 1995). Dyslexia, defined as an impairment of reading ability of less than total magnitude, is a much more common occurrence.

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DYSLEXIA

ALGOZZINE, BOB (1946–)

After receiving a BS in economics in 1968 from Wagner College in New York, Bob Algozzine earned his MS in educational psychology from the State University of New York, Albany in 1970 and his PhD in the education of exceptional children from Pennsylvania State University in 1975. He was a professor at the University of Florida where he was involved with training regular class teachers to work with exceptional students. Currently, he is professor at the University of North Carolina Charlotte, in the Dept. of Educational Administration, Research & Technology.

Algozzine's main interest is in working with students who fail to profit in regular classes. Much of his work has focused on the similarities between learning-disabled (LD) and low-achieving students. Algozzine contends that LD is a sophisticated term for low achievement and that it represents an oversophistication of a concept (Algozzine, Ysseldyke, & Shinn, 1982). He has shown that few differences exist in test profiles of LD and low-achieving students and that performance profiles of many normal students evidence significant discrepancies as well. He believes that schools need to spend less energy trying to identify exceptional students and place more effort on determining what to do with all students who fail to profit from their current educational placement (Algozzine & Ysseldyke, 1983).

Algozzine has written over 200 articles, research reports, monographs, final reports, and books. He has been a member of the Council for Exceptional Children, the American Educational Research Association, and the Florida Council for Children with Behavior Disorders. Currently, he is co-editor of the journal *Exceptional Children*.

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ALLERGIC DISORDERS

An allergy is a hypersensitivity to a specific substance (an antigen) that in a similar quantity does not affect other people. The abnormal reactions are usually in the form of asthma, hay fever, eczema, hives, or chronic stuffy nose (allergic rhinitis). Technically, the use of the term should be limited to those conditions in which an immunological mechanism can be demonstrated. Allergies are common to 20 to 25% of the children in the United States and are inherited. The tendency to develop allergies is present at birth but may appear at any age.

Allergies can be classified into two types: immediate hypersensitivity (such as allergic rhinitis, asthma, and food allergies) and delayed hypersensitivity (such as reactions

to poison ivy). Patients with the former have more of the antibody IgE in their systems. This antibody reacts with whatever patients are allergic to, whether it is something that they breathe, eat, or have skin contact with. This reaction causes certain cells in the body to release chemical mediators such as histamine and serotonin. These chemicals cause the dilation of the small blood vessels, increased secretion from the mucous glands, and smooth muscle contractions that produce the allergy symptoms.

Allergic rhinitis is the commonest cause of nasal congestion in children. Epidemiological data indicate that in the United States alone allergic rhinitis occurs in 6 million children, accounting for 2 million days lost from school (Shapiro, 1986). An important complication of perennial allergic rhinitis is otitis media with effusion, an accumulation of fluid behind the eardrum in the middle ear. Patients usually have at least an intermittent loss of hearing and may complain of a sensation of fullness or popping and cracking noises.

Allergies often play a role in the etiology of asthma, especially in childhood. The chemical mediators released upon the allergic reaction cause contraction of the smooth muscles in the walls of the bronchial airways, swelling of the bronchial tubes, and an increase in the rate of secretion of mucous by submucosal glands. This produces obstruction and causes the characteristic wheezing and shortness of breath. Asthma may be mild (one or two mild attacks per year) or severe with intractable wheezing daily. The severe form may greatly restrict physical activity and make school attendance difficult for school-age children. Physical exertion may precipitate wheezing and become a problem in physical education classes.

Skin allergies are common, especially in younger children. Atopic dermatitis (eczema) may occur in 3 to 4% of infants and result in a dry, scaly, itchy rash involving the cheeks and extremities. While most children outgrow the rash, over 50% of them tend to develop respiratory allergies. Another common rash with an allergic origin is urticaria or hives. Possible causes are allergies to drugs like aspirin or penicillin and to foods.

Food allergies are perhaps the most controversial area of allergy study. Some allergists feel that allergic reactions to foods are rare, while others feel they are a common cause of illness. The frequency of food allergy seems to decrease as children grow older. The most common symptoms of food allergy include gastrointestinal symptoms such as abdominal pain, vomiting and diarrhea, and rashes such as hives. Food may play a role in other allergic conditions such as allergic rhinitis, asthma, and eczema, especially during the first 3 or 4 years of life. The most serious allergic reaction to foods and drugs is an anaphylactic one, in which the person experiences a shocklike reaction that can result in death. Any food can cause an allergic reaction, but the foods most apt to cause one in children include milk, eggs, fish, wheat, corn, peanuts, soy, pork, and chocolate.

Stinging insect allergies may cause a severe anaphylactic reaction to the sting of a bee, wasp, hornet, or yellow jacket. The reaction may occur within minutes after the sting and allergic persons need immediate medical attention.

A thorough history and physical examination are important components of a diagnosis. Seasonal patterns of symptoms, exposure to animals, and usual diet are useful information in identifying causes. Laboratory analysis of nasal secretions, sputum, and blood may establish the presence of eosinophil cells that appear in increased numbers with allergic reactions. Pulmonary function tests are also helpful. Scratch and intradermal skin tests for the suspected allergens can confirm a diagnosis. Another tool is the radioallergoabsorbant (RAST) test, which measures the level of IgE in the blood for a particular allergen (Tuft, 1973). The elimination-challenge diet is used for suspected food allergies; after avoiding a particular food for two to three weeks, the patient consumes it and is observed for reactions. Awareness of environmental conditions from change of seasons, foliage in different parts of the country, and environmental factors in homes, schools, and the work place also assists the diagnostician.

While there is no cure for allergies, symptoms may be controlled in a variety of ways. First, symptomatic treatment involves using medication. Antihistamines are the most commonly prescribed drugs for the treatment of allergic reactions. They inhibit some of the actions of histamine but frequently have negative side effects such as sedation, excitation, and insomnia. Antihistamines are often combined with decongestant drugs. Asthmatics are usually treated with bronchodilator drugs that cause relaxation of the smooth muscle surrounding the bronchial tubes. Acute asthmatic attacks and anaphylactic reactions are frequently treated with epinephrine. Both drugs may have negative side effects. For severe allergic problems, corticosteroids may be used, but on a limited basis because of adrenal suppression and limitation of physical growth in children.

The second method of treatment is environmental control, that is, removal of troublesome antigens such as pet hair, dust, and pollen. Good housekeeping practices, use of air conditioning at home and in the car, and other careful planning can prevent many allergic problems. A third and related approach is to teach self-regulation strategies to persons with asthma and other types of allergies. They include relaxation training, biofeedback procedures to modify physiological reactions, and general education about the medical condition (Creer, Marion, & Harm, in press). A fourth treatment is immunotherapy, which involves injecting the patient with small amounts of an antigen that has been processed into a dilute form. These injections stimulate the immune system to produce another type of antibody that inhibits the reaction between the allergic antibody and the antigen. While initially the shots are taken

once or twice a week, the regimen is gradually phased out over a 2- to 3-year period (Patterson et al., 1978).

Allergies have been connected with specific learning disabilities through analyses of case studies (Rapaport & Flint, 1976). Allergic children are rated lower in reading, auditory perception, and visual perception (Harvard, 1975). Teacher and parent ratings as well as test scores indicated lower proficiency among allergic students in some areas (Rawls, Rawls, & Harrison, 1971). Learning-disabled students with recurrent otitis media may have more problems with allergies and verbal skills than non-disabled children (Loose, 1984). Geschwind and Behan (1982) associate left-handedness with reports of learning problems and immunological diseases such as thyroid and bowel disorders.

However, McLoughlin, et al. (1983) found no differences in parent reports concerning academic achievement, diagnosis for disabilities, and behavioral problems of allergic and nonallergic students. There was a tendency for children with asthma and chronic rhinitis to be rated lower in listening skills. Additionally, a comparison of group achievement scores of allergic and nonallergic students indicated no interaction of exceptional conditions and allergies (McLoughlin, Nall, & Petrosko, 1985). Some lower estimates of allergic children's school performance seem confused with the effects of socioeconomic factors.

Higher rates of school absenteeism are reported for asthmatic children and those with chronic rhinitis (Shapiro, 1986). Asthmatic children may be absent 10% of the time; such absenteeism is a direct cause of school problems. Additionally, the seasonal occurrence of allergic reactions (especially in the fall) and the typical pattern of frequent, brief absences are disruptive to classroom performance, attending skills, and social development. Milder forms of allergies may not cause significant school absenteeism, particularly with improved medical treatment, self-management programs, and parent education (McLoughlin, Nall, & Petrosko, 1985). Furthermore, some previous estimates of higher absenteeism of allergic children may have been confused with the effects of socioeconomic status.

Hearing difficulties are frequently associated with otitis media resulting from allergies (Northern, 1980). Among allergic students, Szanton and Szanton (1966) found many cases of intermittent hearing loss that had been undetected on screening measures. Articulation and/or vocal quality problems have also been reported among allergic students (Baker & Baker, 1980). Recurrent otitis media among three year olds has been associated with lower speech and language performance (Teele, et al., 1984).

Allergy history seems present among cases of behavioral and emotional disorders (Mayron, 1978). King (1981) estimated that 70% of students with such disorders have personal or family allergy histories; cognitive-emotional symptoms were noted after allergic exposure under double-blind conditions. Psychological and personality changes are frequently reported by asthmatic children and their parents (Creer, Marion, & Creer, 1983). However, comparisons of reports and ratings of behavioral problems, placement in services for behavior disorders, and school suspensions between allergic and nonallergic students have not yielded significantly different profiles (McLoughlin et al., 1985).

Hyperactivity has been particularly connected with food allergies. Feingold (1975b) drew attention to the ingestion of artificial food additives (color and flavors) and naturally occurring salicylates in food and proposed the Feingold Kaiser-Permanente (K-P) diet based on clinical observations and anecdotal accounts (Crook, 1977; Feingold, 1975a). However, reviews of controlled studies (Kavale & Forness, 1983; Mattes, 1983) dismiss these claims, as do the findings of the Consensus Development Conference sponsored by the National Institutes of Health (Office for Medical Applications of Research, 1982).

Allergy medication may have adverse effects on behavior and exacerbate existing behavioral problems (McLoughlin et al., 1983). Theophylline has been significantly correlated with inattentiveness, hyperactivity, irritability, drowsiness, and withdrawal behavior; the negative side effects increase with length of use. Furakawa and his colleagues (1984) found decreased test performances under the influence of theophylline. Terbutaline created socially inappropriate behavior in a comparison group (Creer, 1979), and corticosteroids negatively affected academic performance (Suess & Chai, 1981). Ladd, Leibold, Lindsey, and Ornby (1980) also reported euphoria, insomnia, and visual disturbances with corticosteroids. Antihistamines may cause sedation, dry mouth, and irritability (Weinberger & Hendeles, 1980). Visual hallucinations occur among some children receiving decongestants (Sankey, Nunn, & Sills, 1984).

Allergic disorders have important implications for the professional assessment and intervention of exceptionalities as well as for parental involvement. Certain types of allergies and/or the side effects of medication may be contributing factors in behaviors of concern and may require special consideration when designing special services. The self-monitoring and management skills taught in special education may be mutually beneficial in coping with this medical condition.

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ALLEY, GORDON R. (1934–)

Gordon R. Alley received his BA (1959) from Augustina, Illinois, later earning his MA (1961) in Psychology and his doctorate (1967) in Special Education and School Psychology from the University of Iowa. Alley's contributions to the field of education include his service as teacher of the mentally retarded, school psychologist, and director of special education. He taught at the University of Utah (1967–1970), and has been professor of special education and a lecturer in pediatrics at the University of Kansas since 1970. Alley has been invited to present his papers to regional and national gatherings on numerous occasions.

Alley's work has emphasized learning strategies associated with the developmental characteristics of adolescents, with his research promoting alternatives to the traditional tutorial and remedial approaches to interventions for students with learning disabilities. While at the Institute for Research in Learning Disabilities at the University of Kansas, Alley published many of his writings pursuant to his interests, including a chapter in *Instructional Planning for Exceptional Children* (1979). Other important publications are his 1979 work, *Teaching the Learning Disabled Adolescent* and *The Effect of Advance Organizers on the Learning and Retention of Learning Disabled Adolescents within the Context of a Cooperative Planning Model*, a study conducted by Alley and Keith Lenz in 1983. Alley's study investigated whether advance organizers would help learning disabled adolescents process information on selected academic tasks more effectively. Results of

the research indicated the efficacy of their use in secondary classrooms.

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ALPHABETIC METHOD

The alphabetic method of teaching children to read is historically connected with the development of an alphabet. Once letters and sounds were fixed in a structure (an alphabet), a method to master this structure emerged. The first recorded use of the alphabetic method was in ancient Greek and Roman civilizations. Reading instruction began by teaching children all the letters in their proper alphabetical order. After a complete mastery of the alphabet, children learned to group the letters to form syllables, words, and finally sentences. Reading instruction was considered primarily an oral process; the child recited the spelling of each syllable or word and then pronounced it. This progression of teaching letters, syllables, words, and sentences was the predominant method of teaching reading from Greek and Roman times until the late 1800s (Huey, 1908).

In using this method, sixteenth- and seventeenth-century teachers drilled children unmercifully on the names of the letters (Matthews, 1966). Instructional materials that presented lists of letters, syllables, and words to be memorized before advancing to the text were developed. The *New England Primer* was one of the most widely used reading texts in seventeenth-century America. Each reading selection focused on a moral or religious lesson, and was preceded by an alphabet, lists of the vowels and consonants, and lists of syllables such as ab, eb, and ib. The lists of words for spelling began with one-syllable words and progressed to two- and three-syllable words (Huey, 1980).

As the English language evolved, letter names no longer directly represented speech sounds; therefore, children became more and more confused as they tried to read modern literature by simply reciting the names of the letters. Realizing that this confusion hindered efforts to teach reading effectively, the alphabetic method was gradually replaced by phonetically based methods of reading instruction. By the beginning of the twentieth century, the classic alphabetic method was seldom used.

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DISTAR
READING REMEDIATION
WHOLE WORD TEACHING

ALTERNATIVE COMMUNICATION METHODS IN SPECIAL EDUCATION

> Individuals with severe communication disorders are those who may benefit from AAC (augmentative and alternative communication)—those for whom gestural, speech, and/or written communication is temporarily or permanently inadequate to meet all of their communication needs. For those individuals, hearing impairment is not the primary cause for the communication impairment. Although some individuals may be able to produce a limited amount of speech, it is inadequate to meet their varied communication needs. Numerous terms that were initially used in the field but are now rarely mentioned include speechless, nonoral, non-vocal, nonverbal, and aphonic (ASHA, 1991, p. 10).

Beukelman & Ansel (1995) estimate 8 to 12 persons per 1,000 in the United States are in need of augmentative and alternative communication (AAC).

In the mid 1970s, alternative methods of communication began to be explored with the nonspeaking population. These methods are termed augmentative communication systems. They are currently being used with children and adults who have physical, mental, emotional, and linguistic handicaps. ASHA (1991) defines an AAC system as "an integrated group of components, including the symbols, aids, strategies, and techniques used by individuals to enhance communication" (p. 10). Unaided communication systems use only the physical body for communication. They include sign languages, gestures, and facial expressions. Aided systems require additional equipment for communication. There are many advantages to using

unaided systems for communication. Social interaction is enhanced because the rate of communication is typically fast. Speaker-listener eye contact is maintained when using unaided systems. The meaning of many signs and gestures are concrete, making learning and recall of vocabulary easier. In addition, during training, sign and gesture response can be physically prompted and shaped by the instructor.

Sign languages such as American Sign Language (ASL) were originally developed for the hearing-impaired population. They are separate languages and not simply word-for-word manual translations of spoken English or other oral languages. Educational sign systems, or pedagogical sign systems, are designed to be manual equivalents of spoken English. Signed English is an educational sign system that is used frequently with the nonspeaking population (Bryen & Joyce, 1985). The differences between true sign languages and educational sign systems include differences in word order and sign representations and changes in grammatical structures. To use sign systems as an augmentative communication system, the nonspeaking person should have good motor control of the hands, arms, and face, along with good visual acuity and spatial orientation (Beukelman & Mirenda, 1998). Persons who routinely interact with a signing communicator will also need to learn the system. Gestures and facial expressions typically require less motor control than sign-language systems. Pantomime and natural gestures can often be used and understood without extensive training. Skelly and Schinsky (1979) developed a comprehensive gestural system known as Amer-Ind; it is based on American Indian hand talk. While gesture systems are initially less complex to learn, the information that can be conveyed is often constrained. Gestures and facial expressions are typically used as supplements to other communication systems, or as temporary communication methods.

Aided communication systems require additional devices or equipment for communication. Computers, writing with pen and paper, and communication boards are all examples of aided communication systems. An aided communication system consists of a communication aid, which is the mechanism used for communication, and a symbol system, which is the language used for communication.

The communication aid can consist of three major components: the interface, the communication device, and the output system. Complex electronic systems usually have all three components. Simple communication boards may consist of the communication device alone. The interface is used to control the system. A head stick, joystick, or computer keyboard are examples of interfaces. They are used to select symbols on the communication device. Direct selection allows the user to directly choose symbols for communication. Scanning systems present symbol choices to the user, who then activates a response when the desired symbol is reached. A scanning system resembles an advanced form of the guessing game "Twenty Questions." The communication device can display all of the available vocabulary options, or it can display a few symbols that are combined into codes to access vocabulary. Electronic devices often indicate, by small lights or LCD display screens, which symbol has been selected. Once the entire message to be communicated is completed, an output device such as a speech synthesizer, computer modem, or printer is used to convey the message to others.

A Hierarchy of Aided Communication Symbol Systems

Symbolically complex	Written alphabet orthography
↕	Linguistic pictographic systems (i.e., Blissymbols, Rebus, Piscyms)
↕	Black and white line drawings
↕	Colored drawings
↕	Photographs
↕	Miniature objects
Symbolically concrete	Real objects

Many symbol systems have been developed for use in aided communication systems. Symbol systems can be hierarchically ordered from linguistically simple concrete systems to complex written languages (see Table). Concrete linguistic systems are the easiest to learn. However, linguistically complex systems allow greater flexibility for communicative expression. The advantage of aided communication systems is flexibility. The communication aid and symbol system can be adapted to meet the physical and mental skills of almost any person. The symbol system can be permanently displayed to enhance symbol recall and memory. In addition, most aided communication systems can be easily understood by others without extensive listener training.

There are also many disadvantages to using aided communication systems. The devices themselves are often physically cumbersome and difficult to transport. Communication through a mechanical device also reduces speaker-listener eye contact and affects the location and distance from the speaker or a listener. The primary disadvantage of aided communication systems is an extremely slow rate of communication. Normal verbal communication rates range from 150 to 200 words per minute (Goldman-Eisler, 1986). Direct selection aided systems have rates that range from 6 to 25 words per minutes; scanning systems can be as slow as two words per minute (Foulds, 1980, 1987). This slow rate of communication tends to affect the style and amount of communicative interaction that occurs when using aided communication systems. Methods of increasing communication rate will be discussed later.

Before an augmentative communication system can be developed, a complete evaluation of the user's physical, lin-

guistic, cognitive, and academic skills must be completed. This requires a team of professionals including speech-language pathologists, physical therapists, occupational therapists, and school psychologists. The physical evaluation should determine the user's gross motor skills, range of motion, adaptive posturing and seating, fine motor accuracy, and speed of movement. An evaluation of language skills should determine the user's current communication strategies and receptive language skills, and the communicative needs of the user (Beukelman & Mirenda, 1998). Academic and cognitive skills should be evaluated with a language specialist to determine a language symbol system that is within the user's capabilities. In addition, the academic and vocational skills and needs of the user should be identified. The evaluation results are then used to determine the communication aid, or unaided system, and symbolic system that best fits the user's needs.

When an aided communication system is being developed, the system should be designed to increase communication speed. Message cost can be used to analyze the communication speed of augmentative communication systems (Goodenough-Trepagnier, Tarry, & Prather, 1982; Higgenbotham, 1992). Message cost equals the number of separate motor movements necessary to encode a message. For example, the message cost of letter-by-letter encoding for "I want to go to the store" equals 25 when blank spaces between words are included. By using whole word symbols, message cost is reduced to seven. If unnecessary words are eliminated (i.e., "I want go store"), message cost is further reduced to four. Any system that requires more motor movements to encode messages will not result in effective communication.

Once an augmentative system is developed, extensive user training is required. There are two components to the training process. The first is augmentative system training. The user needs to learn how the augmentative system functions. Communication aid operation, vocabulary training, and the production of phrases and sentences are aspects of system training. The second component is communication training. Studies have documented that many nonspeaking persons who are trained to use their augmentative communication systems are unable to communicate effectively (Calculator & Bredosian, 1988; Light, 1988; Romski & Sevcik, 1988). Normal children learn how to interact communicatively and socially with others through experience. Nonspeaking persons have limited interactive experiences and need modeling of communicative and social interaction skills. Communication programming should concentrate on establishing the natural communication skills for the natural setting, in the same settings in which they will ultimately be used (Goosens, Crain, & Elder, 1995). Nonspeaking persons also need to learn how to respond to others, how to maintain conversations, and how to increase intelligibility in various contexts.

The ability to communicate with others is a binding element within members of a society. The development of augmentative communication systems has opened many avenues of communication for the nonspeaking population. While most augmentative systems are not yet perfect replacements for oral speech, they do provide a means of communication and interaction with others.

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AMAROUTIC FAMILIAL IDIOCY

See TAY-SACHS SYNDROME.

AMBLYOPIA

Amblyopia, also called suppression blindness (Harley & Lawrence, 1977), is a visual condition that occurs when an anatomically healthy eye cannot see because of some other defect (Eden, 1978). Amblyopia is commonly called "lazy eye"; however, this is a misnomer (Eden, 1978) because it implies that amblyopia results from a muscular problem. Actually, amblyopia can have a number of causes. For example, strabismus (a condition in which the two eyes are not parallel when viewing an object) can lead to amblyopia. The brain ignores the visual signals of one of the two eyes to reduce the annoyance of double vision. Other factors such as astigmatism can also lead to amblyopia.

The degree of visual impairment associated with amblyopia can vary a great deal from losses that are just below normal to those in which only large objects can be identified. Treatment of amblyopia consists of treating the causal factors. It must be accomplished early in life, (before the age of six) because the child is likely to permanently lose the ability to process a 20/20 image from the affected eye.

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BLIND
CATARACTS

AMERICAN ACADEMY FOR CEREBRAL PALSY AND DEVELOPMENTAL MEDICINE (AACPDM)

The American Academy for Cerebral Palsy, founded in 1947, changed its name in 1976 to the American Academy for Cerebral Palsy and Developmental Medicine (AACPDM). This is a professional organization of physicians, diplomates of specialty boards, and persons holding a Ph.D. degree in specialties concerned with diagnosis, care, treatment, and research into cerebral palsy and developmental disorders. The AACPDM's 1,200 members also include associate members from the fields of occupational and physical therapy and speech-language pathology.

The AACPDM's activities and services include the presentation of awards and grants for research, demonstration, and personnel preparation. The organization also supports or conducts continuing education activities. The AACPDM holds an annual convention. The office address is 6300 N. River Road, Suite 727, Rosemont, IL 60018.

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AMERICAN ANNALS OF THE DEAF

The American *Annals of the Deaf* is a professional journal dedicated to quality in education and related services for hearing impaired children and adults. First published in 1847, the publication is the oldest and most widely read English language journal dealing with deafness and the education of deaf persons. The *Annals* is the official organ of the Convention of American Instructors of the Deaf and the Conference of Educational Administrators of Schools and Programs for the Deaf. Members of the executive committees of both organizations comprise the Joint *Annals* Administrative Committee charged with the direction and administration of the publication.

For 150 years, the *Annals* has primarily focused on the education of deaf students as well as dissemination of information for professionals associated with the educational development of this population. Concurrently, the *Annals* extends its range of topics beyond education, incorporating the broad interests of educators in the general welfare of deaf children and adults, and representing the diverse professional readership of the publication. Topics covered include communication methods and strategies, language development, mainstreaming and residential schools, parent-child relationships, and teacher training and teaching skills.

Four literary issues are published by the journal each year in March, July, October, and December. An annual reference issue, a comprehensive listing of schools and programs in the United States and Canada for students who are deaf or hard of hearing and their teachers, is also published by the *Annals*. In addition to the listings, the reference issue provides demographic, audiological, and educa-

tional data regarding students who are deaf and hard of hearing and the schools they attend. The data are compiled annually by the Center for Assessment and Demographic Studies, a component of the Gallaudet Research Institute.

Conference of Educational
Administrators of Schools
and Programs for the Deaf

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (AAAS)

The American Association for the Advancement of Science (AAAS) was founded in Philadelphia in 1848, making it one of the oldest professional societies in the United States. AAAS is a nonprofit society dedicated to the advancement of scientific and technological quality across all fields of science, and to increasing the general public's understanding of science and technology. The mission of the organization, according to its Constitution, is to "further the work of scientists, facilitate cooperation among them, foster scientific freedom and responsibility, improve the effectiveness of science in the promotion of human welfare, advance education in science, and increase the public's understanding and appreciation of the promise of scientific methods in human progress" (AAAS, 1995).

Today AAAS's membership is international, and is composed of over 143,000 scientists, science educators, engineers, and interested others; membership is open to anyone interested in scientific and technological progress. There are 285 scientific and engineering societies that have chosen to affilitate themselves with the AAAS, and they include 238 other societies, 44 state and regional academies of science, and 3 city academies. AAAS is thus the world's largest federation of professional scientific organizations. The association is organized into 24 sections which represent the various fields of interest of members, and four regional divisions. Programs fall into one of three directorates: Education and Human Resources, International, and Science and Policy.

The Association publishes many science books and reference works, the most prestigious being the weekly *Science*, a highly respected publication which disseminates state-of-the-art scientific research.

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AMERICAN ASSOCIATION OF COLLEGES FOR TEACHER EDUCATION (AACTE)

The American Association of Colleges for Teacher Education is a national, voluntary association of colleges and universities with undergraduate and/or graduate programs committed to the preparation of professional educators, including teachers and other educational personnel. The Association is composed of over 700 member institutions representing both private and public colleges and universities of every size and located in every state, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam. As a group, the AACTE institutions produce more than 85% of new educators each year.

The Association encourages major initiatives and innovations in teacher education, and serves as advocate for the profession on issues of interest to the membership, particularly in areas of certification, accreditation, and assessment. AACTE is a major influence in helping form federal and state educational policy, and is recognized as the primary representative of teacher education interests before Congress, state legislatures, other governmental agencies, and the media. The Association continues to advise the National Council for Accreditation of Teacher Education (NCATE) on issues of institutional standards and accreditation. AACTE publishes the biweekly newsletter *Briefs*, which reports on current happenings in the education, public policy, and government arenas to the teacher education community.

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AMERICAN ASSOCIATION FOR MARRIAGE AND FAMILY THERAPY

The American Association for Marriage and Family Therapy (AAMFT), founded in 1942, is the national organization representing marriage and family therapists. The association seeks to (1) advance marriage and family therapy through increased understanding, research, and treatment, (2) establish and maintain standards for the education and training of marriage and family therapists, and (3) promote professional development, ethics, and conduct among marriage and family therapists. The AAMFT has over 23,000 members and offers four membership categories. Clinical, Associate, and Student members are mental health therapists or therapists-in-training who have met varying levels of AAMFT credential standards. Affiliate members are individuals in allied mental health

professions who are interested in marriage and family therapy.

The AAMFT publishes three periodicals and a variety of books, videotapes, and brochures. The *Journal of Marital and Family Therapy* (the official journal of the association) offers current research findings in marriage and family therapy. The *Family Therapy News* provides the latest updates in the field of marriage and family therapy and *Practice Strategies* assists with practice management information and advice.

Each year the AAMFT sponsors an Annual Conference in early fall for training in family systems theory, practice, and research. Also, Summer Institutes are held for continued learning and professional development in marriage and family therapy. The association offices are located at 1133 15th Street, NW, Suite 300, Washington, DC 20005.

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AMERICAN ASSOCIATION ON MENTAL RETARDATION (AAMR)

The American Association on Mental Retardation was founded in 1876, and claims over 9,500 members both in the United States and throughout the world. Its membership is composed of professionals from a large variety of academic disciplines who are interested in the field of mental retardation, as well as nonprofessionals who are involved in and care about mental retardation. One of its primary goals is to expand the possibilities for people with mental retardation to live fulfilling and productive lives.

The AAMR offers strong support to research in mental retardation in the service of increasing the knowledge and skills of all who are involved in the field of mental retardation, through the publication of two professional journals and the Association's newspaper *News and Notes*. The *American Journal on Mental Retardation* is a scholarly research journal, and *Mental Retardation* includes research, book reviews, and conceptual articles aimed at practitioners.

The AAMR is organized into 10 regions that cover the United States, Canada, and parts of the Pacific, and contains over 85 local, state, or provincial chapters. There are 16 divisions, the topics of which include, among others, administration, communication disorders, legal process and advocacy, medicine, psychology, occupational and physical therapy, and vocational rehabilitation. The Association also offers eight special interest groups, focused on creative arts therapies, direct support professionals, Down Syndrome, families, health promotions, mental health services, multicultural concerns, and sexual/social concerns. Membership in the American Association on Mental Retardation is open to anyone concerned about mental retardation.

Kay E. Ketzenberger
The University of Texas of the Permian Basin

AMERICAN BOARD OF PROFESSIONAL PSYCHOLOGY (ABPP)

Originally named the American Board of Examiners in Professional Psychology, this organization was renamed the American Board of Professional Psychology in 1968. Founded in 1947 with the support of the American Psychological Association, it is comprised of a board of 15 trustees with headquarters in Columbia, Missouri. This certification board conducts oral examinations and awards specialty certification in eleven specialties: behavioral psychology, clinical psychology, clinical neuropsychology, counseling psychology, family psychology, forensic psychology, health psychology, industrial/organizational psychology, psychoanalysis in psychology, rehabilitation psychology, and school psychology. Necessary for certification is 5 years of qualifying experience in psychological practice.

The ABPP annually presents the Distinguished Professional Achievement Award. This and other awards are presented at the annual convention of the American Psychological Association in August. Publications of the ABPP include the *Diplomate* newsletter and the *Directory of Diplomates* (biannual).

Mary Leon Perry
Texas A & M University
First edition

Kay E. Ketzenberger
The University of Texas of the Permian Basin
Second edition

AMERICAN BOARD OF PROFESSIONAL NEUROPSYCHOLOGY (ABPN)

The American Board of Professional Neuropsychology (ABPN) is a credentialing board that examines doctoral-level psychologists with specialized training in the field of clinical neuropsychology and awards diplomas if examination performance is satisfactory. Examinations consist of an essay exam concerning clinical casework, a work sample

examination (wherein examinees submit for scrutiny two actual cases from their practice), and a 3-hour oral examination. Additionally, documentation of appropriate credentials and training is required. Incorporated in 1982, ABPN was the first (and as of this writing, the only) psychology credentialing board that has applied to be approved and certified by the National Commission of Certifying Agencies, the certification arm of the National Organization for Competency Assurance, an organization charged by the federal government with oversight and accreditation of health care certification bodies. The ABPN central office address is Care of the Executive Director, Dr. Michael Raymond, John Heinz Institute of Rehabilitation Medicine, Neuropsychology Services, 150 Mundy Street, Wilkes-Barre, PA 18702.

Cecil R. Reynolds
Texas A & M University

AMERICAN CANCER SOCIETY (ACS)

The American Cancer Society (ACS) is a voluntary organization committed to the elimination and control of cancer. This nationwide effort is conducted through 58 largely state-incorporated divisions and is accomplished through four major activities: (1) the public education program, which emphasizes regular, preventive care for adults, attention to specific warning signals, and information regarding positive outcomes when prompt diagnosis and preventive measures are adopted; (2) a comprehensive professional education program designed to stimulate health professionals to use the best cancer detection, diagnostic, and patient management techniques available, to exchange knowledge on the latest cancer-fighting techniques, and to disseminate new ideas and developments in the community; (3) a wide range of volunteer-based service and rehabilitation programs to assist cancer patients and their families with the necessary practical and emotional support so vital to coping with the wide-ranging effects of the disease; and (4) research into all aspects of cancer, from direct clinical investigations and training to prospective cancer prevention studies.

The ACS began in 1913, when fifteen physicians and business leaders gathered in New York City and founded the American Society for the Control of Cancer (ASCC). The Society's founders were aware that the disease, steeped in a climate of fear and denial, must be brought to the attention of the people. Articles were written for popular magazines and professional journals, a monthly bulletin providing information about cancer was published, and physicians were recruited throughout the United States in an attempt to increase public awareness.

In 1936, Marjorie G. Illig, an ASCC field representative and chair of the General Federation of Women's Clubs Committee on Public Health, proposed the creation of a legion of volunteers, with the sole purpose of waging war on cancer. The Women's Field Army, as this organization came to be known, was the driving force behind the agency's move to the forefront of voluntary health organizations.

Today, the core of the organization's effort resides in its 2 million volunteers who implement the society's public and professional education programs, service programs for patients and families, and raise funds for research programs.

The ASCC was reorganized in 1945, becoming the American Cancer Society (ACS), today's leader in the fight against cancer through its programs in research, patient services, prevention, detection and treatment, and advocacy. The Society strives to achieve this goal by promoting the early detection of cancer through education, intervention, and programs such as the Breast Cancer Network and Man to Man, a prostate cancer education and support group. In conjunction with these efforts, the ACS has increased its effort to protect children through comprehensive school health education and similar programs designed to discourage tobacco use and promote healthy living.

Scientists supported by ACS have successfully established the link between cancer and smoking, demonstrated the effectiveness of the Pap smear, developed cancer-fighting drugs and biological response modifiers, dramatically increased the cure rate for leukemia, and proved the safety and effectiveness of mammography. The American Cancer Society has committed almost $2 billion to research and funded 28 Nobel Prize winners.

Craig S. Higgins
Stonehill College
First edition

Tamara J. Martin
The University of Texas of the Permian Basin
Second edition

AMERICAN EDUCATIONAL RESEARCH ASSOCIATION (AERA)

The American Educational Research Association (AERA) was founded in 1915 as the National Association of Directors of Educational Research. The AERA is an international organization of educators, professors, research directors, specialists, and graduate students interested in educational research. The objectives of AERA include im-

proving the status and quality of research and promoting application and findings of research to educational problems (American Education Research Association, undated).

The AERA is divided into 12 divisions: administration, counseling and human development, curriculum studies, education in the professions, educational policy and politics, history and historiography, instruction and learning, measurement and research methodology, postsecondary education, school evaluation and program development, social context of education, and teaching and teacher education.

Journals published by the AERA include the American Educational Research *Journal, Educational Evaluation and Policy Analysis, Journal of Educational and Behavioral Statistics, Review of Educational Research, Educational Researcher, Review of Research in Education* (annual), *Encyclopedia of Educational Research*, and *Handbook of Research on Teaching* (both revised every 10 years).

The AERA holds an annual convention for the presentation of reports, papers, and awards. It also holds research training programs and monitors federal educational research activities.

REFERENCE

American Educational Research Association (Undated brochure). *American Educational Research Association: A membership for your discipline.* Washington, DC: Author.

Douglas L. Friedman
Fordham University

AMERICAN FOUNDATION FOR THE BLIND (AFB)

The American Foundation for the Blind (AFB), a nonprofit organization, was founded in 1921 to serve as the national partner of local services for the blind and visually impaired. The organization is a leading national resource for people who are blind or visually impaired, the organizations that serve them, and the general public. The mission of the organization is to enable people who are blind or visually impaired to achieve equality of access and opportunity in order to ensure freedom of choice in their lives.

The AFB traces its origins to a meeting of a group of professionals in Vinton, Iowa, in the summer of 1921 (Koestler, 1976). This meeting, comprised primarily of officers of the American Association of Workers for the Blind (AAWB), resulted in the recognition of the pressing need for a national organization that was not affiliated with special interest groups, professional organizations, or any local, regional, or state organization currently serving the needs of the blind (Hagerty, 1987).

Helen Keller was closely identified with AFB from the early 1920s until her death, and the organization is recognized as her cause in the United States. Working with AFB for over 40 years, she represented the organization in their efforts to educate legislators and the public about services needed for people who are blind.

AFB fulfills its mission through four primary areas of activity regarding the nonmedical aspects of blindness and visual impairment. Development, collection, and dissemination of information are accomplished by responding annually to 100,000 inquiries from people who are blind or visually impaired, their family and friends, professionals in the blindness field, and the general public requesting information about AFB's programs, services, and other topics related to blindness and visual impairment.

AFB activities in this area also include the publication of books, pamphlets, videos, and periodicals about blindness for professionals and consumers. The AFB publishes the leading professional journal of its kind, *Journal of Visual Impairment and Blindness*. In addition, the organization is responsible for maintaining and preserving the Helen Keller Archives, an invaluable collection of personal material donated by Helen Keller. AFB also houses the M. C. Migel Memorial Library, one of the world's largest collections of print materials on blindness.

Identification, analysis, and resolution of issues critical to people who are blind or visually impaired is achieved by setting priorities, analyzing policy options, and promoting feasible solutions in conjunction with experts and constituents in the field of blindness. Expertise is offered in program areas such as education, employment, aging, and technology; and policy research that positively affects the quality of life of people who are blind or visually impaired is conducted, evaluated, and published by the AFB. The organization also serves as an advocate for and evaluator of the development of assistive products and technology. Maintenance of the Careers & Technology Information Bank, a network of individuals who are blind from all 50 states and Canada who use assistive technology at home, school, or work and are able and willing to serve as mentors to others, is another function of the AFB.

In the accomplishment of its mission, the AFB also strives to educate policymakers and the public as to the needs and capabilities of people who are blind or visually impaired. Consulting on legislative issues and representing blind and visually impaired persons before Congress and government agencies accomplishes this goal. Corporate and public awareness of the capabilities of people who are blind or visually impaired is also increased through publications, audio/visual presentations, exhibits, and public service announcements.

AFB production and distribution of books and other audio materials includes recording and duplicating Talking

Books under contract to the Library of Congress. The organization also records and duplicates annual reports and other publications for various corporations and nonprofit organizations, thus making them accessible to print-handicapped employees, clients, and shareholders.

For more information about AFB, write the American Foundation for the Blind, 11 Penn Plaza, Suite 300, New York, NY 10001 or call 1-800-AFB-LINE (232-5463); in New York State, (212) 502-7657.

REFERENCE

Hagerty, S. J. (1987). American Foundation for the Blind. In C. R. Reynolds & L. Mann (Eds.), *Encyclopedia of Special Education* (1st ed.). New York, NY: Wiley.

Koestler, F. A. (1976). *The Unseen Minority*. New York: McKay.

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AMERICAN GUIDANCE SERVICE (AGS)

American Guidance Service, Inc. is an educational publishing company founded in 1957, and is an employee-owned company that encourages partnership and ongoing dialogue with the professionals that use its products. AGS publishes a wide variety of norm-referenced assessment instruments for the identification of special needs students, focusing primarily on cognitive ability, achievement, behavior, and personal and social adjustment, with many publications also available in Spanish. Their better-known tests include the Peabody Picture Vocabulary Test (PPVT-III), Vineland Adaptive Behavior Scales, the Kaufman Test of Educational Achievement (K-TEA), and the Developmental Indicators for the Assessment of Learning (DIAL-III). AGS also publishes The Behavioral Assessment System for Children, known popularly as the BASC, which became their best selling test during 1999, and is now used with over one million children annually.

In addition to testing materials, AGS publishes a great many instructional materials, including over 900 textbooks, as well as programs for parenting and family living. Much of their material is focused on children with learning/emotional problems or in special education, though they also publish material geared to all ages. AGS can be reached at 4201 Woodland Road, Circle Pines, MN 55014-1796, or by phone at (800) 328-2560 or (612) 786-4343.

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AMERICAN INSTITUTE—THE TRAINING SCHOOL AT VINELAND

The American Institute—The Training School at Vineland, is located in Vineland, New Jersey (Main Road and Landis Avenue, Vineland, NJ 08360). The school and training facility were founded in 1887; they are under the supervision and administrative management of Elwyn Institutes. The facility serves children and adults who are mentally retarded, brain damaged, emotionally disturbed, physically handicapped, and learning disabled.

The school programs are ungraded at the elementary and secondary levels. The school features education and training programs that are designed to train young people to return to the community. The training programs serve mildly handicapped to the severely retarded students. The range of educational programs and vocational training experiences are developed with individualized educational plans and rehabilitation services. The facility is internationally recognized for the pioneering works of Binet and Doll. The Stanford Binet tests were translated and norms were developed at the school. Dr. Edward Doll is recognized as the pioneer in the development of the Vineland Social Maturity Scale.

REFERENCE

Sargent, J. K. (1982). *The Directory for exceptional children* (9th ed.). Boston, MA: Porter Sargent.

Paul C. Richardson
Elwyn Institutes

AMERICAN JOURNAL OF MENTAL RETARDATION (AJMR)

Originally known as the *American Journal of Mental Deficiency, AJMR* is published on a bimonthly basis by the American Association on Mental Retardation (AAMR). The original title reflected the original name of the sponsoring organization, which was changed from the American Organization on Mental Deficiency (AAMD) to its current name in 1987. The primary purpose of the journal is to publish theoretical manuscripts and research in the area of mental retardation, with an emphasis on meterial of an objective, scientific, and experimental nature. Book reviews are included. The journal address is 1719 Kalorama Road, N.W., Washington, D.C. 20009.

Staff