One

OVERVIEW

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Drs. Nadeen and Alan Kaufman have been leaders in the field of cognitive and academic assessment since the early 1980s when their first IQ test, the Kaufman Assessment Battery for Children (K-ABC; Kaufman & Kaufman, 1983a, 1983b) was published. The K-ABC's publication coincided with the widespread use of Alan's landmark text (filled with Nadeen's case reports), *Intelligent Testing with the WISC-R* (Kaufman, 1979), which provided clinicians with a new, "intelligent" approach to the interpretation of Wechsler profiles. Their strong advocacy of the intelligent testing philosophy, along with their drive to improve the field of assessment by developing better, more user-friendly, theory-driven tests has had a rippling effect in the assessment world. This book provides information on seven of the tests that the Kaufmans have developed: the K-ABC, the Kaufman Brief Intelligence Test (K-BIT; Kaufman & Kaufman, 1990), the Early Screening Profiles (ESP; Harrison, Kaufman, Kaufman, Bruininks, Rynders, Ilmer, Sparrow, & Cicchetti, 1990), the Kaufman Survey of Early Academic and Language Skills (K-SEALS; Kaufman & Kaufman, 1993b), the Kaufman Functional Academic Skills Test (K-FAST, Kaufman & Kaufman, 1994a), the Kaufman Short Neuropsychological Assessment Procedure (K-SNAP; Kaufman & Kaufman, 1994b), and the Kaufman Adolescent and Adult Intelligence Test (KAIT; Kaufman & Kaufman, 1993a). One of the Kaufmans' widely used tests, the Kaufman Test of Educational Achievement (K-TEA; Kaufman & Kaufman, 1985, 1997b) is not covered in this book because this book is devoted to cognitive assessment, not to the measurement of traditional school-based achievement. However, the K-TEA will be included in a forthcoming book on achievement testing that is part of the *Essentials* series. Figure 1.1 provides a pictorial representation of the timeline in which these Kaufman tests were developed.

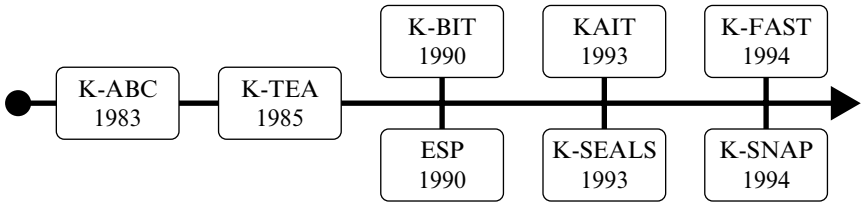

Figure 1.1 Timeline of Kaufman Test Development

This book opens with Chapter 1, which gives a description of the basic theories that form the foundations of the Kaufman tests presented here, and provides information on the development and rationale of the tests. Chapter 2 provides information on the K-ABC. Specifically, the content of the K-ABC chapter is research-based and it presents a historical overview of empirical findings over nearly the past two decades. Details of the administration, scoring, and interpretation of the K-ABC are not presented in this book for two reasons: first, published information is available on these topics in other sources, and second, the K-ABC is currently being revised and restandardized and the new K-ABC will be the focus of a forthcoming book in the *Essentials* series. The main topics covered in Chapters 3, 4, 5, 6, and 7 of this book include administration, scoring, interpretation, and clinical use of the K-BIT, ESP, K-SEALS, K-FAST, K-SNAP, and KAIT. Chapter 8 provides sample case reports that integrate various Kaufman instruments in clinical examples. Important points are highlighted throughout the book by "Rapid Reference," "Caution," and "Don't Forget" boxes. Each chapter also includes a set of questions that are intended to help you consolidate what you have read. Rapid Reference 1.1 provides basic information about each of the tests. The in-depth information presented on each of these Kaufman measures will help you to further develop your skills as an examiner and a clinician in the area of assessment.

INTELLIGENT TESTING PHILOSOPHY

The basic premise of test interpretation that we put forth in discussing each of the Kaufman instruments is one that Kaufman (Kaufman, 1990, 1994; Kaufman & Lichtenberger, 1999, 2000) has advocated before. We believe that it is critical that examiners use an intelligent approach to testing and understand

Rapid Reference 1.1

Information on the Seven Kaufman Measures

TEST	Authors	Publication Date	What the Instrument Provides	Age Range	Administration Time (minutes)	Qualification of Examiners
ESP*	Patti Harrison Alan S. Kaufman Nadeen L. Kaufman Robert L. Bruininks John Rynders Steven Ilmer Sara S. Sparrow Domenic V. Cicchetti	1990	A brief measure of cognitive, language, motor, and social development	2-0 through 6-11	45–90	Professionals, paraprofessionals, or nonprofessionals with training
K-ABC*	Alan S. Kaufman Nadeen L. Kaufman	1983	A comprehensive measure of sequential and simultaneous processing abilities	2-6 through 12-6	35–85	Graduate- or professional-level training in psychological assessment
KAIT*	Alan S. Kaufman Nadeen L. Kaufman	1993	A comprehensive measure of fluid and crystallized intelligence	11-0 through 85	60–90	Graduate- or professional-level training in psychological assessment

(continued)

TEST	Authors	Publication Date	What the Instrument Provides	Administration Age Range	Administration Time (minutes)	Qualification of Examiners
K-BIT*	Alan S. Kaufman Nadeen L. Kaufman	1990	A brief measure of intelligence	4-0 through 90	15–30	Educational, psychological, vocational, & medical personnel
K-FAST*	Alan S. Kaufman Nadeen L. Kaufman	1994	A brief measure of arithmetic and reading ability	15 through 90	15–25	Educational, psychological, neuropsychological, vocational rehabilitation, & medical personnel
K-SEALS*	Alan S. Kaufman Nadeen L. Kaufman	1993	A brief measure of cognitive and language abilities	3-0 through 6-11	15–25	Educational, psychological, neuropsychological, vocational rehabilitation, & medical personnel
K-SNAP*	Alan S. Kaufman Nadeen L. Kaufman	1994	A brief screen of neuropsychological abilities	11-0 through 85	20–30	Educational, psychological, neuropsychological, & medical personnel

*American Guidance Service, 4201 Woodland Rd, Circle Pines, MN 55104-1796, Ph. 800-328-2560, Fax 800-471-8457, Web site: www.agsnet.com, e-mail: agsmail@agsnet.com.

our basic philosophy before proceeding with the specifics of test interpretation. Assessment should be of the individual and for the individual. The examiner's role in assessment is more than simply examining the scores; rather, he or she must bring together research knowledge, theoretical sophistication, and solid clinical skill when interpreting tests. The intelligent testing philosophy that we follow is five-fold, as shown in Don't Forget 1.1.

DON'T FORGET 1.1

Tenets of the Intelligent Testing Philosophy

1. Subtests measure what the individual has learned.
2. Subtests are samples of behavior and are not exhaustive.
3. Standardized, individually administered tests assess mental functioning under fixed experimental conditions.
4. Test batteries are optimally useful when interpreted from a theoretical model.
5. Hypotheses generated from the test profile should be supported with data from multiple sources.

The first tenet of the intelligent testing philosophy: Subtests measure what the individual has learned, highlighting the fact that intelligence tests measure prior learning. The type of learning that IQ tests tap includes not only school-based knowledge, but also learning that occurs within a culture and in daily experiences. Thus, the strong relationships between IQ tests and achievement measures are not surprising. For example, the KAIT correlates .82 with the K-ABC Achievement scale (Kaufman & Kaufman, 1993a), and the correlations between the K-BIT and other achievement measures, such as the K-TEA, range from .53 to .86, with a median value of .70 (Kaufman & Kaufman, 1990). However, even though the predictive validity of intelligence test scores is strong, the relationship between IQ test scores and school achievement need not indicate a predetermined fate for an individual. That is, if results from an intelligence test are appropriately interpreted and translated to helpful recommendations, positive change in academic achievement may occur, thereby changing one's IQ-determined "destiny."

The second intelligent testing tenet: Subtests are samples of behavior and are not exhaustive, which is relevant to the generalizability of the test findings. Since test results are usually obtained within one or two hours and include samples of behavior from a select set of tasks, caution needs to be exercised in generalizing the results to other behaviors in different circumstances. Also im-

plied in this tenet is that a global IQ should not be interpreted as an estimate of a person's total level of intellectual functioning. In particular, do not treat a global IQ as a clear-cut, valid indicator of an individual's total intelligence. Much more is needed to fully understand a person's ability spectrum and learning potential. Scores from an IQ test need to be interpreted in conjunction with scores from other supplemental measures, such as those from visual-perceptual tests, motor tests, memory tests, language tests, adaptive behavior tests, and so on. Examination of one's individual cognitive strengths and weaknesses obtained from IQ test data is more fruitful when combined with supportive data from other samples of behavior, such as those data obtained from supplemental measures.

The third intelligent testing tenet: Standardized, individually administered tests assess mental functioning under fixed experimental conditions. Strict adherence to the standardized procedures of administration and scoring of standardized tests is important to ensure the comparability of obtained test results to those of the normative group. However, these same formal procedures for administration and scoring add to the artificial nature of the testing situation. Very infrequently in real life does someone sit across from you with an easel and stopwatch and ask you to perform a task while your every move is being observed, scrutinized, and recorded. Thus, awareness of the experimental nature of the testing process will help prevent overinterpreting a person's IQ as their maximum capacity.

Interpreting test scores in the context of observed behaviors can aid in the appropriate interpretation of the scores. For example, when an adolescent's oppositionality during testing has led to a low level of motivation on timed tasks, this behavior is crucial to understanding that the obtained scores may be a gross underestimate of the adolescent's abilities. In addition, such observations can be useful in translating test results into practical recommendations. Kaufman (1990) states: "The value of the scores increases when the examiner functions as a true experimenter and tries to determine *why* the child earned the particular profile revealed on the record form; the IQs become harmful when they are unquestioningly interpreted as valid indicators of intellectual functioning and are misconstrued as evidence of the child's maximum or even typical performance" (p. 9).

The fourth intelligent testing tenet: Test batteries are optimally useful when interpreted from a theoretical model, an important notion when attempting to

organize test data in a meaningful way. When trying to understand the reasons underlying the peaks and valleys of a cognitive profile, in order to translate the scores to pragmatic, fundamental areas of deficit and strength, using the appropriate theoretical model is crucial. As will be discussed throughout this book, the Kaufman tests have foundations in a variety of theoretical models, ranging from Horn's fluid-crystallized dichotomy (Horn, 1989; Horn & Noll, 1997) to Luria's (1973, 1980) Block 3 model to Piaget's (1972) theory of development. In addition to these theoretical foundations are other models that may be applied to interpreting the results of the Kaufman measures. For example, a verbal-nonverbal (Wechsler, 1991, 1997a) dichotomy may be useful in organizing results or an information processing model that features input, integration, storage, and output (Silver, 1993) could be helpful frameworks for test interpretation. Whether test results are interpreted within a test's own theoretical model or by reorganizing the subtests to better fit another theoretical framework, the results will be best explained and translated into practical recommendations if presented within a theoretical framework.

The fifth intelligent testing tenet: Hypotheses generated from the test profile should be supported with data from multiple sources, a key postulate preventing misuse of test results. Results from one instrument should not be interpreted alone as the gospel truth about an individual. Rather, when hypotheses are created from an individual's profile, supplemental information should be found that could confirm or disconfirm the hypotheses. Such supplemental information may come from a variety of sources including behavioral observations, background information, previous test data, and the administration of additional subtests and tests.

The importance of this fifth tenet is probably best explained through an example. Consider an adult female who has a KAIT-inspired hypothesis of weak short-term memory. The memory hypothesis is based on a grouping of KAIT subtests that includes low scores on the Auditory Comprehension, Rebus Learning, and Memory for Block Designs subtests. Her low scores on these subtests may be due to poor short-term memory, but may also be due to anxiety, distractibility, lack of concentration, or other factors. What was the woman like during the evaluation? Did she appear focused and remain on task? Did she seem nervous, fidgety, or exhibit other signs of anxiety? Did she score low on other tests of short-term memory, such as on the Number Recall of the K-SNAP or on the Working Memory subtests of the Wechsler Adult In-

telligence Scale-Third Edition (WAIS-III; Wechsler, 1997a)? Did her background include a history of difficulty remembering names, phone numbers, or appointments? The answers to questions such as these will support or disconfirm the hypothesis of poor short-term memory. With multiple sources of data backing a hypothesis, you can feel much more confident in stating a person's abilities. Thus, throughout this book we present an interpretive approach to analyzing a particular test as part of a comprehensive battery that integrates many sources of data.

DEVELOPMENT AND RATIONALE OF KAUFMAN TESTS

The development of the Kaufmans' multiple tests was influenced by their extensive experience in the field of intelligence testing. As a researcher and assistant director at The Psychological Corporation from 1968 to 1974, Alan Kaufman was project director for the development and standardization of the Wechsler Intelligence Scale for Children-Revised (WISC-R) and the McCarthy Scales of Children's Abilities (McCarthy, 1972). He was particularly well-suited for involvement in these projects given his training in measurement, research, and evaluation at Columbia University under the instruction of Robert L. Thorndike, a well-respected psychometrician. Nadeen Kaufman brought to the table her training (also at Columbia University, in the field of special education with specialization in neuroscience and learning disabilities) and her insightful clinical skills. Together, the Kaufmans wrote a book entitled *Clinical Evaluation of Young Children with the McCarthy Scales* (Kaufman & Kaufman, 1977). These experiences provided a training ground for their work on the K-ABC. In 1979, Alan Kaufman authored a text on the WISC-R that molded the foundation for an approach to intelligence test interpretation that is widely used today. Both the Kaufmans found their interest in adult assessment spurred by conversations with David Wechsler in the early- to mid-70s. From that point on, their thoughts brewed on how to better assess those who are aging. It is their strong background in the field, coupled with their desire to improve upon existing instruments available in the field, that led and continues to lead the Kaufmans in creating tests of intelligence and related abilities.

The Kaufmans' first test in 1983, the K-ABC, was groundbreaking, as it is a test built upon a theoretical framework that differed greatly from other tests available at the time. Other unique features of the K-ABC included its manual,

which was filled with validity studies; its sensitivity to minority assessment, which resulted in greatly-reduced Caucasian-African American and Caucasian-Hispanic differences; and its training workshops, which were publisher-sponsored and author-involved. The rationale for the K-ABC was to take a process-based approach to intelligence, rather than a content-based one: "If we know how a child best learns, we have a much better idea of how to teach that child. The K-ABC is predicated on a model of how we learn. An integral part of this model is, once you get the results, what do you do with them?" (Kaufman & Kaufman, 1984). One of the goals that the Kaufmans had in developing this theory-driven test was to make a test that would be applicable to classroom teaching and learning. They hoped to create a means to identify a child's most efficient learning style and then directly translate that style (evidenced by the test scores) into academic action. Ultimately, the Kaufmans wanted to turn a child's strengths and weaknesses into a plan for transforming failures into successes: "One of the motivations for constructing the K-ABC was to have a test that was educationally relevant, that did more than just pin a number on somebody or help place them in some room or category. But instead, what have I learned about this child that I can now use to help this child learn better, function better?" (Kaufman & Kaufman, 1984).

After the development of their first widely successful test, the K-ABC, the Kaufmans created an achievement test in 1985, the K-TEA (not discussed in this book), and then went on to develop two tests in 1990: the K-BIT and the ESP. Apart from measuring a different age range than the K-ABC (for ages 2½ to 12½), one key difference between the K-BIT (for ages 4 to 90) and K-ABC was that the K-BIT was designed for situations in which a brief measure of intelligence was needed. The rationale behind the K-BIT was to provide a reliable brief measure of intellectual ability that could be administered not only by psychologists, but also by appropriately trained technicians or paraprofessionals. At the time that the K-BIT was developed, the available instruments used for screening and related purposes tended to be poorly normed and had questionable psychometric properties. Though short forms of Wechsler's scales were commonly used, the excellent psychometric properties of these brief tests were not enough of a benefit to compensate for a glaring flaw: The norms were based only on the comprehensive battery, not on an administration of just the short form. Additional problems with other existing short measures were that they only assessed one skill (e.g., receptive vocabulary or nonverbal

reasoning) or that only highly trained professionals were allowed to administer the tests (e.g., Wechsler short forms). Thus, the Kaufmans designed the K-BIT keeping these existing limitations in mind, and created a measure that could be administered by personnel without sophisticated psychometric backgrounds and that was reliable and well-normed.

The second test published by the Kaufmans and their colleagues in 1990 was the ESP. The rationale behind the ESP was to provide a measure of diverse abilities for the early childhood period. The ESP was designed to assess children ages 2-0 to 6-11, a crucial period for optimal development of children and their abilities (Harrison et al., 1990). The view of the Kaufmans regarding preschool screening is that it is one of the first steps in assessing and providing interventions for at-risk children and their families. Ultimately, their hope is that later learning and behavioral problems can be prevented with appropriate early intervention guided by the ESP. This philosophy, in combination with developmental knowledge and clinical experience with preschool children, led the ESP authors to create a test that improved upon existing preschool screening instruments.

Finding greater need for more in-depth assessment of the domains of cognition and language for preschoolers, the Kaufmans set out to develop an expanded measure of these domains tapped by the ESP. In so doing, the K-SEALS came into existence. Although the K-SEALS measures skills for a slightly smaller age range than the ESP (3-0 to 6-11 rather than 2-0 to 6-11), the K-SEALS provides more detailed information on children's expressive and receptive language skills; knowledge of numbers, number concepts, letters, and words; and articulation. Part of the rationale behind the K-SEALS was that it could be used as part of a comprehensive test battery for preschool and primary grade programs that target language delays, communication disorders, and general developmental delays. With the K-SEALS, the Kaufmans also desired to create a test that could be used to assess the effectiveness of the curriculum of early academic programs.

Also developed in 1993 was the Kaufmans' second comprehensive test of intelligence, which this time was a test for adolescents and adults. Driven by earlier conversations with David Wechsler about how to better measure adult intelligence, Alan and Nadeen Kaufman immersed themselves in developmental psychology and neuropsychology. When the Kaufmans developed the KAIT for individuals ages 11 to 85+, their goal was to produce another test

well-grounded in theory. The most widely used test of adolescent and adult intelligence at the time of the KAIT's development, the Wechsler Adult Intelligence Scale-Revised (WAIS-R; Wechsler, 1981), was not founded within a theoretical framework (Kaufman, 1990; Kaufman & Lichtenberger, 1999). The Kaufmans felt that, in light of all that is now known about the relationship between neurological development and related cognitive development, new measures integrating this knowledge should be created. Thus, developmentally appropriate tasks were used to construct the KAIT battery, which is anchored in developmental (Piaget), intellectual (Horn), and neuropsychological (Luria) theory. The Kaufmans were thereby able to meet their goal of creating an instrument that provides clinically and neuropsychologically valuable information about adolescent and adult functioning.

In 1994 the Kaufmans published two tests that were conormed and codeveloped with the KAIT and K-BIT: the K-FAST and K-SNAP. The rationale behind the K-FAST's development was to create a test that would directly assess adaptive functioning and basic academic skills. At the time of the K-FAST's development, the majority of the existing adaptive functioning measures were subjective measures that required a parent or teacher to describe the client's ability. There were very few existing measures of academic ability that were normed for adults. The Kaufmans sought to contribute a measure of mathematical and reading ability that required subjects to apply these skills to everyday situations. The K-SNAP was designed to measure different cognitive functions than the K-FAST, but it did so for a similar age group (K-FAST is for ages 15 to 85+, whereas K-SNAP is for 11 to 85+). The rationale behind the K-SNAP was to provide a brief measure of neuropsychological ability that could serve as a screener for identifying cognitive or neuropsychological deficits. One of the goals the Kaufmans had in developing the K-SNAP was to provide a more objective method for determining level of cognitive impairment; thus, they created the Impairment Index comprised of a combination of scales on the K-SNAP.

In summary, the Kaufman tests have all been developed from Alan and Nadeen Kaufman's extensive clinical and research experience and from their great knowledge of the assessment field in general. The tests discussed in this book include measures that span the age range from 2 to 90 years (see Figure 1.2). The basic rationale for each of their tests was to fill a void in a particular domain, to improve upon existing measures, and to provide more theoretically-

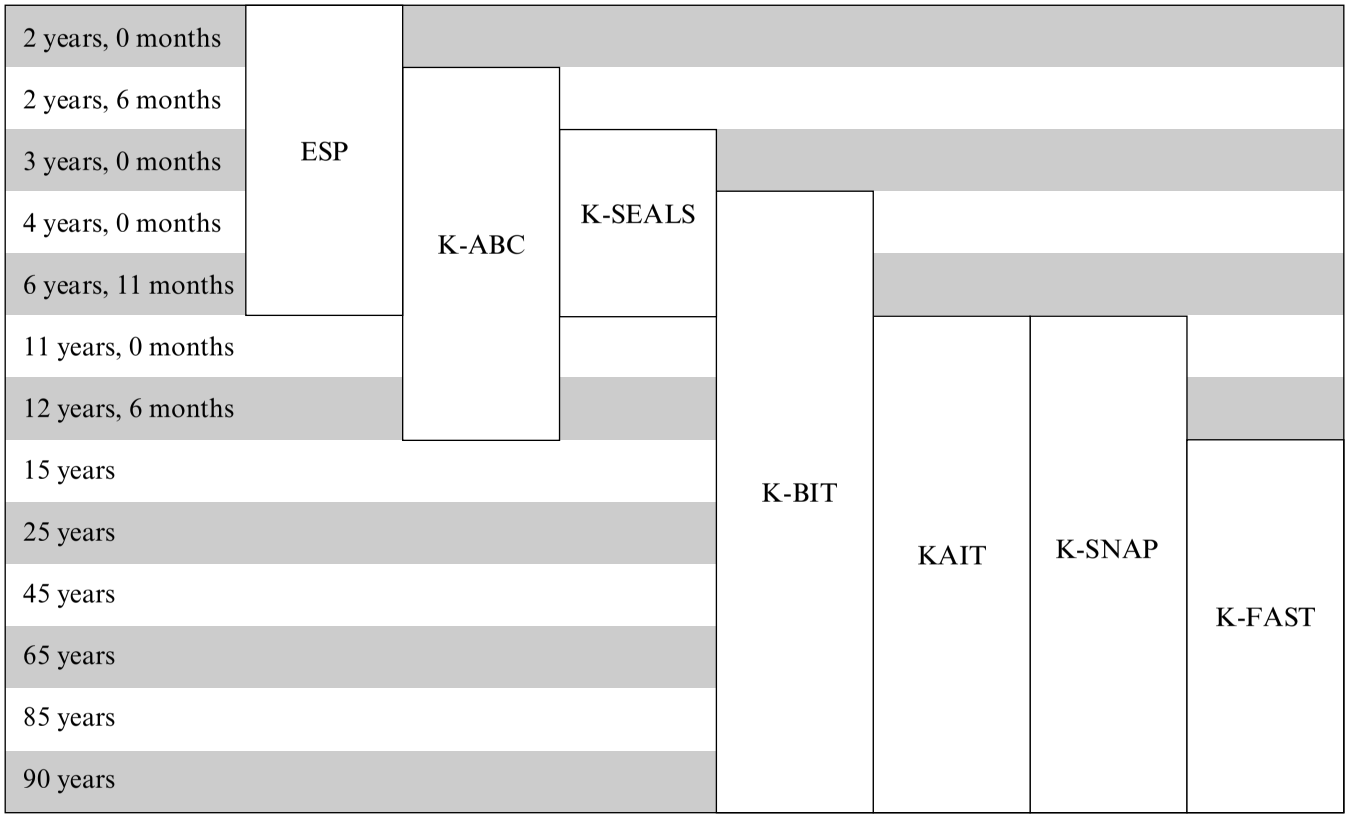

Figure 1.2 Age Range Tested in ESP, K-ABC, K-SEALS, K-BIT, KAIT, K-SNAP, and K-FAST

driven instruments. Alan Kaufman once said that assessment should be "of the individual, by the individual, and *for* the individual" (Kaufman, 1994, p. 14), and the Kaufman tests have provided a way to do just that type of assessment.

THEORETICAL FOUNDATIONS OF THE KAUFMAN TESTS

The seven Kaufman tests described in this book are founded in a variety of theories. Here we will present a brief overview of the main theories tapped by these Kaufman instruments, including sequential-simultaneous processing theory, Luria's three-block theory, Piaget's theory of cognitive development, and Horn's expanded fluid-crystallized theory of intelligence. In the interpretive sections on each of the instruments in this book, we also discuss alternative theoretical models that may be applied to the understanding and interpretation of the Kaufman tests.

Sequential and Simultaneous Processing

The focus of the sequential and simultaneous processing theory is on the ways children solve problems rather than the content of the problems they solve. The sequential and simultaneous framework used in the K-ABC stems from an updated version of a variety of theories (Kamphaus, Beres, Kaufman, & Kaufman, 1995). The sequential and simultaneous model was primarily developed from two lines of theory: the information processing approach of Luria (e.g., Luria, 1966a) and the cerebral specialization work of Sperry (1968, 1974), Bogen (1969), Kinsbourne (1975), and Wada, Clarke, and Hamm (1975).

The neuropsychologically-based sequential-simultaneous processing model originated with the neurophysiological observations of Alexander Luria (1966a, 1966b, 1973, 1980) and Roger Sperry (1968), the psychoeducational research of J. P. Das (1973; Das, Kirby, & Jarman, 1975, 1979; Naglieri & Das, 1988, 1990), and the psychometric research with the K-ABC (Kaufman & Kaufman, 1983a, 1983b). This theory is unique in that it presents a processing, rather than a product-oriented, explanation for behavior. A positive feature of the theory is that it lends itself readily to the development of remedial strategies (Kaufman & Kaufman, 1983a, 1993b; McCallum & Merritt, 1983; Perlman, 1986), although research on the effectiveness of the remediation is sparse and remains controversial (Good & Jefferson, 1989).

Two very distinct types of processes are described by this neuropsychological processing model: One process involves organizing and processing information received in sequential order to solve problems successfully (i.e., successive or sequential, analytic-linear processing), and the second involves holistic or simultaneous processing of information (Levy & Trevarthen, 1976; Luria, 1966a). These processes have been identified by numerous researchers in diverse areas of neuropsychology and cognitive psychology (Perlman, 1986). From Sperry's cerebral specialization perspective, these processes represent the problem-solving strategies of the left hemisphere (analytic/sequential) and the right hemisphere (Gestalt/holistic). From Luria's theoretical approach, successive and simultaneous processes reflect the "coding" processes that characterize "Block 2" functions.

Regardless of whether one takes Sperry's or Luria's perspective, successive processing refers to the processing of information in a sequential, serial order. Essentially, when sequentially processing information, the system is not totally surveyable at any point in time. Sequential processing emphasizes the ability to place or arrange stimuli in sequential or serial order. The stimuli are all linearly or temporally related to one another, creating a form of serial interdependence within the set of stimuli (Kaufman & Kaufman, 1983a, 1983b). A prototypical sequential processing task is the K-ABC's Number Recall. In this task, children are required to repeat a series of numbers that are read aloud. By contrast, simultaneous processing refers to the synthesis of separate elements into groups. When simultaneously processing information, any portion of the result is, at once, surveyable without dependence on its position in the whole. Simultaneous processing refers to the mental ability to integrate information all at once to solve a problem correctly. Simultaneous processing frequently involves spatial, analogic, or organizational abilities (Kaufman & Kaufman, 1983a, 1983b); Kamphaus & Reynolds, 1987). The Triangles subtest of the K-ABC is a prototypical measure of simultaneous processing. To complete the items on this task, children must mentally integrate the components of the design to visualize the whole.

An assumption of the sequential-simultaneous theoretical model is that both styles of processing information are available to an individual. The selection of either or both modes of processing depends on two conditions: the individual's habitual mode of processing information as determined by social-cultural and genetic factors and the demands of the task (Das, Kirby, &

Jarman, 1975). Thus, a child's performance on a test like the K-ABC will depend on his or her ability to call on the type of processing demanded by a particular subtest, but also to balance that with whichever mode is the most natural for the child.

Luria's Three-Block Theory

The K-SNAP and KAIT incorporate the three blocks of Luria's (1980) theoretical model. Block 1 is Arousal, Block 2 is Successive and Simultaneous Processing, and Block 3 is Planning. Each of the three blocks of Luria's theory correspond to one of the levels of complexity of the K-SNAP subtests (low, medium, and high complexity). Block 1, Arousal, involves low-level tasks such as those that are measured by the Mental Status exam of the K-SNAP (e.g., orientation to person, place, and time). Block 2, Successive and Simultaneous Processing, is described in the previous section. Generally, Block 2 abilities are exemplified by those such as K-SNAP's Number Recall or Gestalt Closure and the subtests on the K-ABC's Sequential and Simultaneous scales. Block 3, Planning, is exemplified by tasks such as Four-Letter Words on the K-SNAP. Luria's planning ability (Block 3) was also the main component integrated in the KAIT. Luria's notion of planning ability is associated with the frontal lobes of the brain (prefrontal region, specifically). For Luria, planning involves decision-making, evaluation of hypotheses, and flexibility. This type of planning ability is thought to emerge at about age 11 to 12, coinciding with the maturity of the prefrontal lobes (Golden, 1981).

Piaget's Developmental Theory

Piaget (1972; Phillips, 1975) conceptualized cognitive development in four global stages: 1) sensorimotor thought; 2) preoperational thought; 3) concrete operational thought; and 4) formal operational thought. Sensorimotor thought involves coordination of sensations with physical movements, and lasts from birth to approximately age 2. Preoperational thought roughly spans ages 2 to 7. This period is when stable concepts are formed, mental reasoning emerges, egocentrism is prominent, and magical belief systems are constructed. Concrete operational thought is made up of mental actions or representations that are reversible. One of the key tasks used to assess this stage of

development is through conservation of liquid. Concrete operational thought roughly spans ages 7 to 11. Beginning at about age 11 or 12, formal operational thought emerges. During this stage, the ability to think abstractly, relativistically, and hypothetically develops. Piaget's theory of cognitive development merges well with Luria's neuropsychological theory regarding the ability to deal with abstraction. Both theories posit that during this preadolescent period, new skills develop that allow decision-making and abstract reasoning. Indeed, Piaget's stage of formal operational thought is quite similar to Luria's notion of planning ability. Both notions about high-level thinking provided the "entry-level" requirement for the inclusion of tasks in the KAIT.

Horn's Fluid-Crystallized Theory of Intelligence

Horn's expansion of the Horn-Cattell theory of intelligence (Horn, 1989; Horn & Hofer, 1992; Horn & Noll, 1997) distinguishes fluid from crystallized intelligence and also includes more refined abilities such as visual intelligence, quantitative reasoning, short-term memory, long-term storage, auditory processing, and processing speed. We will focus our description here on fluid and crystallized intelligence, as these two constructs are the ones mainly used by the Kaufman tests (KAIT and K-BIT, in particular). Fluid intelligence (Gf) refers to novel problem-solving and the ability to learn. Crystallized intelligence (Gc) involves acquired skills, knowledge, and judgments that have been systematically taught or learned through acculturation. Gc often reflects cultural assimilation and is influenced by formal education. These two types of Horn abilities are exemplified by tasks on the K-BIT: The K-BIT Vocabulary subtest represents Gc, and Matrices reflects Gf.

PURPOSES FOR CONDUCTING ASSESSMENTS

Clinicians use the seven Kaufman measures that are discussed in this book for a variety of reasons. These reasons vary, of course, depending on the age of the client tested, the setting in which the assessment takes place, and the particular referral question. Overall, the most common purposes for administering these measures include the following: to obtain a brief or comprehensive measure of global level of cognitive functioning, to screen to determine whether

more comprehensive testing is necessary, to obtain information on one's language skills or preacademic skills, to obtain information on adaptive functioning abilities, or to gather data for research purposes.

For preschoolers, assessments are usually conducted to obtain information that will enable decisions to be made, which will facilitate educational and psychological development. Specific reasons for assessing a preschool child may include eligibility for special programs for developmentally disabled children, kindergarten screening, placement in classrooms for advanced children, and evaluation of programs (Nagel, 2000). For school-aged children, assessments are completed for similar reasons: to determine eligibility for special education and for the assessment of learning disabilities, mental retardation, behavioral problems, or giftedness (Kaufman & Lichtenberger, 2000). In adolescence, the reasons for assessment may include assessment of learning disabilities, behavioral or emotional problems, or college and career planning. The purposes for which adults are assessed commonly include measuring cognitive potential or neurological dysfunction, making educational or vocational placement decisions, and for developing interventions (Kaufman & Lichtenberger, 1999).

TEST YOURSELF

1. **The Kaufmans' two comprehensive tests of intelligence, the K-ABC and the KAIT, were developed from a strong theoretical base.** True or False?
2. **The intelligent testing philosophy discussed in this book advocates all of the following except**
   (a) supporting hypotheses with multiple sources of data
   (b) considering the test data collected to be exhaustive samples of behavior
   (c) viewing standardized tests as analogous to controlled experiments
   (d) interpreting test results from a theoretical model
3. **The Kaufmans' rationale for the K-ABC's development was to take a _____ approach to intelligence.**
   (a) content-based
   (b) process-based
   (c) verbally-based
   (d) academically-based

4. The K-BIT was designed to be administered by

(a) psychologists only
(b) psychiatrists only
(c) appropriately trained technicians, paraprofessionals, or psychologists
(d) anyone who has completed college

5. Which of the following Kaufman tests are considered screening instruments?

(a) K-ABC
(b) K-BIT
(c) KAIT
(d) ESP
(e) both (a) and (d)
(f) both (b) and (d)

6. The two broad dimensions of Horn's theory that are utilized in the KAIT and K-BIT include

(a) Verbal and Nonverbal
(b) Speed and Memory
(c) Crystallized and Fluid
(d) Frozen and Liquified

7. The stage of Piaget's theory of cognitive development which is most pertinent to the KAIT is

(a) sensorimotor
(b) preoperational
(c) concrete operational
(d) formal operational

Answers: 1. True; 2. b; 3. b; 4. c; 5. f; 6. c; 7. d