

Essentials

of Stanford-Binet

Intelligence Scales (SB5)

Assessment

Gale H. Roid and
R. Andrew Barram



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Essentials of Stanford-Binet Intelligence Scales (SB5) Assessment

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To my family

G. H. R.

To my loving wife and children

R. A. B.

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SERIES PREFACE

In the *Essentials of Psychological Assessment* series, we have attempted to provide the reader with books that will deliver key practical information in the most efficient and accessible style. The series features instruments in a variety of domains, such as cognition, personality, education, and neuropsychology. For the experienced clinician, books in the series will offer a concise yet thorough way to master utilization of the continuously evolving supply of new and revised instruments, as well as a convenient method for keeping up-to-date on the tried-and-true measures. The novice will find here a prioritized assembly of all the information and techniques that must be at one's fingertips to begin the complicated process of individual psychological diagnosis.

Wherever feasible, visual shortcuts to highlight key points are utilized alongside systematic, step-by-step guidelines. Chapters are focused and succinct. Topics are targeted for an easy understanding of the essentials of administration, scoring, interpretation, and clinical application. Theory and research are continually woven into the fabric of each book but always to enhance clinical inference, never to sidetrack or overwhelm. We have long been advocates of what has been called intelligent testing—the notion that a profile of test scores is meaningless unless it is brought to life by the clinical observations and astute detective work of knowledgeable examiners. Test profiles must be used to make a difference in the child's or adult's life, or why bother to test? We want this series to help our readers become the best intelligent testers they can be.

The Stanford-Binet Intelligence Scales, one of the classics of assess-

ment, was recently revised and published in its fifth edition (SB5) (Roid, 2003a). Enhanced features were designed to increase the usefulness of the SB5 for preschool children, individuals with mental retardation, elderly clients with memory difficulties, individuals with intellectual giftedness, and many other applications. The SB5 combines the point scale format of the Fourth Edition (SB4) with the age-level format found in previous editions such as the classic Form L-M. The latest version of the Stanford-Binet is a wide-ranging, individually administered test battery designed for ages 2 through 85+ years; its subtests cover five cognitive factors—Fluid Reasoning, Knowledge (Crystallized ability), Quantitative Reasoning, Visual-Spatial ability, and Working Memory—in both the verbal and nonverbal domains. The SB5 represents a useful addition to the cognitive assessment scene.

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Gale Roid and Andrew Barram

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Essentials of Stanford-Binet Intelligence Scales (SB5) Assessment

OVERVIEW OF THE SB5 AND ITS HISTORY

INTRODUCTION

New editions of nationally standardized tests provide modern wording, illustrations, enhanced measurement procedures, updated theory and research, and new standardizations, enhancing the validity of test interpretations. Such enhancements come at a price, however, in time, effort, and costs to the developers and consumers. After a 7-year revision project, the Stanford-Binet Intelligence Scale, Fifth Edition (SB5) (Roid, 2003b) was published with enhanced features, norms, and procedures. Initial reviews and receptions by users have shown that the revision project was successful in many respects, to be described in the chapters that follow.

The SB5 combines the point-scale format of the fourth edition (SB4) by Thorndike, Hagen, and Sattler (1986) with the age-level format found in previous editions such as the classic Forms L, M, and L-M (Terman & Merrill, 1937, 1960). Examiners begin a standard test administration by giving the two routing subtests: Object Series/Matrices (nonverbal) and Vocabulary (verbal). Estimates of ability in the nonverbal and verbal domains are obtained from raw scores on each routing test and used to tailor the remaining assessment to the examinee's functional ability. Simple conversion tables show the examiner which functional levels (ranging from easy to hard, Levels 1 through 6) of the nonverbal and verbal scales to continue testing. By adding the non-

DON'T FORGET

The SB5 combines the point-scale format used in the SB4 and many intelligence tests with the functional levels design of the Terman and Merrill (1960) Form L-M. The purpose of this combination is to tailor the test to the ability level of the examinee—a critical feature that improves measurement for individuals with disabilities and for highly gifted children.

verbal routing test and an entire one-half of the SB5 in the non-verbal domain, the new edition provides excellent features for testing individuals with limited English or with communication difficulties. The nonverbal section requires a low language demand—that is, minimal receptive language and mostly nonverbal responses (pointing, moving pieces, etc.) by the examinee. Also, the two-stage testing

procedure, with routing subtests first and functional-level sections next, provides highly precise estimates of cognitive ability in a relatively short period of time.

Thus, the SB5 is a wide-ranging, individually administered test battery. Norms were designed for ages 2 through 85+ years and the subtests cover five cognitive factors—Fluid Reasoning, Knowledge (crystallized ability), Quantitative Reasoning, Visual-Spatial Processing, and Working Memory—in both the verbal and nonverbal domains. Importantly, the SB5 is the first intellectual battery to cover five cognitive factors in both the nonverbal and verbal domains. Five nonverbal subtests and five verbal subtests measure each of the factors.

Many new features have been added to the SB5 and features of previous editions enhanced, as shown in Rapid Reference 1.1. Many of the new features were designed to enhance the usefulness of the SB5 for assessments with preschool children, individuals with mental retardation, and individuals with intellectual giftedness. In addition, many features were added to make the test easy for examiners to administer and score.

Rapid Reference 1.1

New Features of the SB5 Compared to Previous Editions

- Brightly colored toys, blocks, and pictures to enhance preschool assessment.
- New composite scores (IQ and Factor Index) with a mean of 100 and standard deviation of 15, and subtests with a mean of 10 and standard deviation of 3.
- Extended low-end items for early childhood assessment and high-end items for giftedness assessment, including an innovative Extended IQ measuring IQ down to 10 and up to 225.
- An abbreviated IQ based on the two routing subtests.
- Retention of a few classic Binet items such as Picture Absurdities; new scales such as block tapping, recall of the last words in a series of sentences (measuring working memory processes; Baddeley, 1986), and formation of designs using an expanded set of form-board pieces as a replacement for block designs.
- Change-Sensitive Scores, providing criterion-referenced interpretation of scores based on item response theory.
- Linkage to the Woodcock-Johnson III Tests of Achievement for assessment of learning disabilities.
- Interpretation of differences between nonverbal and verbal abilities within each factor to identify strengths and weaknesses in the individual's profile of abilities.

HISTORY

A number of the features of the design of the SB5 become apparent when the history of the Stanford-Binet and its various editions is reviewed. Developments began in France at the turn of the 20th century. Alfred Binet and Theodore Simon (1905) developed a useful tool to assess general intelligence, which is widely cited as the first major break-

through in intelligence testing. As a member of a French governmental commission working on mental retardation, Binet developed a practical test, sensitive to different levels of cognitive development, that could be given during a clinical interview. Binet's early work is summarized in Rapid Reference 1.2.

Terman's 1916 Stanford Revision

Researchers in the United States, such as Goddard (1908) and Terman (1911), quickly saw the theoretical and practical value of Binet's work and began to adapt the work to the American context. Lewis Terman, of Stanford University, worked with Child (Terman & Child, 1912) to develop a preliminary revision of the Binet-Simon scale. Within a few years, Terman (1916) had extended the scale and collected data on more than 2,300 children and adolescents. The improved scale was published as the *Stanford Revision and Extension of the Binet-Simon Scale* by a division of Houghton-Mifflin Company called Riverside Press. Alternative versions of the Binet-Simon scales that presented intelligence as a singular dimension were distributed in the United States (e.g., the Goddard, 1910 version). However, Terman's 1916 revision retained Binet's concept of intelligence as a complex mixture of abilities, and is the only revision that has stood the test of time, remaining in publication to the present day. The standardization that Terman accomplished was quite rigorous for the early 1900s and increased the scale's technical quality. Also, the scale had thorough directions for examiners and used the ratio of mental age to chronological age first introduced by Stern (1914). This intelligence quotient (IQ) became the new standard for the assessment of intelligence.

Revisions of the Terman Scales in 1937, 1960, and 1972

Within 20 years of its release in 1916, the Stanford Revision emerged as the most widely used test of intellectual ability in America. The scale

Rapid Reference 1.2

History of the Early Work of Binet

Alfred Binet (1857–1911) authored almost 300 books, articles, and reviews during his career. His work began with intelligence testing, when Binet collaborated with Victor Henri (1872–1940) to outline a project for the development of a series of mental tasks to measure individual differences (Binet & Henri, 1895). The tasks were designed to differentiate a number of complex mental faculties, including memory, imagery, imagination, attention, comprehension, aesthetic sentiment, moral sentiment, muscular strength, motor ability, and hand-eye coordination.

The 1905 Binet-Simon Scale

Binet was named a member of a government educational commission and took the lead in devising a useful and reliable diagnostic system for identifying children with mental retardation. Binet's project culminated in the publication of the first practical intelligence test (Binet & Simon, 1905) with physician Theodore Simon (1873–1961).

Binet sought to make the 1905 scale efficient and practical: "We have aimed to make all our tests simple, rapid, convenient, precise, heterogeneous, holding the subject in continued contact with the experimenter, and bearing principally upon the faculty of judgment" (from the Kite translation, Binet & Simon, 1916). The scale consisted of 30 items, which were scored on a pass-fail basis. The items presented various word problems, paper-cutting tasks, repeating sentences and digits, and comparing blocks to put them in order by weight (Wolf, 1969). Combinations of mental and physical strategies were required in solving each item or mastering each task. The complex nature of these practical items is generally recognized as the major breakthrough that allowed intelligence to be assessed during a clinical interview. Prior to Binet's use of complex items and tasks, mental abilities were measured in isolated fashion with laboratory equipment and included visual perception, reaction time, hearing acuity, and other physical measurements (e.g., Galton, 1883, as described in Johnson, McClearn, Yuen, Nagoshi, Ahern, & Cole, 1985).

(continued)